Subject: **Design & Technology** **Key assessment criteria**

Year 1	Year 2	Year 3
Skills **Cooking and Nutrition - Fruit and Vegetables** **Design:** • I can design smoothie carton packaging by-hand or on ICT software. **Make:** • I can chop fruit and vegetables safely to make a smoothie. • I can identify if a food is a fruit or a vegetable. • I can say where and how fruits and vegetables grow. **Evaluate:** • I can taste and evaluate different food combinations. • I can describe appearance, smell and taste. • I can suggest information to be included on packaging.	**Skills** **Cooking and Nutrition - A Balanced Diet** **Design:** • I can design a healthy wrap based on a food combination which works well together. **Make:** • I can slice food safely using the bridge or claw grip. • I can construct a wrap that meets a design brief. **Evaluate:** • I can describe the taste, texture and smell of fruit and vegetables. • I can taste test food combinations and final products. • I can describe the information that should be included on a label. • I can evaluate which grip was most effective.	**Skills** **Cooking and Nutrition - Eating Seasonally** **Design:** • I can create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. **Make:** • I can prepare myself and my work space to cook safely in, after having learnt the basic rules to avoid food contamination. • I can follow the instructions within a recipe. **Evaluate:** • I can establish and use a design criteria to help test and review dishes. • I can describe the benefits of seasonal fruits and vegetables and the impact on the environment. • I can suggest points for improvement when making a seasonal tart.
Knowledge **Cooking and Nutrition - Fruit and Vegetables** • I know the difference between fruits and vegetables. • I know that some foods typically known as vegetables are actually fruits (e.g. cucumber). • I know that a blender is a machine which mixes ingredients together into a smooth liquid. • I know that a fruit has seeds and a vegetable does not. • I know that fruits grow on trees or vines. • I know that vegetables can grow either above or below ground.	**Knowledge** **Cooking and Nutrition - A Balanced Diet** • I know that 'diet' means the food and drink that a person or animal usually eats. • I know what makes a balanced diet. • I know where to find the nutritional information on packaging. • I know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.	**Knowledge** **Cooking and Nutrition - Eating Seasonally** • I know that not all fruits and vegetables can be grown in the UK. • I know that climate affects food growth. • I know that vegetables and fruit grow in certain seasons. • I know that cooking instructions are known as a 'recipe'. • I know that imported food is food which has been brought into the country. • I know that exported food is food which has been sent to another country.

• I know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• I know that I should eat a range of different foods from each food group, and roughly how much of each food group. • I know that nutrients are substances in food that all living things need to make energy, grow and develop. • I know that 'ingredients' means the items in a mixture or recipe. • I know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • I know that many foods and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.	• I know that imported foods travel from far away and this can negatively impact the environment. • I know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • I know that vitamins, minerals and fibre are important for energy, growth and maintaining health. • I know safety rules for using, storing and cleaning a knife safely. • I know that similar coloured fruits and vegetables often have similar nutritional benefits.
Skills **Mechanisms - Wheels and axels** **Design:** • I can design a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • I can create clearly labelled drawings that illustrate movement. **Make:** • I can adapt mechanisms, when: * they do not work as they should. * to fit their vehicle design. * to improve how they work after testing their vehicle. **Evaluate:** • I can test wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.	**Skills** **Mechanisms - Making a moving monster** **Design:** • I can create a class design criteria for a moving monster. • I can design a moving monster for a specific audience in accordance with a design criteria. **Make:** • I can make linkages using card for levers and split pins for pivots. • I can experiment with linkages adjusting the widths, lengths and thicknesses of card used. • I can cut and assemble components neatly. **Evaluate:** • I can evaluate my own designs against design criteria. • I can use peer feedback to modify a final design.	**Skills** **Mechanisms - Pneumatic Toy** **Design:** • I can design a toy which uses a pneumatic system. • I can design a criteria from a design brief. • I can generate ideas using thumbnail sketches and exploded diagrams. • I can talk about the different types of drawings that are used in design to explain ideas clearly. **Make:** • I can create a pneumatic system to create a desired motion. • I can build secure housing for a pneumatic system. • I can use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • I can select materials due to their functional and aesthetic characteristics. • I can manipulate materials to create different effects by cutting, creasing, folding and weaving. **Evaluate:** • I can use the views of others to improve designs. • I can test and modify the outcome, suggesting improvements. • I can understand the purpose of exploded-diagrams through the eyes of a designer and their client.

