

Year 3

Year 3 - Autumn 1: Mechanisms (Research)

Milestone LO

Children will learn to research (through exploration) existing mechanisms (sliders, levers and linkages). For example look at pop up cards/books

Concepts	Substantive Knowledge	Disciplinary Knowledge
Research Inspiration Exploration Function Mechanisms	Know that... <ul style="list-style-type: none"> • A mechanism is a device which takes one type of motion or force and produces a different one. • A force is an action that changes or maintains the motion of an object. • Motion means the change of the position of an object. • The role of a mechanism is to make a job easier to do. • Some examples of mechanisms include: sliders, levers and linkages. • A slider is something that slides. • A lever is a simple machine consisting of a rigid bar or rod pivoted at one point along its length. • Pivot means a fixed point, supporting something that turns or balances. • A linkage is produced by combining the mechanisms of sliders and levers. • Research is the process of solving problems and finding facts in an organised way. 	Know how to... <i>(Revisit from Year 2 Autumn 1)</i> <ul style="list-style-type: none"> • Generate ideas through talking and drawing based on own experiences of products • Exploring and evaluating joining techniques used in existing products • Exploring and evaluating materials used to make products • Create a criteria to evaluate existing products against – asking questions such as: <i>How has the product been put together? What materials have been used? What has been added? Who has the product been made for? How well has this product been made? Would I play with it? Why?/Why not?</i> Know how to... <ul style="list-style-type: none"> • Gather information about our intended users (with adult support/whole class e.g. surveys, interviews) (could link to Maths curriculum - Statistics) • Investigate and analyse a range of existing products (e.g. looking at function, materials, construction, purpose, audience) • Learn about inventors, designers, engineers or manufacturers who have developed ground-breaking products Know how to... <ul style="list-style-type: none"> • To know how to apply force to a slider, lever, wheel etc. to produce an outcome (movement)
Vocabulary	Mechanism Force Motion Slider Lever Linkage pivot slot research product push pull up down	
Enrichment & wider development		

FOXHILLS
FEDERATION



Year 3 - Autumn 2: Mechanisms (Design)

<p>Milestone LO Children will learn to generate, develop, model and communicate their ideas through discussion, labelled drawings and mock ups. (Design a pop-up book, card)</p>		
Concepts	Substantive Knowledge	Disciplinary Knowledge
<p>Design and Creativity</p> <p>Innovation</p> <p>Making choices (colour, texture, finish, form, materials)</p> <p>Processes</p> <p>Equipment</p> <p>Drawing</p> <p>Mechanisms</p>	<p>Know that...(Revisit from Autumn 1)</p> <ul style="list-style-type: none"> • A mechanism is a device which takes one type of motion or force and produces a different one. • A force is an action that changes or maintains the motion of an object. • Motion means the change of the position of an object. • The role of a mechanism is to make a job easier to do. • Some examples of mechanisms include: sliders, levers and linkages. • A slider is something that slides. • A lever is a simple machine consisting of a rigid bar or rod pivoted at one point along its length. • Pivot means a fixed point, supporting something that turns or balances. <p>Know that...</p> <ul style="list-style-type: none"> • A linkage is produced by combining the mechanisms of sliders and levers. • We can use a labelled diagram to show the shape, size and features of an object • A design is a plan or drawing produced to show the look and function or <u>workings</u> of a building, garment, or other object before it is made. • A designer is someone who produces drawings and diagrams to show the look and function of a product that hasn't yet been made. <p>A mock up is a non-functional model that is to resemble the shape of the product.</p>	<p>Know how to... (Revisit from Year 2 Autumn 2)</p> <ul style="list-style-type: none"> • Draw a simple design of their product and label the key components • Think of appropriate materials to use for the purpose of their product • Using a scaffold and adult support if required, give reasons for their choice of theme, material and finishing technique. • With support, use a template to create a paper mock-up of their product • With support, show accuracy when marking out and cutting templates and materials • Use glue carefully to join two materials • Add finishing techniques to their product for effect. <p>Know how...</p> <ul style="list-style-type: none"> • Generate own design criteria informed by research (with adult support or in pairs/groups) • Use annotated sketches to develop and communicate ideas • To model ideas using mock-ups/prototypes <p>Know how...</p> <p>To make a simple lever, pivot and slider (with support)</p>
Vocabulary		
Enrichment & wider development		

FOXHILLS
FEDERATION



Year 3 - Spring 1: Structures (Make)

Milestone LO

Children will learn to select from and use a wider range of tools and equipment, materials and components (in order to assemble a net to make a 3D structure)

