



Bure Park Primary School

Subject: Design and Technology

- **Overview & Rationale**
- **Scheme of Work**
- **Progression of Skills & Year Group End Points**

Overview and Rationale

A whole school approach to Design and Technology has been developed which gives due consideration to the progression of knowledge, skills, values, attitudes and the use of resources, as chronicled above.

Design and Technology is approached through cross-curricular topic work as a subject in its own right, through planned happenings and through spontaneous occurrences. Nutrition, structures and mechanisms are taught on a yearly basis with textiles also being incorporated into the DT curriculum. We aim to create a balance between open-ended and focused tasks, long and short activities, freedom to use all available resources or exploration of a specific material or tool.

Children may work individually, in pairs, in small groups, in a larger group or participate in a whole class or area activity. We vary the criteria for the composition of groups; they may be based on friendship groups, ability, mixed ability or interest.

We feel that first hand experience is an essential element of this subject and, as such, we use organised visits, speakers, artefacts and resources whenever possible. Similarly, we hold competitions and events that encourage children to use and develop a range of skills – bake offs, Easter hat/t-shirt parades, posters and Christmas competitions.

Children's findings and explanations are communicated in a wide variety of ways, including presentations, displays, written reports, assemblies, drawings, *annotated* diagrams and finished artefacts. As with all other subjects, Design and Technology provides many opportunities for the children to utilise information technology as and when appropriate.

We use the Kapow Scheme of work to plan and deliver sessions and usually Design and Technology work is blocked to enhance the learning experience for the children. This may be a series of afternoons or full day DT days as appropriate.

Early Years Foundation Stage



End points for EYFS

Through our EAD provision, all pupils will be able to:

Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function

Share their creations, explaining the processes they have used.

Key Stages 1 & 2

	Autumn Term	Spring Term	Summer Term
Year 1	Cooking and Nutrition – Fruit and Vegetables	Mechanical Systems – Moving Story Book	Structures - Windmill
Year 2	Cooking and Nutrition – Balanced Diet	Textiles – Pouches .	Mechanical Systems – Fairground Wheel
Year 3	Mechanical Systems – Pneumatic Toys	Cooking and Nutrition – Eating Seasonally	Electrical Systems: Electronic Posters
Year 4	Cooking and Nutrition – Adapting a Recipe	Electrical Systems - Torches	Structure - Pavilions
Year 5	Digital World: Monitoring Devices.	Cooking and Nutrition – Developing a Recipe	Structure - Bridges
Year 6	Mechanical Systems – Automata Toys	Textiles - Waistcoats	Cooking and Nutrition – Come Dine with Me

Year 1	Purple = Substantive Knowledge		Green = Implicit Knowledge / Skills			
	Cooking and Nutrition		Mechanical Systems		Structures	
	<ul style="list-style-type: none"> • 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 is any edible part of a plant. 	<ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand. • Learning where and how fruits and vegetables grow. • Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie. • Identifying if a food is a fruit • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • 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. • To know that the sails or blades of a windmill are moved by the wind. • To know that a structure is something built for a reason. • To know that stable structures do not topple • To know that adding weight to the base of a structure can make it more stable. 	<ul style="list-style-type: none"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. • Making stable structures from card • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. • Finding the middle of an object. • Puncturing holes. • Adding weight to structures. • Creating supporting structures • Cutting evenly and carefully • Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. • Suggest points for improvements.



End points for Year 1

Pupils can:

Cooking and Nutrition

Describe fruits and vegetables and explain how to identify fruits.

Name a range of places that fruits and vegetables grow.

Describe basic characteristics of fruit and vegetables.

Prepare fruits and vegetables to make a smoothie.

Mechanical Systems

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 that meets the design criteria, with parts that move purposefully as planned.

Evaluate the main strengths and weaknesses of their design and suggest alterations.

Structures

Follow design criteria to meet the needs of a user.

Make a stable structure.

Make functioning sails/blades that attach to the supporting structure.

Improve their windmill.

