The Rosary Catholic Primary School

Progression of Knowledge and Skills in Design Technology

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Reception
Autumn</td>
<td>
<u>Focus: Cooking and Nutrition: Soup</u>

<u>Early Years Outcomes (Development Matters)</u>
• ELG: Managing self: Manage their own basic hygiene and personal needs, including…understanding the importance of healthy food choices
• ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery.
• ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

<u>Contributing towards:</u> Cooking and Nutrition: Fruit and Vegetables (Year 1)
<table>
<tr><th><u>Objective</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>To explore fruits and vegetables and the differences between them.</td><td>Different fruits taste,smell, look different e.g banana is yellow and smooth.</td><td>Fruit: A fruit is the part of a flowering plant that contains the seeds.</td></tr>
<tr><td>To explore a pumpkin and describe it using the five senses.</td><td>A pumpkin is a vegetable you can turn into soup</td><td>Soup: a liquid food with a meat, fish, or vegetable stock as a base and often containing pieces of solid food</td></tr>
<tr><td>To design a fruit and vegetable soup recipe.</td><td>Ingredients are mixed together to make soup.</td><td>Mix: to combine with another
Names of fruits and vegetable (broccoli, carrot, potatoes etc)</td></tr>
<tr><td>To learn how to use a knife safely.</td><td>I can use a knife to cut vegetables/fruits</td><td>Chop: to cut into or sever usually by repeated blows of a sharp instrument</td></tr>
<tr><td>To safely use tools to prepare ingredients.</td><td>I need to use certain tools in cooking in order to keep safe</td><td>Safety: the condition of being safe from undergoing or causing hurt, injury, or loss</td></tr>
<tr><td>To design food packaging.</td><td>Food is placed in eye catching packaging.</td><td>Packaging: the enclosing of something in a container or covering</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge
Children can design and make their own soup</td><td>Assessing Key Vocabulary and Definition:
Children can describe how to make soup</td></tr>
</table>
</td>
<td>
<u>Design</u>
• Designing a soup recipe as a class.
• Designing soup packaging.

<u>Make</u>
1. Chopping plasticine safely.
2. Chopping vegetables with support.

<u>Evaluate</u>
1. Tasting the soup and giving opinions.
2. escribing some of the following when tasting food: look, feel, smell and taste.
3. Choosing their favourite packaging design and explaining why.
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<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Reception
Spring</td>
<td>
<u>Focus: Textiles: Bookmarks</u>

<u>Early Years Outcomes (Development Matters)</u>
• ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery.
• ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
• ELG: Creating with materials: Share their creations, explaining the process they have used.

<u>Contributing towards</u>: Textiles: Puppets (Year 1)
<table>
<tr><th><u>Objective</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>To develop threading and weaving skills.</td><td>Weaving goes in and out with a push and a pull.</td><td>Weave: is the interlacing of two sets of threads or yarns</td></tr>
<tr><td>To practise and apply weaving skills to a specific material e.g. paper.</td><td>Paper needs to be in strips to weave.</td><td>Over: above or higher than something else
Under: in or into a position below or beneath something.</td></tr>
<tr><td>To practise and apply threading skills with specific materials e.g. hessian and wool.</td><td>You can use wool to weave</td><td>Sew: to make or repair with a needle and thread</td></tr>
<tr><td>To use threading or sewing to design a product.</td><td>We can use weaving to design a bookmark</td><td>Bookmark: something you attach or place on the inside of a book before closing it to help you remember where you were up to</td></tr>
<tr><td>To create a textiles product following their own design.</td><td>We can use weaving to make a book mark</td><td>Wool: a type of fabric derived from the hairs of various animals
Hessian: a thick, rough fabric that is used for making sacks.</td></tr>
<tr><td>To reflect with children on how they have achieved their aims.</td><td>All work can be improved</td><td>Reflect: to express a thought or opinion</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge
Children to create a bookmark</td><td>Assessing Key Vocabulary and Definition
Children to talk about the process of making their bookmark</td></tr>
</table>
</td>
<td>
<u>Design</u>
• Discussing what a good design needs.
• Designing a simple pattern with paper. Designing a bookmark.
• Choosing from available materials.

<u>Make</u>
• Developing fine motor/cutting skills with scissors.
• Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.
• Using a prepared needle and wool to practise threading.

<u>Evaluate</u>
• Reflecting on a finished product and comparing to their design.
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<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Reception Summer</td>
<td>
<u>Focus: Structures: Boats</u>

<u>Early Years Outcomes (Development Matters)</u>
• ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
• ELG: Creating with materials: Share their creations, explaining the process they have used.

<u>Contributing towards</u>: Structures: Baby Bears Chair (Year 2)
<table>
<tr><th><u>Objective</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>To understand what waterproof means and to test whether materials are waterproof.</td><td>Waterproof is materials that prevents waters going through</td><td>Waterproof: Something that keeps water out</td></tr>
<tr><td>To test and make predictions for which materials float or sink.</td><td>A prediction is making an educated guess</td><td>Float: to rest on the surface of or be suspended in a fluid
Sink: to move downward usually so as to be below the surface</td></tr>
<tr><td>To compare the uses of boats.</td><td>Boats move and float on water</td><td>Boat: a small watercraft used for fun or for carrying small loads
Ship: a large boat that can carry passengers or cargo for long distances over water.</td></tr>
<tr><td>To investigate how the shape and structure of boats affects the way they move.</td><td>The shape of boats help then float and move in water.</td><td>Hull: the body, or frame, of the boat
Mast: a long pole that rises from the bottom of a ship or boat and supports the sails and rigging
Anchor: a device usually of metal that is attached to a boat or ship by a cable and that when thrown overboard digs into the earth and holds the boat or ship in place</td></tr>
<tr><td>To design a boat.</td><td>We can use junk to design a boat</td><td>Junk: articles discarded as worthless.</td></tr>
<tr><td>To create a boat based upon their own design.</td><td>We can use junk to build a boat</td><td>Deck: a platform extending from side to side in a ship and forming a floor.
Sail: the big piece of cloth attached to a mast that propels a sailboat through the water by catching the wind.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge
Children to use knowledge of boat/ship design to build their own boat.</td><td>Assessing Key Vocabulary and Definition
Class Bingo
Can describe the process of building their boat/ship and explain the different parts.</td></tr>
</table>
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<td>
<u>Design</u>
• Designing a junk model boat.
• Using knowledge from exploration to inform design.