Knowledge

Mechanisms - Wheels and axels

Technical:

- I know that wheels need to be round to rotate and move.
- I know that for a wheel to move it must be attached to a rotating axle.
- I know that an axle moves within an axle holder which is fixed to the vehicle or toy.
- I know that the frame of a vehicle (chassis) needs to be balanced.

Additional:

- I know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.

Knowledge

Mechanisms - Making a moving monster

Technical:

- I know that mechanisms are a collection of moving parts that work together as a machine to produce movement.
- I know that there is always an input and output in a mechanism.
- I know that an input is the energy that is used to start something working.
- I know that an output is the movement that happens as a result of the input.
- I know that a lever is something that turns on a pivot.
- I know that a linkage mechanism is made up of a series of levers.

Additional:

- I know some real-life objects that contain mechanisms.

Knowledge

Mechanisms - Pneumatic Toy

Technical:

- I know how pneumatic systems work.
- I know that pneumatic systems can be used as part of a mechanism.
- I know that pneumatic systems operate by drawing in, releasing and compressing air.

Additional:

- I know how sketches, drawings and diagrams can be used to communicate design ideas.
- I know that exploded-diagrams are used to show how different parts of a product fit together.
- I know that thumbnail sketches are small drawings to get ideas down on paper quickly.

Skills

Textiles - Puppets

Design:

- I can use a template to create a design for a puppet.

Make:

- I can cut fabric neatly with scissors.
- I can use joining methods to decorate a puppet.
- I can sequence the steps taken during construction.

Evaluate:

- I can reflect on a finished product, explaining likes and dislikes.

Skills

Structures - Baby Bear's Chair

Design:

- I can generate and communicate ideas using sketching and modelling.

Make:

- I can make a structure according to design criteria.
- I can create joints and structures from paper/card and tape.
- I can build a strong and stiff structure by folding paper.

Evaluate:

- I can test the strength of my own structure.
- I can identify the weakest part of a structure.
- I can evaluate the strength, stiffness and stability of my own structure.

Skills

Textiles - an Egyptian Collar

Design:

- I can design and make a template for an Egyptian collar and apply individual design criteria.
- I can follow my design criteria to create an Egyptian collar.

Make:

- I can select and cut fabrics with ease using fabric scissors.
- I can thread needles with greater independence.
- I can tie knots with greater independence.
- I can sew cross stitch to decorate or join fabric.
- I can decorate fabric using appliqué, beads (or other embellishments), ribbon and pinking scissors.

Evaluate:

- I can evaluate an end product

Knowledge **Textiles - Puppets** ● I know that 'joining technique' means connecting two pieces of material together. ● I know that there are various temporary methods of joining fabric by using staples. glue or pins. ● I know that different techniques for joining materials can be used for different purposes. ● I know that a template (or fabric pattern) is used to cut out the same shape multiple times. ● I know that drawing a design idea is useful to see how an idea will look.	**Knowledge** **Structures - Baby Bear's Chair** ● I know that materials can be manipulated to improve strength and stiffness. ● I know that a structure is something which has been formed or made from parts. ● I know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. ● I know that a 'strong' structure is one which does not break easily. ● I know that a 'stiff' structure or material is one which does not bend easily.	**Knowledge** **Textiles - an Egyptian Collar** **Technical:** ● I know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric. ● I understand that a product's function relies on material choices. **Additional:** ● I can identify and explain some materials and explain their aesthetic and/or functional properties.

Year 4	Year 5	Year 6
Skills **Textiles:** **Design:** • I can write a design criteria for a product, articulating decisions made. • I can design a personalised book sleeve (changed to t-shirt to fit with the topic.) **Make:** • I can make and test a paper template with accuracy and in keeping with the design criteria. • I can measure, mark and cut fabric using a paper template. • I can select a stitch style to join fabric, working neatly by sewing small, straight stitches. • I can incorporate fastenings into a design. **Evaluate:** • I can test and evaluate an end product against the original design criteria. • I can decide how many of the criteria should be met for the product to be considered successful. • I can suggest modifications for improvement. • I can articulate the advantages and disadvantages of different fastening types.	**Skills** **Cooking and Nutrition - What could be healthier?** **Design:** • I can adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • I can write an amended method for a recipe to incorporate the relevant changes to ingredients. • I can design appealing packaging to reflect a recipe. **Make:** • I can cut and prepare vegetables safely. • I can use equipment safely, including knives, hot pans and hobs. • I can avoid cross-contamination and talk about how I have avoided cross-contamination . • I can follow a step by step method carefully to make a recipe. **Evaluate:** • I can identify the nutritional differences between different products and recipes. • I can identify and describe the healthy benefits of food groups.	**Skills** **Electric Systems - Steady hand game** **Design:** • I can design a steady hand game - identifying and naming the components required. • I can draw a design from three different perspectives. • I can generate ideas through sketching and discussion. • I can model ideas through prototypes. **Make:** • I can construct a stable base for a game. • I can accurately cut, fold and assemble a net. • I can decorate the base of the game to a high quality finish. • I can make and test circuits. • I can incorporate a circuit into a base. **Evaluate:** • I can test my own and others finished games, identifying what went well and making suggestions for improvement.