Concepts	Substantive Knowledge	Disciplinary Knowledge
Making Experimenting Safety Accuracy Structures	Know that... <ul style="list-style-type: none"> • A structure is a combination of materials and/or parts to create a 3D shape • Structures can be assembled from nets or an open framework of rods • Structures may be free-standing or supported • Structures can be created from nets • Nets are the flat or opened-out shape of a 3D object such as a box. • A 3D shape is a shape that you can hold 	Make disciplinary knowledge <ul style="list-style-type: none"> - Select and use appropriate tools - Select materials for our products (according to our functional properties and aesthetic qualities) (link to KS2 Science) - Measure, mark, cut out and shape materials and components with more accuracy - Assemble, join and combine materials - Select and use appropriate finishing techniques to improve the appearance of our product (linked to Art curriculum) Structures disciplinary knowledge <ul style="list-style-type: none"> • To know how to assemble 3D shapes from given nets • To revisit drawing inspiration from existing products • To use equipment appropriately and safely
Vocabulary	Cuboid – a solid body with rectangular sides. Edge – where two surfaces meet at an angle. Face – a surface of a geometric shape. Font – a printer’s term meaning the style of lettering being used. Net – the flat or opened-out shape of an object such as a box. Prism – a solid geometric shape with ends that are similar, equal and parallel. Scoring – cutting a line or mark into sheet material to make it easier to fold. Shell structure – a hollow structure with a thin outer covering. Vertex – used to refer to the corners of a solid geometric shape, where edges meet	
Enrichment & wider development		



Year 3 - Spring 2: Structures (Make)

Milestone LO

Children will learn to select from and use a wider range of materials and components according to their functional properties. Children will learn to strengthen, stiffen and reinforce structures.

Concepts	Substantive Knowledge	Disciplinary Knowledge
Making Experimenting Safety Accuracy Structures	<p>Know that... (Revisit from Year 2 Summer 1)</p> <ul style="list-style-type: none"> • A flange joint can be used to connect tubes or pipes. • A slot is a way to connect flat materials together to make a free standing structure • An L brace is a way to connect materials together to make an L shape. • Tabs can be used to make a free-standing wall. They can also be used to connect corners and hold them in place. <p>Know that...(Revisit from Year 3 Spring 1)</p> <ul style="list-style-type: none"> • <i>A structure is a combination of materials and/or parts to create a 3D shape</i> • <i>Structures can be assembled from nets or an open framework of rods Structures may be free-standing or supported</i> • <i>Structures can be created from nets</i> • <i>Nets are the flat or opened-out shape of a 3D object such as a box. A 3D shape is a shape that you can hold</i> <p>Tabs are often used in the corners of packaging boxes. This helps to make them strong to protect the contents.</p> <p>Know that...</p> <ul style="list-style-type: none"> • Structures can be made from one material or from a composite of materials, each adding a particular property to the finished article. • Structures can be made more through stiffening and strengthening • Stiffening and strengthening methods can include: <ul style="list-style-type: none"> Laminating – gluing together several layers of card Corrugating – zig-zagging a piece of paper or card and glue in between two layers of card Ribbing – gluing layers of straws between layers of card <p>Equipment: Card, paper, paper straws, scissors, Sellotape, glue</p>	<p>Know how...(Revisit from Year 3 Spring 1)</p> <ul style="list-style-type: none"> • <i>To know how to assemble 3D shapes from given nets</i> • <i>To revisit drawing inspiration from existing products</i> • <i>To use equipment appropriately and safely</i> • <i>To know how to experiment with stiffening and strengthening methods such as laminating, corrugating and ribbing.</i> <p>Know how to...</p> <ul style="list-style-type: none"> • Select and use appropriate tools • Select materials for our products (according to our functional properties and aesthetic qualities) (link to KS2 Science) • Measure, mark, cut out and shape materials and components with more accuracy • Assemble, join and combine materials • Select and use appropriate finishing techniques to improve the appearance of our product (linked to Art curriculum)
Vocabulary	<p>Laminating – gluing together several layers of card</p> <p>Corrugating – zig-zagging a piece of paper or card and glue in between two layers of card</p> <p>Ribbing – gluing layers of straws between layers of card</p> <p>Stiffening – Making something more hard and rigid</p> <p>Strengthening – making something stronger</p>	
Enrichment & wider development		



Year 3 - Summer 1: Textiles (Evaluate)

Milestone LO

Children will learn to investigate a range of existing textile products. Children will evaluate the work of a famous designer