<u>Make</u>
• Making a boat that floats and is waterproof, considering material choices.

<u>Evaluate</u>
• Making predictions about, and evaluating different materials to see if they are waterproof.
• Making predictions about, and evaluating existing boats to see which floats best. Testing their design and reflecting on what could have been done differently.
• Investigating the how the shapes and structure of a boat affect the way it moves.
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<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Reception
Autumn
Spring
Summer</td>
<td>
<u>Focus: Structures: Junk Modelling</u>

<u>Early Years Outcomes (Development Matters)</u>
• ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery.
• ELG: Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
• ELG: Creating with Materials: Share their creations, explaining the process they have used.

<u>Contributing towards:</u> Structures: Baby Bears Chair (Year 2)
<table>
<tr><th><u>Objective</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>To explore and investigate the tools and materials in the junk modelling area.</td><td>There are different types of junk that's can be used to build something.</td><td>Join: to connect, attach, or become a member ofC</td></tr>
<tr><td>To investigate cutting different materials.</td><td>You use scissors to cut things</td><td>Scissors: a cutting instrument having two blades whose cutting edges slide past each other.</td></tr>
<tr><td>To learn how to plan and select the correct resources needed to make a model.</td><td>I need to pick the correct junk to build something.</td><td>Bend: to curve out of a straight line or position.
Slot: a narrow opening,</td></tr>
<tr><td>To verbally plan and create a junk model.</td><td>You can make models out of junk</td><td>Open: to move (something, such as a door) from a closed position</td></tr>
<tr><td>To share a finished model and talk about the processes in its creation.</td><td>I know what I need to use to build a model.</td><td>Rough: having a broken, uneven, or bumpy surface.
Smooth: not rough; even.</td></tr>
<tr><td>To explore different ways to temporarily join materials together.</td><td>I can use different methods to join materials.</td><td>Materials: The substance used to make something is called a material.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge
Children to use knowledge of materials to make junk models.</td><td>Assessing Key Vocabulary and Definition
Children to talk about how they have made and joined their materials together to make their model.</td></tr>
</table>
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<td>
<u>Design</u>
• Making verbal plans and material choices.
• Developing a junk model.

<u>Make</u>
• Improving fine motor/scissor skills with a variety of materials.
• Joining materials in a variety of ways (temporary and permanent).
• Joining different materials together.
• Describing their junk model, and how they intend to put it together.

<u>Evaluate</u>
• Giving a verbal evaluation of their own and others' junk models with adult support.
• Checking to see if their model matches their plan.
• Considering what they would do differently if they were to do it again.
• Describing their favourite and least favourite part of their model.
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<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
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<td>Year 1
Autumn</td>
<td>
<u>Focus: Mechanisms: Making a moving story book</u>

<u>National Curriculum Knowledge:</u>
• Explore and use mechanisms (for example, levers, sliders, wheels and axels).

<u>Contributing towards:</u> Mechanisms: Fairground Wheel (Year 2)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Exploring sliders and movement
To explore making mechanisms.</td><td>A slider is a type of mechanism.</td><td>Mechanisms - A system of parts working together.
Slider - Something that can move from side to side or up and down.</td></tr>
<tr><td>2. Design
To design a moving storybook.</td><td>We create designs to show our final plan.</td><td>Design - A drawing that shows how something will be made.</td></tr>
<tr><td>3. Construction
To construct a moving picture.</td><td>Sliders can be made from lollypop sticks or stiff card.</td><td>Assemble - To fix all parts together.</td></tr>
<tr><td>4. Testing and evaluation
To evaluate my finished product.</td><td>When making products, you need to follow the design criteria.</td><td>Design criteria - A set of rules to help you with your ideas and test the success of them.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Create a pop-up Christmas card using one of the mechanisms taught.</td><td>Assessing Key Vocabulary:
Class Bingo</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills:</u>
• Design purposeful, functional, appealing products for themselves and other users based on design criteria.
• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology.
• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Explore and evaluate a range of existing products.
• Evaluate their ideas and products against design criteria.

<u>Design</u>
• Explaining how to adapt mechanisms, using bridges or guides to control the movement.
• Designing a moving story book for a given audience.

<u>Make</u>
• Following a design to create moving models that use levers and sliders.