K e y V o c a b u l a r y	Cooking and Nutrition blend compare evaluate fruit juice plant seed stem tree blender cut flavour healthy juicer recipe select table knife vegetable chopping board design fork ingredients leaf root smoothie taste vine	Mechanical Systems adapt assemble design design criteria input mechanism model sliders test	Structures base equal rotate sails strong weak centre evaluate rotor same structure wind design middle rotor blades stable test windmill
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Year 2	Purple = Substantive Knowledge		Green = Implicit Knowledge / Skills			
	Cooking and Nutrition		Textiles		Mechanical Systems	
	<ul style="list-style-type: none"> • To know that ‘diet’ means the food and drink that a person or animal usually eats. • To know what makes a balanced diet. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To know that I should eat a range of different foods from each food group, and roughly how much of each food group. • To know that ‘ingredients’ means the items in a mixture or recipe • To know how to cut, grate, snip and spread to prepare foods. • To know how to review and give a score to evaluate. 	<ul style="list-style-type: none"> • Designing three wrap ideas • Chopping foods safely to make a wrap. • Constructing a wrap that meets a design brief. • Grating foods to make a wrap. • Snipping smaller foods instead of cutting. • Spreading soft foods to make a wrap. • Identifying the five food groups. • Learning about balanced diet. • Describing appearance, smell and taste. • Taste and evaluating different food combinations. • Describing the information that should be included on a label. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • To know everyday objects have mechanisms. • To know many things that move have parts inside to help them work. • To know mechanisms usually limit unwanted movement. • To know everyday objects utilise wheels and axles. • To know wheels must be able to turn to work effectively. • To know axles allow wheels to turn without falling off • Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere • To know the features of a fairground wheel include the wheel, frame, pods, a base an axle and an axle holder. 	<ul style="list-style-type: none"> • Conducting simple surveys or discussions to gather opinions on what others need or like in a design. • Knowing that a survey is used to find out what people like. • Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. • Knowing that a design brief helps to decide what to make. • Knowing that design criteria are the steps for making a product successful. • Creating ideas with design criteria in mind. • Referring to specific parts of existing products when generating ideas. • Knowing that the design criteria help when thinking of ideas. • Using labels to explain parts of a design, label materials, etc. • Knowing that drawings can help explain how something works. • Knowing that a label explains part of a drawing. • Choosing materials, ingredients or components

						<p>from a wider range of materials, ingredients or components.</p> <ul style="list-style-type: none">● Explaining their choices based on the properties of materials and components.● Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc.● Following and recalling simple safety instructions.● Knowing that some tools are sharp like scissors and knives.● Choosing known geometric shapes when making.● Beginning to shape objects to improve how they work.● Considering balance in their finishing, like evenly spaced decoration.● Discussing a range of existing products and saying what they like and dislike about them.● Evaluating existing products against design criteria.● Evaluating their ideas and creations against simple design criteria.● Knowing that design criteria help to decide if their product is a success.● Suggesting improvements to their peers' designs and products.
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						<ul style="list-style-type: none">● Knowing that improve means to make something better.● Knowing that their suggestions can improve someone else's work
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End points for Year 2

Pupils can:

Cooking and Nutrition

Name the main food groups and identify foods that belong to each group.

Describe the taste, feel and smell of a given food.

Think of three different wrap ideas, considering flavour combinations.

Construct a wrap that meets the design brief and their plan.

Textiles

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.

Mechanical systems

Describe how axles help wheels move a vehicle and design and label a working fairground wheel

Evaluate different designs

Describe the properties of different materials and select appropriate materials for the wheel.

Build a stable structure, test elements of the design and adapt the design as necessary.

Make the wheel rotate, evaluate a wheel mechanism and adapt it as necessary.

Recall that a survey is used to find out what people like, tally results and use the results to inform the design.

Add pods for the correct number of people and ensure that the pods stay upright when rotating around a fixed point.

Explain the decisions for the pod design.