Knowledge

Textiles:

- I know that a fastening is something which holds two pieces of material together, for example a zipper, toggle, button, press stud and velcro.
- I know that different fastening types are useful for different purposes.
- I know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.
- I know how to make a pattern accurately for a design.

Knowledge

Cooking and Nutrition - A Balanced Diet

- I know where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.
- I know that I can adapt a recipe to make it healthier by substituting ingredients.
- I know that I can use a nutritional calculator to see how healthy a food option is.
- I know that 'cross-contamination' 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.

Knowledge

Electric Systems - Steady hand game

Technical:

- I know that batteries contain acid, which can be dangerous if they leak.
- I know the names of the components in a basic series circuit, including a buzzer.

Additional:

- I know the diagram perspectives 'top view', 'side view' and 'back'

Skills

Structures - Pavilions

Design:

- I can design a stable pavilion structure that is aesthetically pleasing and select materials to create a desired effect.
- I can create a design in accordance with a plan.

Make:

- I can create a range of different shaped frame structures.
- I can make a variety of free standing frame structures of different shapes and sizes.
- I can select appropriate materials to build a strong structure and cladding.
- I can reinforce corners to strengthen a structure.
- I can build a frame structure designed to support weight.
- I can create different textural effects with materials.

Evaluate:

- I can evaluate structures made by the class.
- I can describe what characteristics of a design and construction made it the most effective.
- I can consider effective and ineffective designs.

Skills

Mechanical systems - Pop up Book

Design:

- I can design a pop-up book which uses a mixture of structures and mechanisms.
- I can name each mechanism, input and output accurately.
- I can Storyboard ideas for a book.

Make:

- I can follow a design brief to make a pop up book, neatly and with focus on accuracy.
- I can make mechanisms and/or structures using sliders, pivots and folds to produce movement.
- I can use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.

Evaluate:

N/A

Skills

Mechanical systems - Automata Toys

Design:

- I can experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement.
- I can understand how linkages change the direction of a force.
- I can make things move at the same time.
- I can understand and draw cross-sectional diagrams to show the inner-workings of my design.

Make:

- I can measure, mark and check the accuracy of the jelutong and dowel pieces required.
- I can measure, mark and cut components accurately using a ruler and scissors.
- I can assemble components accurately to make a stable frame.
- I can understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles.
- I can select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set.

		Evaluate: • I can evaluate the work of others and receive feedback on my own work. • I can apply points of improvement to my toy. • I can describe the changes that I would make/do if I were to do the project again.

Knowledge

Structures - Pavilions

Technical:

- I know what a frame structure is.
- I know that a 'free-standing' structure is one which can stand on its own.

Additional:

- I know that a pavilion is a decorative building or structure for leisure activities.
- I know that cladding can be applied to structures for different effects.
- I know that aesthetics are how a product looks.
- I know that a product's function means its purpose.
- I know that the target audience means the person or group of people a product is designed for.
- I know that architects consider light, shadow and patterns when designing.

Knowledge

Mechanical systems - Pop up Book

Technical:

- I know that mechanisms control movement.
- I know that mechanisms can be used to change one kind of motion into another.
- I know how to use sliders, pivots and folds to create paper-based mechanisms.

Additional:

- I know that a design brief is a description of what I am going to design and make.
- I know that designers often want to hide mechanisms to make a product more aesthetically pleasing.

Knowledge

Mechanical systems - Automata Toys

Technical:

- I know that the mechanism in an automata uses a system of cams, axles and followers.
- I know that different shaped cams produce different outputs.

Additional:

- I know that an automata is a hand powered mechanical toy.
- I know that a cross-sectional diagram shows the inner workings of a product.
- I know how to use a bench hook and saw safely.
- I know that a set square can be used to help mark 90° angles.