<u>Evaluate</u>
• 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.
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<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
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<td>Year 1
Spring</td>
<td>
<u>Focus: Textiles: Puppets</u>

<u>Prior Learning:</u> Textiles: Weaving (Year Reception)

<u>Contributing towards:</u> Textiles: Pouches (Year 2)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Joining fabrics
To join fabrics together using different methods.</td><td>A staple is a technique for joining fabric together. It bends a staple to hold fabric.</td><td>Technique: A way of doing something to complete a task.</td></tr>
<tr><td>2. Designing my puppet
To use a template to create my design.</td><td>Templates are used to create the same shape more than once.</td><td>Template - A stencil which you use to help you draw a shape more easily on to different materials.</td></tr>
<tr><td>3. Making and joining my puppet.
To join two fabrics together accurately.</td><td>Fabrics must not overlap before joining.</td><td>Fabric - A natural or man-made woven or knitted material that is made from plant fibres, animal fur or synthetic material.</td></tr>
<tr><td>4. Decorating my puppet
To embellish my design using joining methods.</td><td>Glue can attach sequins and gems to fabric.</td><td>Decorate - To add something to an object or place to make it more attractive.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Create a hand puppet using a template and joining techniques of choice.</td><td>Assessing Key Vocabulary:
Match definition to key vocab.</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills:</u>

Design purposeful, functional, appealing products for themselves and other users based on design criteria.
Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology.
Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
Evaluate their ideas and products against design criteria.

<u>Design</u>

Using a template to create a design for a puppet.

<u>Make</u>

Cutting fabric neatly with scissors.
Using joining methods to decorate a puppet.
Sequencing steps for construction.

<u>Evaluate</u>

Reflecting on a finished product, explaining likes and dislikes.

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<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 1
Summer</td>
<td>
<u>Focus: Cooking and nutrition: Smoothies</u>

<u>National Curriculum Knowledge:</u>
• Understand where foods come from.
• Use the principles of a healthy and varied diet to prepare dishes.

<u>Prior Learning:</u> Cooking and nutrition: Soup (Year Reception)

<u>Contributing towards:</u> Cooking and nutrition: Eating seasonally (Year 3)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Fruits
To identify fruits.</td><td>Fruits have seeds whereas vegetables do not</td><td>Fruit – the part of a plant that contains the seeds.</td></tr>
<tr><td>2. Growing
To describe where fruits and vegetables grow.</td><td>Fruit grow on trees and vines, vegetables grown above or below ground</td><td>Vine – A plant with a long stem that grows on walls or along the ground.</td></tr>
<tr><td>3. Cutting and juicing
To practise food preparation skills.</td><td>Partly curving your fingers can make a claw grip to help cut fruit and vegetables</td><td>Cut – To make something smaller using a sharp tool.</td></tr>
<tr><td>4. Testing ingredients.
To select ingredients for a recipe.</td><td>Pineapples are sweet and carrots are savoury.</td><td>Taste – To put food in your mouth to find out the flavours.</td></tr>
<tr><td>5. Making smoothies
To apply food preparation skills to a recipe.</td><td>To make a smoothie you need to cut and blend fruits and vegetables.</td><td>Blend – To mix things together.</td></tr>
<tr><td><u>Assessment Tasks</u>
Evaluating against the design brief</td><td>Assessing Sticky Knowledge:
Prepare a smoothie or fruit kebab</td><td>Assessing Key Vocabulary:
Multiple choice quiz</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Design purposeful, functional, appealing products for themselves and other users based on design criteria.
• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology
• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Evaluate their ideas and products against design criteria.

<u>Design</u>
• Designing smoothie carton packaging by-hand.

<u>Make</u>
• Chopping fruit and vegetables safely to make a smoothie.
• Juicing fruits safely to make a smoothie.

<u>Evaluate</u>
• 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.
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<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 2
Autumn</td>
<td>
<u>Focus: Textiles: Pouches</u>

<u>Prior Learning:</u> Textiles: Puppets (Year 1)

<u>Contributing towards:</u> Textiles: Cross-stitch and applique (Year 3)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Running stitch
To sew a running stitch.</td><td>A running stitch is a method for joining materials.</td><td>Running stitch – a simple style of sewing in a straight line with no overlapping.</td></tr>
<tr><td>2. Using a template
To sew a running stitch.</td><td>You can attach a template to fabric using pins.</td><td>Sew – To join or fasten by stitches made using a needle and thread.</td></tr>
<tr><td>3. Making a pouch
To join fabrics using a running stitch.</td><td>A running stitch is when a thread moves in and out of the fabric.</td><td>Needle – A thin, pointed metal object with a small hole at one end for the thread which is used in sewing.</td></tr>
<tr><td>4. Decorating a pouch
To decorate a pouch using fabric glue or stitching.</td><td>Glue can join fabrics and decorations (sequins, buttons etc.) together.</td><td>Fabric glue – used to stick fabric together, especially if sewing cannot be used.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Kapow Unit Quiz
Evaluation of pouch against design brief.</td><td>Assessing Key Vocabulary:
Class Bingo</td></tr>
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<u>See also: Knowledge organiser.</u>
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<u>National Curriculum Skills:</u>

Design purposeful, functional, appealing products for themselves and other users based on design criteria.
Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology
Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
Explore and evaluate a range of existing products
Evaluate their ideas and products against design criteria

<u>Design</u>

Designing a pouch.

<u>Make</u>

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.

<u>Evaluate</u>

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.

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<tr>
<td>Year 2
Spring</td>
<td>
<u>Focus: Mechanisms: Wheels and Axels and Fairground Wheel</u>

<u>National Curriculum Knowledge:</u>
• Build structures, exploring how they can be made stronger, stiffer and more stable.
• Explore and use mechanisms [for example, levers, slider, wheels and axels], in their products.