K e y V o C a b u l a r y	Cooking and Nutrition appearance chopping board dairy diet fruit ingredients proteins smell spreads balanced combination design evaluate grate menu review snip table knife carbohydrates cut design brief feel grater oil scissors spread taste	Textiles decorate fabric fabric glue knot needle needle threader running stitch sew template thread	Mechanical Systems design brief design criteria evaluate frame model opinion rotate survey
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Year 3	Purple = Substantive Knowledge		Green = Implicit Knowledge / Skills			
	Mechanical Systems		Cooking and Nutrition		Electrical Systems	
	<ul style="list-style-type: none"> • 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 drawing in, releasing and compressing air. 	<ul style="list-style-type: none"> • Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. • Creating a pneumatic system to create a desired motion. <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • To know that seasonal means foods that grow in a given season in a given country. • To know some seasonal foods that grow in the UK and what season they grow in. • To know that eating seasonal foods can have a positive impact on the environment. • To know how to describe the flavour and texture of foods. • To know how to cut a peel safely. • To know that the appearance of food is as important as taste. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. 	<ul style="list-style-type: none"> • Describing how climate affects where foods grow • Identifying seasonal ingredients from the UK. • Following the instructions within a recipe. • Tasting seasonal ingredients. • Peeling foods by hand or with a peeler. • Cutting ingredients safely. • Choosing ingredients based on a design brief • Describing the texture and flavour of ingredients. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. 	<ul style="list-style-type: none"> • 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.). • 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. 	<ul style="list-style-type: none"> • 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 • Create a final design for the electric poster. • Mount the poster onto corrugated card to improve its strength and allow it to withstand the 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). • Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the

		<p>cutting, creasing, folding and weaving.</p> <ul style="list-style-type: none"> • 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. 				<p>design criteria and justifying opinions.</p> <ul style="list-style-type: none"> • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs
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End points for Year 3

Pupils can:

Electrical systems

<p>Mechanical Systems</p> <p>Define a mechanism as a system of parts working together to create movement and a pneumatic system can be used as part of this.</p> <p>Describe how a pneumatic system forces air over a distance to create movement and identify pneumatic systems in a range of everyday objects.</p> <p>Describe different types of drawings used in design to explain ideas clearly and explain why one may be more useful for a particular situation.</p> <p>Develop design criteria from a design brief.</p> <p>Begin to draw different types of diagrams to generate suitable ideas.</p> <p>Recall different types of pneumatic systems used to design a toy and create one for a specific movement.</p> <p>Build secure housing for a pneumatic system, consider sustainable resources and work with materials to create different effects by cutting, creasing, folding, etc. Evaluate how well the design, materials and equipment help to achieve the design brief.</p>	<p>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.</p> <p>Research and choose a specific Ancient Roman topic on which to base their initial poster ideas.</p> <p>Complete design criteria based on a client's request.</p> <p>Roughly sketch four initial poster ideas, indicating where a bulb will be located for each.</p> <p>Review their initial ideas against the design criteria and peer feedback, developing a final design.</p> <p>Assemble an electric poster, including a functional, simple circuit with a bulb, following a demonstration.</p> <p>Acknowledge, with a brief explanation, the need to mount the poster using corrugated card.</p> <p>Test that the simple circuit works by adding a battery.</p> <p>Evaluate their electric posters in a letter to a client.</p>
<p>Cooking and Nutrition</p> <p>Explain that fruits and vegetables grow in different countries based on their climates.</p> <p>Understand that seasonal fruits and vegetables grow in a given season.</p> <p>Understand that eating seasonal fruit and vegetables positively affects the environment.</p> <p>Design a tart recipe using seasonal ingredients.</p>	

<p>K e y v o c a b u l a r y</p>	<p>Mechanical systems diagram evaluate feedback housing linkage mechanical system pivot pneumatic system thumbnail sketch</p>	<p>Cooking and Nutrition appearance complementary design fruit ingredients mountain seasonal taste tropical arid country evaluate grate Mediterranean peel seasons temperate vegetable climate cut export import mock-up polar snip texture weather</p>	<p>Electrical systems battery circuit component design criteria electrical system information design publinc sketch bulb crocodile wire develop feedback initial ideas research circuit design electric product final design peer-assessment self-assessment</p>
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Year 4	Purple = Substantive Knowledge		Green = Implicit Knowledge / Skills			
	Cooking and Nutrition		Electrical Systems		Structures	
	<ul style="list-style-type: none"> • To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that safety and hygiene are important when cooking. • To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. • To know the importance of budgeting while planning ingredients for a recipe. • To know that products often have a target audience. 	<ul style="list-style-type: none"> • Designing a biscuit within a given budget. • Conducting market research • Following a baking recipe. • Understanding safety and hygiene rules. • Adapting a recipe • Evaluating an adapted recipe. • Evaluating and comparing a range of products. • Suggesting modifications. 	<ul style="list-style-type: none"> • 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. • 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. • 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. 	<ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. • 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 • Evaluating electrical products. • Testing and evaluating the success of a final product. 	<p>To understand what a frame structure is.</p> <ul style="list-style-type: none"> • To know that a 'free-standing' structure is one which can stand on its own • To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing. 	<p>Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</p> <ul style="list-style-type: none"> • Building frame structures designed to support weight. • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials. • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs



End points for Year 4

Pupils can:

Cooking and Nutrition

Describe features of biscuits using taste, texture and appearance.

Follow a recipe with support.

Use a budget to plan a recipe.

Adapt a recipe using additional ingredients.

Electrical Systems

Identify electrical products and explain why they are useful.

Help to make a working switch

Identify the features of a torch and how it works.

Describe what makes a torch successful.

Create suitable designs that fit the success criteria and their own design criteria.

Create a functioning torch with a switch according to their design criteria.

Structures

Produce a range of free-standing frame structures of different shapes and sizes.

Design a pavilion that is strong, stable and aesthetically pleasing.

Select appropriate materials and construction techniques to create a stable, free-standing frame structure.

Select appropriate materials and techniques to add cladding to their pavilion.

<p>K e y V o C a b u l a r y</p>	<p>Cooking and Nutrition</p> <p>adapt budget comment cream cut fold layout multiplication sieve addition buttery compare crunchy design hygiene market research opinion sift appearance combine construct cuboid evaluate ingredients modify pounds target audience</p>	<p>Electrical Systems</p> <p>battery circuit diagram electrical item insulator target audience wire bulb component electricity series circuit test buzzer conductor electronic item switch torch</p>	<p>Structures</p> <p>3D shapes cladding design criteria innovative natural reinforce structure</p>
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Year 5	Purple = Substantive Knowledge		Green = Implicit Knowledge / Skills			
	Digital World		Cooking and Nutrition		Structures	
	<ul style="list-style-type: none"> • To know that a ‘device’ means equipment created for a certain purpose or job and that monitoring devices observe and record. • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met • To understand key developments in thermometer history • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • To know the 6Rs of sustainability. • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling. 	<ul style="list-style-type: none"> • Researching (books, internet) for a particular (user’s) animal’s needs. • Developing design criteria based on research. • Generating multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD • Changing the properties of, or combining one or more 3D objects, using CAD • Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range. • Stating an event or fact from the last 100 	<ul style="list-style-type: none"> • To know that beef comes from cows reared on farms. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that nutritional information is found on food packaging. • To know that coloured chopping boards can prevent cross-contamination. • To know that food packaging serves many purposes. 	<ul style="list-style-type: none"> • Researching existing recipes. • Suggesting alternative ingredients. • Writing an alternative recipe. • Understanding cross-contamination. • Using preparation skills. • Making a developed recipe. • Explaining the farm to fork process • Analysing nutritional content. 	<ul style="list-style-type: none"> • To understand some different ways to reinforce structures • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials • To understand why material selection is important based on properties • To understand the material (functional and aesthetic) properties of wood. 	<ul style="list-style-type: none"> • Designing a stable structure that is able to support weight • Creating a frame structure with a focus on triangulation. • 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 saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating 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.

		<p>years of plastic history.</p> <ul style="list-style-type: none">• Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices.• Explaining key functions in my program (audible alert, visuals).• Explaining how my product would be useful for an animal carer including programmed features.				<ul style="list-style-type: none">• Suggesting points for improvements for own bridges and those designed by others.
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End points for Year 5

Pupils can:

Textiles

Identify stronger and weaker shapes.

Recognise that supporting shapes can help increase the strength of a bridge, 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.

Digital World

Describe what is meant by monitoring devices and provide an example.

Explain briefly the development of thermometers from thermoscopes to digital thermometers.

Research a chosen animal's key information to develop a list of design criteria for an animal monitoring device.

Write a program that monitors the ambient temperature and alerts someone when the temperature moves from a specified range.