Concepts	Substantive Knowledge	Disciplinary Knowledge
<p>Evaluate Using Criteria Responding to feedback Making comparisons Referring back to design brief Recognising potential for improvement Considering aesthetics</p> <p>Textiles</p>	<p>Know that... Revisit from Year 2 Autumn 1</p> <ul style="list-style-type: none"> • Fabric is cloth or other material produced by weaving or knitting fibres • Fibres are thin threads, either natural or man-made • Fray means to unravel or become worn at the edges • A seam is a row of stitches joining two pieces of fabric. • Fabric pieces can be joined together by sewing, pinning, gluing or stapling • Sew means to join pieces of fabric with stitches. • Products made from fabric can be decorated using finishing techniques • Paints, glitter glue, sequins and buttons (finishing techniques) can all be used to decorate fabrics. • Appliqué means to attach a decorative fabric item onto another piece of fabric by gluing and/or sewing. <p>Know that...</p> <ul style="list-style-type: none"> • Evaluate means to identify strengths of a product and the areas for improvement in line with the design criteria. • Textiles means a type of cloth or woven fabric • Products made from textiles include clothing, bedding, shelters such as tents, toys etc. • Textiles can be joined to make items by sewing, gluing, stapling, weaving etc. • In order to make a product look a certain way, textiles can be dyed, embroidered, embossed, printed upon etc. • Dyed means to use an ink to change the colour of a material • Embroidered means decorated with patterns sewn on with thread • Embossed means decorated with a design that stands out • Printed means applying colours to fabrics in patterns and designs • A design is a plan or drawing produced to show the look and function or <u>workings</u> of a building, garment, or other object before it is made. (Revisit from Autumn 1) • A designer is someone who produces drawings and diagrams to show the look and function of a product that hasn't yet been made. (Revisit from Autumn 1) 	<p>To know how to... Revisit from Year 2 Summer 2</p> <ul style="list-style-type: none"> • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original (whole class) design criteria. <p>To know how to...</p> <ul style="list-style-type: none"> • Evaluate existing products against our design criteria (strength, durability etc.) Consider the views of others, including the intended users, to suggest improvements to existing products
Vocabulary	Textiles – a type of cloth or woven fabric	
Enrichment & wider development		



Year 3 - Summer 2: Textiles (Evaluate)

Milestone LO

Children will learn to select from and use textiles according to their functional and aesthetic qualities in response to a design criteria. Children will learn to evaluate their ideas and products against a design criteria and consider the views of others to improve their work.

Children could make a book mark (Yr 3 teachers create a design criteria based on the ideas of Year 2 – Year 3 children could be paired with Year 2 children to discuss ideas) **Join materials using glue only**

Concepts	Substantive Knowledge	Disciplinary Knowledge
Evaluate Using Criteria Responding to feedback Making comparisons Referring back to design brief Recognising potential for improvement Considering aesthetics Textiles	Know that... (Revisit from Year 3 Summer 1) <ul style="list-style-type: none"> Evaluate means to identify strengths of a product and the areas for improvement in line with the design criteria. Textiles means a type of cloth or woven fabric Products made from textiles include clothing, bedding, shelters such as tents, toys etc. Textiles can be joined to make items by sewing, gluing, stapling, weaving etc. In order to make a product look a certain way, textiles can be dyed, embroidered, embossed, printed upon etc. Dyed means to use an ink to change the colour of a material Embroidered means decorated with patterns sewn on with thread A design is a plan or drawing produced to show the look and function or <u>workings</u> of a building, garment, or other object before it is made. A designer is someone who produces drawings and diagrams to show the look and function of a product that hasn't yet been made A hot glue gun is a small sized gun that dispenses hot glue A glue gun must be handled safely with adult supervision and according to the safety guidelines. <p>Revisit relevant measure related substantive knowledge from the Maths curriculum</p>	Know how to... <ul style="list-style-type: none"> Evaluate our ideas during the design process and adapt our plans (with adult support) Evaluate our products against our design criteria Consider the views of others, including the intended users, to improve our work Know how to... <ul style="list-style-type: none"> Select and use appropriate tools Select materials for our products (according to our functional properties and aesthetic qualities) (link to KS2 Science) Measure, mark, cut out and shape materials and components with more accuracy Assemble, join and combine materials Select and use appropriate finishing techniques to improve the appearance of our product (linked to Art curriculum) Know how to... <ul style="list-style-type: none"> Join materials using glue
Vocabulary	Textiles – a type of cloth or woven fabric	
Enrichment & wider development		