<u>Prior Learning:</u> Mechanisms: Making a moving story book (Year 1)

<u>Contributing towards:</u> Mechanical Systems: Pneumatic toys (Year 3)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Design a Ferris wheel
To explore wheel mechanisms and design a Ferris wheel.</td><td>A wheel needs an axel to move and has to be round to rotate and move.</td><td>Axel – A long straight piece of material which connects to a rotating component (e.g. the wheels of a car)</td></tr>
<tr><td>2. Planning the build
To select appropriate materials.</td><td>Strong materials are suitable when designing a Ferris wheel.</td><td>Ferris wheel – A ride at a fairground which carries passengers around a large vertical wheel.</td></tr>
<tr><td>3. Building the frame and wheels
To build and test a moving wheel.</td><td>Testing helps to find problems in our designs.</td><td>Test – To find out whether something works as it should.</td></tr>
<tr><td>4. Adding pods and decoration
To make and evaluate a structure with a rotating wheel.</td><td>Evaluating our structure helps us to improve next time</td><td>Evaluation – When you look at the good and bad points about something, then think about how you could improve it.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge
Kapow Unit Quiz
Evaluate structure</td><td>Assessing Key Vocabulary:
Match word to definition</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
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<u>National Curriculum Skills</u>
• Design purposeful, functional, appealing products for themselves and other users based on design criteria.
• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology
• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Explore and evaluate a range of existing products
• Evaluate their ideas and products against design criteria

<u>Design</u>
• Selecting a suitable linkage system to produce the desired motion.
• Designing a wheel.

<u>Make</u>
• Selecting materials according to their characteristics.
• Following a design brief.

<u>Evaluate</u>
• Evaluating different designs.
• Testing and adapting a design.
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<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 2
Summer</td>
<td>
<u>Focus: Structures: Baby Bears Chair</u>

<u>National Curriculum Knowledge:</u>
• Build structures, exploring how they can be made stronger, stiffer and more stable.

<u>Prior Learning:</u> Structures: Boats and Junk Modelling (Year 2)

<u>Contributing towards:</u> Structures: Pavilions (Year 4)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Exploring stability
To explore the concept and features of structures and the stability of different shapes.</td><td>If an object is stable is means that is it firmly fixed and unlikely to move or change.</td><td>Shape – a geometric figure, such as a square, rectangle of triangle.</td></tr>
<tr><td>2. Strengthening materials
To understand that the shape of the structure affects its strength.</td><td>You can fold paper different ways to improve strength and stiffness.</td><td>Strong – Something that is not easily broken (e.g. wood, brick or building)
Weak – Something that is easily broken (e.g. paper, egg shells)</td></tr>
<tr><td>3. Making Baby Bear's chair
To make a structure according to design criteria.</td><td>Chairs are structures that need to be strong, stiff and stable.</td><td>Structure – something that has been made, put together and can usually stand on its own (e.g. a building, bridge or chair).</td></tr>
<tr><td>4. Fixing and testing Baby Bear's chair
To produce a finished structure and evaluate its strength, stiffness and stability.</td><td>A good quality, well-made joints will help keep the chair stable.</td><td>Stiff – A material or object that does not bed easily (e.g. wood).</td></tr>
<tr><td><u>Assessment Tasks:</u></td><td>Assessing Sticky Knowledge:
Kapow Unit Quiz
Test out structures</td><td>Assessing Key Vocabulary:
Multiple Choice Quiz</td></tr>
</table>
<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Design purposeful, functional, appealing products for themselves and other users based on design criteria.
• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology
• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Evaluate their ideas and products against design criteria

<u>Design</u>
• Generating and communicating ideas using sketching and modelling.
• Learning about different types of structures, found in the natural world and in everyday objects.

<u>Make</u>
• 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.

<u>Evaluate</u>
• Exploring the features of structures.
• Comparing the stability of different shapes.
• Testing the strength of own structures.
• Identifying the weakest part of a structure.
• Evaluating the strength, stiffness and stability of own structure.
</td>
</tr>
</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 3
Autumn</td>
<td>
<u>Focus: Cooking and Nutrition: Eating seasonally.</u>

<u>National Curriculum mock Knowledge:</u>

Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

<u>Prior Learning:</u> Cooking and Nutrition: Smoothies (Year 1)

<u>Contributing towards:</u> Cooking and Nutrition: Come dine with me (Year 6)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Food around the world.
To explain why food comes from different places around the world.</td><td>Climate affects food growth.</td><td>Climate - The weather conditions that an area usually has.</td></tr>
<tr><td>2. Seasonal food
To explain the benefits of seasonal foods.</td><td>Eating seasonally is better for the environment and for local farmers.</td><td>Seasonal - Food that grows at a certain time of the year.</td></tr>
<tr><td>3. Cutting and peeling
To develop cutting and peeling skills.</td><td>A vegetable knife if sharper than a table knife and a peeler is used to peel food.</td><td>Peel - To remove the skin of fruit or vegetables.</td></tr>
<tr><td>4. Tasting seasonal ingredients
To evaluate seasonal ingredients.</td><td>Fruits and vegetables have different tastes and textures. (E.g. potatoes taste earthy and spinach taste bitter.)</td><td>Texture – The way food feels in your mouth.
Taste – The flavour of a particular food.</td></tr>
<tr><td>5. Making a mock-up
To design a mock-up using criteria.</td><td>The colours and arrangements of ingredients can make a dish more inviting and enjoyable.</td><td>Mock up – A model of how something might look.</td></tr>
<tr><td>6. Evaluating seasonal tarts
To evaluate a dish.</td><td>To check the tarts met the design brief, you need to look at them, taste them and check the ingredients.</td><td>Appearance – The way something looks.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Evaluation of a seasonal dish
Kapow assessment quiz</td><td>Assessing Key Vocabulary:
Match key vocabulary to definition</td></tr>
</table>
<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Links</u>

Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

<u>Design</u>

Designing a recipe for a savoury tart.