Skills

Electric Systems - Torches

Design:

- I can design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.

Make:

- I can make a torch with a working electrical circuit and switch.
- I can use appropriate equipment to cut and attach materials.
- I can assemble a torch according to the design and success criteria.

Evaluate:

- I can evaluate electrical products, testing and evaluating the success of a final product.

Skills

Structures - Bridges

Design:

- I can design a stable structure that is able to support weight.
- I can create a frame structure with a focus on triangulation.

Make:

- I can make a range of different shaped beam bridges.
- I can use triangles to create truss bridges that span a given distance and support a load.
- I can build a wooden bridge structure.
- I can independently measure and mark wood accurately.
- I can select appropriate tools and equipment for particular tasks.
- I can use the correct techniques to saw safely.
- I can identify where a structure needs reinforcement and use card corners for support.
- I can explain why selecting appropriate materials is an important part of the design process.
- I can understand basic wood functional properties.

Evaluate:

- I can adapt and improve my own bridge structure by identifying points of weakness and reinforcing them as necessary.
- I can suggest points for improvements for own bridges and those designed by others.

Skills

Digital World - Navigating the World

Design:

- I can write a design brief from information submitted by a client.
- I can develop design criteria to fulfil the client's request.
- I can consider and suggest additional functions for my navigation tool.
- I can develop a product idea through annotated sketches.
- I can place and manoeuvre 3D objects, using CAD.
- I can change the properties of, or combine one or more 3D objects, using CAD.

Make:

- I can consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).
- I can explain material choices and why they were chosen as part of a product concept.
- I can program an N,E, S, W cardinal compass.

Evaluate:

- I can explain how my program fits the design criteria and how it would be useful as part of a navigation tool.
- I can develop an awareness of sustainable design.
- I can identify key industries that utilise 3D CAD modelling and explain why.
- I can describe how the product concept fits the client's request and how it will benefit the customers.
- I can explain the key functions in my program, including any additions.
- I can explain the key functions and features of my navigation tool to the client as part of a product concept pitch.
- I can demonstrate a functional program as part of a product concept pitch.

Knowledge

Electric Systems - Torches

Technical:

- I know that an electrical circuit must be complete for electricity to flow.
- I know that a switch can be used to complete and break an electrical circuit.

Additional:

- I know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.
- I know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.

Knowledge

Structures - Bridges

Technical:

- I know some different ways to reinforce structures.
- I know how triangles can be used to reinforce bridges.
- I know that properties are words that describe the form and function of materials.
- I know why material selection is important based on properties.
- I know the material (functional and aesthetic) properties of wood.

Additional:

- I know the difference between arch, beam, truss and suspension bridges.
- I know how to carry and use a saw safely.

Knowledge

Digital World - Electronic Charm

Technical:

- I know that accelerometers can detect movement.
- I know that sensors can be useful in products as they mean the product can function without human input.

Additional:

- I know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.
- I know that 'multifunctional' means an object or product has more than one function.
- I know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.

Design and Technology (DT): Bedrock - Bookmark

Nursery	Reception
Personal, Social, Emotional Development **3 / 4 year olds:** ● Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. **Physical Development** **3 / 4 year olds:** ● Use large-muscle movements to wave flags and streamers, paint and make marks. ● Choose the right resources to carry out their own plan. ● Use one-handed tools and equipment, for example, making snips in paper with scissors. **Understanding the World** **3 / 4 year olds:** ● Explore how things work. **Expressive Arts and Design** **3 / 4 year olds:** ● Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. ● Explore different materials freely, in order to develop their ideas about how to use them and what to make. ● Develop their own ideas and then decide which materials to use to express them. ● Create closed shapes with continuous lines, and begin to use these shapes to represent objects.	**Physical Development** **Reception:** ● Progress towards a more fluent style of moving, with developing control and grace. ● Develop their small motor skills so that they can use a range of tools competently, safely and confidently. ● Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. **ELG: PD: Fine motor skills:** ● Use a range of small tools, including scissors, paintbrushes and cutlery. **Expressive Arts and Design** **Reception:** ● Explore, use and refine a variety of artistic effects to express their ideas and feelings. ● Return to and build on their previous learning, refining ideas and developing their ability to represent them. ● Create collaboratively, sharing ideas, resources and skills. **ELG: EAD: Creating with materials:** - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. - Share their creations, explaining the process they have used.