Identify errors (bugs) in the code and ways to fix (debug) them.

State one or two facts about the history and development of plastic, including how it is now affecting planet Earth.

Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model.

Explain key pros and cons of virtual modelling vs physical modelling.

Recall and describe the name and use of key tools used in Tinkercad (CAD) software.

Cooking and Nutrition

Describe the process of beef production.

Research a traditional recipe and make changes to it.

Add nutritional value to a recipe by selecting ingredients.

Prepare and cook a version of bolognese sauce.

K e y V o C a b u l a r y	Cooking and Nutrition abattoir beef cross-contamination enhance farm ingredients nutrient preference recipe adaptation brand cut equipment grate label nutrition press safety balanced cook design evaluate hygiene measure nutritional value process theme	Digital World alert CAD device loop monitoring device programming comment synthetic ungroup versatile ambient design brief electronic model plastic sensor thermometer value workplane boolean design criteria grou[monitory plastic pollution sustainability Tinkercad variable	Structures accuracy assembly corrugation hardwood mark out reinforce softwood strength truss bridge aesthetics beam bridge evaluate joints material properties rigid stability technique visual appeal arch bridge bench hook/vice factors lamination quality of finish sandpaper/glasspaper stiffness tension saw/coping saw wood file/rasp
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Year 6	Purple = Substantive Knowledge		Green = Implicit Knowledge / Skills			
	Mechanical Systems		Textiles		Cooking and Nutrition	
	<ul style="list-style-type: none"> • To know that an automata is a hand powered mechanical toy • To know that the mechanism in an automata uses a system of cams, axles and followers. • To know that different shaped cams produce different outputs. • To know which mechanisms are working together to make a mechanical system. • To know that there are different directions of movement. • To know that mechanisms can change one type of movement to another. 	<ul style="list-style-type: none"> • Noticing wider-reaching problems or needs in the community. • Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. • Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. • Producing lists of equipment, materials and tools that they need for a task. • Selecting materials, components or ingredients based on research or user needs. • Explaining their choices, referring to their research. • Considering which equipment will work well together. • Choosing from the known range of equipment available to 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions • 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. • Finishing the waistcoat with a secure fastening (such as buttons). 	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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.

		<p>them with little guidance.</p> <ul style="list-style-type: none"> ● Assessing risks associated with different tools and equipment. ● Understanding and explaining the importance of each safety rule. ● Consistently apply safety instructions. ● Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups. ● Cutting in a back-and-forth sawing motion where appropriate. ● In supervised groups, using hot glue guns safely. ● Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly. ● Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. ● Providing feedback that is helpful, specific and encouraging. 		<ul style="list-style-type: none"> ● Learning different decorative stitches. ● Sewing accurately with evenly spaced, neat stitches. ● Reflecting on their work continually throughout the design, make and evaluate process. 		
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		<ul style="list-style-type: none">● Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.				
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End points for Year 6

Pupils can:

Textiles

Consider a range of factors in their design criteria and use this to create a waistcoat design.

Use a template to mark and cut out a design.

Use a running stitch to join fabric to make a functional waistcoat.

Attach a secure fastening, as well as decorative objects.

Evaluate their final product.

Cooking and Nutrition

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.

Mechanical Systems

Mark, saw and cut out the components and supports of their toy with varying degrees of accuracy to the intended measurements.

Follow health and safety rules, taking care with the equipment.

Attempt a partial assembly of their toys using an exploded diagram following a teacher's demonstration.

Develop a design idea with some descriptive notes.

Explore different cam profiles and choose three for their follower toppers with an explanation of their choices.

Create neat, decorated follower toppers with some accuracy

Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata.

Decorate and finish the automata to meet the design criteria and brief.

Evaluate their finished product, making descriptive and reflective points on function and form.

K e y V o C a b u l a r y	Mechanical Systems accurate bench hook component dowel follower function storefront automata cam cross directional diagram evaluate form housing visual axle cam profile diagram exploded diagram frame mechanism	Cooking and Nutrition balance complement enhance flavours pairing research storyboard bitter cookbook equipment ingredients preparation salty sweet bridge method cross-contamination farm to fork method recipe sour unami	Textiles annotate decorate design criteria fabris target customer waistcoat waterproof
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