<u>Make</u>

Following the instructions within a recipe.
Tasting seasonal ingredients.
Selecting seasonal ingredients.
Peeling ingredients safely.
Cutting safely with a vegetable knife.

<u>Evaluate</u>

Establishing and using design criteria to help test and review dishes.
Describing the benefits of seasonal fruits and vegetables and the impact on the environment.
Suggesting points for improvement when making a seasonal tart.

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</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 3
Spring</td>
<td>
<u>Focus: Mechanical Systems: Pneumatic toys</u>

<u>National Curriculum Knowledge:</u>
• Understand how key events and individuals in design and technology have helped shape the world.
• Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

<u>Prior Learning:</u> Mechanisms: Fairground Wheel (Year 2)

<u>Contributing towards:</u> Mechanical Systems: Making a sling shot (Year 4)

<table>
<tr><th>Lesson</th><th>Sticky Knowledge</th><th>Key Vocabulary and Definitions</th></tr>
<tr><td>1. Exploring pneumatics
To understand how pneumatic systems work.</td><td>Mechanisms are a system of parts that work together to create motion and pneumatic systems can be used as part of a mechanism.</td><td>Pneumatic system - A mechanism that runs on air or compressed gas.</td></tr>
<tr><td>2. Designing a pneumatic toy
To design a toy that uses a pneumatic system.</td><td>There are 3 different types of pneumatic system- lever, pivot and linkage system.</td><td>Exploded sketch - A diagram that shows all of the parts of a product, including the internal and external parts.</td></tr>
<tr><td>3. Making pneumatic toys
To create a pneumatic system.</td><td>Balloon and syringes can be used to make pneumatic systems.</td><td>Motion - The movement an object makes when controlled by an input or output (e.g. left, right, up or down).</td></tr>
<tr><td>4. Decorating and assembling my toy
To test and finalise ideas against design criteria.</td><td>You can manipulate materials to create different effects.</td><td>Reinforce – To make something stronger.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Test and finalise ideas against design criteria
Kapow assessment quiz</td><td>Assessing Key Vocabulary:
Multiple choice vocabulary questions</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
• 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.

<u>Make</u>
• 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.

<u>Evaluate</u>
• 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.
</td>
</tr>
</table>

Whole School Design & Technology Curriculum

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 3
Summer</td>
<td>
<u>Focus: Textiles: Cross-stitch and applique (Egyptian collars)</u>

<u>Prior Learning:</u> Textiles: Pouches (Year 2)

<u>Contributing towards:</u> Textiles: Stuffed toys (Year 5)

<table>
<tr><th><u>Objective</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Cross-stitch and applique
To learn how to sew cross-stitch and to applique.</td><td>Applique is a way of decorating textiles and repairing holes.</td><td>Patch – a piece of material sewn over a hole to cover it; this can be a fix or decorative.</td></tr>
<tr><td>2. Egyptian collars
To develop and use a template.</td><td>An Egyptian Usekh is an ancient collar or necklace that symbolised a person's importance in Ancient Egyptian society.</td><td>Symmetrical – The same on either side facing each other.
Asymmetrical – Different on either side.</td></tr>
<tr><td>3. Developing the collars
To assemble fabric parts into a fabric product.</td><td>Fabric parts can be attached to each other by cross-stitch.</td><td>Cross-stitching - sewing half of the stitches in one direction then completing by coming back the opposite direction.</td></tr>
<tr><td>4. Finishing their collars
To decorate fabric using applique and cross-stitch.</td><td>Evaluating our structure helps us to improve next time.</td><td>Embellish - Add decorative details or features to something.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Decorate and evaluate finished collars
Kapow assessment quiz</td><td>Assessing Key Vocabulary:
Definition bingo</td></tr>
</table>
<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills</u>

Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
Designing and making a template from an existing cushion and applying individual design criteria.

<u>Make</u>
Following design criteria to create a cushion or Egyptian collar.
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 embellishing the collars based on design ideas (Egyptian collars).

<u>Evaluate</u>
Evaluating an end product and thinking of other ways in which to create similar items.
</td>
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</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 4
Autumn</td>
<td>
<u>Focus: Structures: Pavilions</u>

<u>National Curriculum Knowledge:</u>
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

<u>Prior Learning:</u> Structures: Baby bear's chair (Year 2)

<u>Contributing towards:</u> Structures: Bridges (Year 4)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Exploring frame structures
To create a range of different shaped frame structures.</td><td>A frame structure is a structure such as a house, church or windmill e.g. the London Eye, The Beehive Pavilion.</td><td>Pavilion – A light flexible space which can be permanent but is often temporary.</td></tr>
<tr><td>2. Designing a pavilion
To design a structure</td><td>Structures need to be stable and aesthetically pleasing.</td><td>Aesthetic – how an object or product looks.</td></tr>
<tr><td>3. Pavilion frame
To build a frame structure.</td><td>A well-made structure has neat, strong joints and accurate angles.</td><td>Reinforce – To make a structure or material stronger, especially by adding another materials or element to it.</td></tr>
<tr><td>4. Pavilion cladding
To add cladding to a frame structure.</td><td>Card can be added as cladding to a structure to add strength and stiffness without increasing the structure's weight.</td><td>Cladding - A material put on top of another material or on a structure as protection or to improve appearance.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Write a paragraph to explain how to build a stable structure.</td><td>Assessing Key Vocabulary:
Fill in the gap with key words</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.
• Building frame structures designed to support weight.

<u>Make</u>
• 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.

<u>Evaluate</u>
• Evaluating structures made by the class.
• Describing what characteristics of a design and construction made it the most effective.
• Considering effective and ineffective designs.
</td>
</tr>
</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 4
Spring</td>
<td>
<u>Focus: Electrical systems: Torches</u>

<u>National Curriculum Knowledge:</u>
• Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

<u>Contributing towards:</u> Electrical systems: Doodlers (Year 5)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Electrical products
To learn about electrical items and how they work.</td><td>Electrical circuits power machines with electricity whereas electronic circuits need power to perform a task.</td><td>Electricity – a type of energy that can be made or sored and used to make objects work (for example, to move things or heat them up).</td></tr>
<tr><td>2. Evaluating torches
To analyse and evaluate electrical products.</td><td>Features of a torch are the housing, reflector, circuit and switch.</td><td>Circuit – a closed system of wires through which electricity can flow.
Series circuit – A closed circuit where the current follows one path.</td></tr>
<tr><td>3. Torch design
To design a product to fit a set of specific user needs.</td><td>A torch needs to be practical for a person to use appropriately.</td><td>Input – something such as energy that is put into something like a machine, so that it can operate.</td></tr>
<tr><td>4. Torch assembly
To make and evaluate a torch.</td><td>You need a working circuit with a switch to make a torch work.</td><td>Switch – A circuit part that you can open or close to allow electricity to flow through or to stop it flowing through.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Evaluate own torch against criteria;
Kapow quiz</td><td>Assessing Key Vocabulary:
Label torch using key words</td></tr>
</table>

<u>See also: Knowledge organiser.</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
• Understand how key events and individuals in design and technology have helped shape the world.

<u>Design</u>
• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.

<u>Make</u>
• 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.

<u>Evaluate</u>
• Evaluating electrical products.
• Testing and evaluating the success of a final product.
</td>
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</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 4
Summer</td>
<td>
<u>Focus: Mechanical systems: Making a slingshot car</u>

<u>National Curriculum Knowledge:</u>
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
• Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

<u>Prior Learning:</u> Mechanical Systems: Pneumatic toys (Year 3)

<u>Contributing towards:</u> Mechanical Systems: Automata toys (Year 6)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Chassis and launch mechanism
To build a car chassis.</td><td>Slingshot cars work by storing kinetic energy in the elastic band before it launches.</td><td>Chassis – The body of a car.
Kinetic – The energy that causes an object to move.</td></tr>
<tr><td>2. Designing the car body
To design a shape that reduces air resistance.</td><td>The shape of a car can affect the amount of air resistance it has.</td><td>Air resistance – The level of drag on an object as it is forced through the air.</td></tr>
<tr><td>3. Making the car body
To make a model based on a chosen design.</td><td>Nets are flat shapes that can be turned into 3D structures.</td><td>Model – Something that a copy can be based on because it is an extremely good example of its type.</td></tr>
<tr><td>4. Assembly and testing
To assemble and test my completed product.</td><td>Smaller shapes create less air resistance and move faster through the air.</td><td>Assemble – To put something together.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Design a poster to inform others how a slingshot car works.</td><td>Assessing Key Vocabulary:
Match words to definitions</td></tr>
</table>

<u>See also: Knowledge organiser</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
• Understand how key events and individuals in design and technology have helped shape the world.

<u>Design</u>
• Designing a shape that reduces air resistance.
• Drawing a net to create a structure from.
• Choosing shapes that increase or decrease speed as a result of air resistance.
• Personalising a design

<u>Make</u>
• Measuring, marking, cutting and assembling with increasing accuracy.
• Making a model based on a chosen design.

<u>Evaluate</u>
• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.
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</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 5
Autumn</td>
<td>
<u>Focus: Electrical Systems: Doodlers</u>

<u>National Curriculum Knowledge:</u>
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
• Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].

<u>Prior Learning:</u> Electrical Systems: Torches (Year 5)

<u>Contributing towards:</u> National Curriculum Design and Technology programme of study KS3 (understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Electrical systems and motors
To understand how motors are used in electrical products.</td><td>Components of a simple circuit include a battery, bulb, motor and a switch.</td><td>Circuit component – One of several parts that complete a circuit (e.g. a bulb)</td></tr>
<tr><td>2. Meet the Doodlers
To investigate an existing product to determine the factors that affect the product's form and function.</td><td>A Doodler is an electrical device that uses a motor to generate a wobbly offset spin and scribble jagged circles and patterns.</td><td>Product analysis – To look at an object and evaluate it based on certain criteria (e.g. function)</td></tr>
<tr><td>3. Doodler design and construction
To apply the findings from research to develop a unique product.</td><td>An object that uses a motor to function is known as motorised.</td><td>Configuration – How different parts are put together to form an object.</td></tr>
<tr><td>4. Doodler DIY kits
To develop a DIY Kit for another individual to assemble their product.</td><td>A DIY kit can include a list of materials, equipment and circuit components that are required to build a product.</td><td>DIY – the acronym means 'do it yourself' and represents various activities that someone chooses to do themselves at home rather than through a service or professional.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Hinge Questions</td><td>Assessing Key Vocabulary:
Key word poster</td></tr>
</table>

<u>See also: Knowledge organiser</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
• 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.

<u>Make</u>
• Constructing a stable base for a game.
• Accurately cutting, folding and assembling a net.
• Decorating the base of the game to a high quality finish.
• Making and testing a circuit.
• Incorporating a circuit into a base.

<u>Evaluate</u>
• Testing own and others finished games, identifying what went well and making suggestions for improvement.
• Gathering images and information about existing children's toys.
• Analysing a selection of existing children's toys.
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</tr>
</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 5
Spring</td>
<td>
<u>Focus: Structures: Bridges</u>

<u>National Curriculum Knowledge:</u>
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

<u>Prior Learning:</u> Structures: Pavilions (Year 4)

<u>Contributing towards:</u> Structures Anderson Shelters (Year 6)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Arch and beam bridges
To explore how to reinforce a beam (structure) to improve its strength.</td><td>A beam bridge uses simple, vertical post to support a straight bridge whereas an arch bridge uses a curving support structure.</td><td>Corrugation – A material with lines or folds on the surface.</td></tr>
<tr><td>2. Spaghetti truss bridges
To build a spaghetti truss bridge.</td><td>Truss bridge, bridge with its load-bearing structures composed of a series of wooden or metal triangles, known as trusses.</td><td>Joint – A place where two or more things are attached together.</td></tr>
<tr><td>3. Building bridges
To build a wooden truss bridge.</td><td>Strong and sturdy materials are an important part of the design process.</td><td>Mark out – To measure and mark where a piece of materials needs to be cut.</td></tr>
<tr><td>4. Finalising bridges
To complete, reinforce and evaluate my truss bridge.</td><td>Layers of material bonded together is known as lamination.</td><td>Quality of finish – The smoothness of the wood, accuracy of the joints and its aesthetics.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge
Kapow Quiz</td><td>Assessing Key Vocabulary:
Definition Bingo</td></tr>
</table>

<u>See also: Knowledge organiser</u>
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<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.
• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
• Designing a stable structure that is able to support weight.
• Creating a frame structure with a focus on triangulation.

Make
• 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.

Evaluate
• 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.
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</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 5
Summer</td>
<td>
<u>Focus: Textiles: Stuffed toys</u>

<u>National Curriculum Knowledge:</u>
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

<u>Prior Learning:</u> Textiles: Cross-stitch and applique (Year 3)

<u>Contributing towards:</u> National Curriculum Design and Technology programme of study KS3 (understand and use the properties of materials and the performance of structural elements to achieve functioning solutions)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Designing a stuffed toy
To design a stuffed toy.</td><td>Templates need to be proportional.</td><td>Proportional – when quantities have the same relative size or ratio.</td></tr>
<tr><td>2. Blanket stitch
To sew a blanket stitch.</td><td>Blanket stitch is a versatile embroidery stitch that can be used for functional or decorative purposes.</td><td>Appendage – something attached to a larger or more important thing.</td></tr>
<tr><td>3. Details and appendages
To create and add decorations to fabric.</td><td>Blanket, running and cross-stitches are used to create strong and secure stitches.</td><td>Applique – A form of textile work where small pieces of cloth are sewn onto a larger piece,</td></tr>
<tr><td>4. Stuffed toy assembly
To use blanket stitch to assemble the components of a stuffed toy.</td><td>When stuffing a toy, it must be done carefully, ensuring there are no holes or gaps.</td><td>Stuffing – soft material used to fill cushions and stuffed toys.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Quiz, Quiz, Trade, Trade</td><td>Assessing Key Vocabulary:
Odd one out</td></tr>
</table>

<u>See also: Knowledge organiser</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.
• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
• Designing a stuffed toy, considering the main component shapes required and creating an appropriate template.
• Considering the proportions of individual components.

<u>Make</u>
• Creating a 3D stuffed toy from a 2D design.
• Measuring, marking and cutting fabric accurately and independently. Creating strong and secure blanket stitches when joining fabric.
• Threading needles independently.
• Using appliqué to attach pieces of fabric decoration.
• Sewing blanket stitch to join fabric.
• Applying blanket stitch so the spaces between the stitches are even and regular.

<u>Evaluate</u>
• Testing and evaluating an end product and giving point for further improvements.
</td>
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</table>

<table>
<tr><th>Year</th><th>Knowledge</th><th>Skills</th></tr>
<tr>
<td>Year 6
Autumn</td>
<td>
<u>Focus: Structures: Andersen Shelters</u>

<u>National Curriculum Knowledge:</u>
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

<u>Prior Learning:</u> Structures: Bridges (Year 5)

<u>Contributing towards:</u> National Curriculum Design and Technology programme of study KS3 (understand and use the properties of materials and the performance of structural elements to achieve functioning solutions)

<table>
<tr><th><u>Lesson</u></th><th><u>Sticky Knowledge</u></th><th><u>Key Vocabulary and Definitions</u></th></tr>
<tr><td>1. Design an Andersen Shelter
To design an Andersen Shelter with a variety of structures.</td><td>A structure has been purpose-built and will stand on its own.</td><td>Plan view – A two-dimensional diagram used to describe a place of object from above with annotations and other details such as measurements.</td></tr>
<tr><td>2. Building structures
To build a range of structures.</td><td>Structures can be strengthened by manipulating materials and shapes.</td><td>Prototype – A simple model that lets you test out your idea and how it will look and work.</td></tr>
<tr><td>3. Perfecting structures
To improve and add detail to structures.</td><td>You must measure accurately before cutting.</td><td>Jelutong – A type of softwood which is lightweight and easy to cut and shape.</td></tr>
<tr><td>4. Andersen landscapes
To create a surrounding landscape.</td><td>Landscaping is the process of making a garden or other piece of land more attractive.</td><td>User – A person that uses something.</td></tr>
<tr><td><u>Assessment Tasks</u></td><td>Assessing Sticky Knowledge:
Can children create and evaluate a structure.</td><td>Assessing Key Vocabulary:
Define terms
Class bingo
Annotate photograph of work</td></tr>
</table>

<u>See also: Knowledge organiser</u>
</td>
<td>
<u>National Curriculum Skills</u>
• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.
• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.
• Investigate and analyse a range of existing products.
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

<u>Design</u>
• Designing an Anderson Shelter featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.

<u>Make</u>
• Building a range of structures drawing upon new and prior knowledge of structures.
• Measuring, marking and cutting wood to create a range of structures. Using a range of materials to reinforce and add decoration to structures

<u>Evaluate</u>
• Improving a design plan based on peer evaluation.
• Testing and adapting a design to improve it as it is developed.
• Identifying what makes a successful structure.
</td>
</tr>
</table>

Year	Knowledge	Skills
Year 6 Spring	<u>Focus: Cooking and Nutrition: Come dine with me</u> <u>National Curriculum Knowledge:</u> • Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • Understand and apply the principles of a healthy and varied diet. • Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. <u>Prior Learning:</u> Cooking and Nutrition: Eating Seasonally (Year 3) <u>Contributing towards:</u> National Curriculum Design and Technology programme of study KS3: Cooking and Nutrition	<u>National Curriculum Skills</u> • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. • Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. • Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. • Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. <u>Design</u> • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. <u>Make</u> • 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. <u>Evaluate</u> • 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 when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. • Evaluating health and safety in production to minimise cross contamination.

<u>Lesson</u>	<u>Sticky Knowledge</u>	<u>Key Vocabulary and Definitions</u>
1. Complementary flavours To explain the use of complementary flavours.	Complementary flavours are combinations of ingredients that enhance and balance each other's taste profiles.	Balance – When one taste is used to reduce another.
2. Three ingredients; three courses To research and design a three-course meal.	Not all courses when creating a 3-course meal have to complement each other.	Recipe – A list of foods and instructions telling you how to make something.
3. Ingredients and skills To explain recipe choices.	Flavour pairings is when you bring together ingredients with complementary or contrasting flavours that enhance the overall taste of a dish.	Enhance – When one taste makes another better.
4. To start… To apply culinary skills and knowledge.	The farm-to-fork journey includes all the stages your produce goes through, from growing the plants to being eaten in your home.	Preparation – Getting ingredients ready to be cooked.
5. The main course… To apply culinary skills and knowledge.	A hero ingredient is the main ingredient in a recipe.	Pairing – Purposely putting two flavours together.
6. Dessert To apply culinary skills and knowledge.	Pineapples do not grow in the UK but in Costa Rica on farms.	Flavour – The taste of food.
<u>Assessment Tasks</u>	Assessing Sticky Knowledge: Evaluate children design a scale to show enjoyment. Kahoot quiz	Assessing Key Vocabulary: Class bingo

<u>See also: Knowledge organiser</u>

Year	Knowledge	Skills
Year 6 Summer	<u>Focus: Mechanical Systems: Automata toys</u> <u>National Curriculum Knowledge:</u> • Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. <u>Prior Learning:</u> Mechanical Systems: Making a slingshot car (Year 4) <u>Contributing towards:</u> National Curriculum Design and Technology programme of study KS3 (understand how more advanced mechanical systems used in their products enable changes in movement and force)	<u>National Curriculum Skills</u> • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. • Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. • Investigate and analyse a range of existing products. • Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. • Understand how key events and individuals in design and technology have helped shape the world. <u>Design</u> • Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. • Understanding how linkages change the direction of a force. • Making things move at the same time. • Understanding and drawing cross-sectional diagrams to show the inner-workings of my design. <u>Make</u> • Measuring, marking and checking the accuracy of the jelutong and dowel pieces required. • Measuring, marking and cutting components accurately using a ruler and scissors. • Assembling components accurately to make a stable frame. • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set. <u>Evaluate</u> • Evaluating the work of others and receiving feedback on own work. • Applying points of improvement to their toys. • Describing changes they would make/do if they were to do the project again.

<u>Lesson</u>	<u>Sticky Knowledge</u>	<u>Key Vocabulary and Definitions</u>
1. Automatas To prepare wood for assembly by measuring, marking and cutting each piece.	Mechanisms control movement and can change one kind of motion into another.	Automata – Sometimes known as mechanical toys or kinetic art, and they use hand-powered mechanisms to create movement in a scene of characters.
2. Frame assembly To assemble the automata frame components and supports with the help of an exploded diagram.	Exploded diagrams illustrate how different parts of a product fit together.	Assembly diagram - An exploded view diagram of an object that shows you how to construct an object or the order of assembly of various parts.
3. Experimenting with cams To explore the relationship between cam profiles and follower movement to inform a design decision.	Cam profiles causes a follower to rise, fall or remain static at different points depending on its shape.	Cam - A rotating or sliding piece in a mechanisms that changes a rotary motion to a linear motion. Follower - The post which traces the shape of the cam, rising and falling in a linear or reciprocating motion.
4. Finishing touches To apply the housing and finishing touches to the automata frame.	Good quality products should be neat, accurate and securely assembled.	Inner-workings – The parts that make something work, that are hidden from view.
<u>Assessment Tasks</u>	Assessing Sticky Knowledge: Annotate photos to show all elements of automata using Key vocab.	Assessing Key Vocabulary: Definition bingo

<u>See also: Knowledge organiser</u>