FOXHILLS
FEDERATION



Year 4

Year 4 - Autumn 1: Structures (Research)

Milestone LO

to use research (surveys) and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups

Children will learn to research what school staff would like to keep their desks tidy and organised (desk tidies)

Concepts	Substantive Knowledge	Disciplinary Knowledge
Research: Inspiration Exploration Function	Know that... <ul style="list-style-type: none"> • A structure is a combination of materials and/or parts to create a 3D shape (Revisit from Year 3 Spring 1) • Structures can be assembled from nets or an open framework of rods (Revisit from Year 3 Spring 1) • Structures may be free-standing or supported (Revisit from Year 3 Spring 1) • Structures can be created from nets (Revisit from Year 3 Spring 1) • Nets are the flat or opened-out shape of a 3D object such as a box. (Revisit from Year 3 Spring 1) • A 3D shape is a shape that you can hold (Revisit from Year 3 Spring 1) • Nets can be used to fold card into useful shapes, such as furniture and household objects. • Research is the process of solving problems and finding facts in an organised way. (Revisit from Year 3 Spring 1) • Research in DT involves asking questions to understand the needs of a user of a certain product. A desk tidy is a storage solution that allows you to keep your essentials within easy reach.	Research Disciplinary Knowledge Know how... <ul style="list-style-type: none"> - Gather information about our intended users (independently or in pairs/groups e.g. surveys, interviews) (could link to Maths curriculum - Statistics) - Investigate and analyse a range of existing products (e.g. by looking at function, materials, construction, purpose, audience, design process) - Learn about the impact inventors, designers, engineers and manufacturers who have developed ground-breaking products and how they have shaped the world
Vocabulary		
Enrichment & wider development		

FOXHILLS
FEDERATION



Year 4 - Autumn 2: Structures (Design)

Milestone LO

Children will learn to generate, develop, model and communicate their ideas through discussion, annotated drawings and prototypes. (To design and make their own desk tidy)

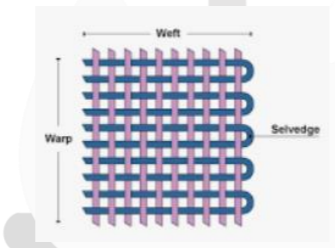
Concepts	Substantive Knowledge	Disciplinary Knowledge
Design and Creativity: Innovation Making Choices (colour, texture, finish, form, materials) Processes Equipment Drawing	<ul style="list-style-type: none"> • A prototype is a 3D model that designers use to represent a flat illustration (Revisit from Year 3 Autumn 2) • We can use a labelled diagram to show the shape, size and features of an object (Revisit from Year 3 Autumn 2) • A design is a plan or drawing produced to show the look and function or <u>workings</u> of a building, garment, or other object before it is made. (Revisit from Year 3 Autumn 2) • A designer is someone who produces drawings and diagrams to show the look and function of a product that hasn't yet been made. (Revisit from Year 3 Autumn 2) • A design is more than just a drawing – it should include information about: the materials chosen, the processes to be used, the equipment required and how the product will be finished. • A prototype is a functional 3D model that designers use to represent a flat illustration. 	Design Disciplinary Knowledge Know how to... - Generate own design criteria informed by research (in pairs/groups or independently) - Use annotated sketches from different views to generate and communicate ideas - Start to develop a plan for the design process (as a whole class including materials, tools and techniques to be used) - Model ideas using prototypes and pattern pieces Make disciplinary knowledge Know how to... - Select and use appropriate tools - Select materials for our products (according to our functional properties and aesthetic qualities) (link to KS2 Science) - Measure, mark, cut out and shape materials and components with more accuracy - Assemble, join and combine materials (revisit ribbing, stiffening, laminating etc. from Year 3) - Select and use appropriate finishing techniques to improve the appearance of our product (linked to Art curriculum)
Vocabulary		
Enrichment & wider development		



Year 4 - Spring 1: Textiles (Make)

Milestone LO

Children will select from and use a wider range of tools and equipment to perform practical tasks **(Weaving) Wall hanging**

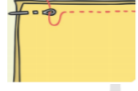

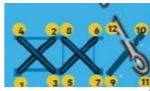

Concepts	Substantive Knowledge	Disciplinary Knowledge
<p>Making Experimenting Safety Accuracy</p> <p>Textiles</p>	<ul style="list-style-type: none"> Textiles means a type of cloth or woven fabric (Revisit from Year 3 Summer 1) Products made from textiles include clothing, bedding, shelters such as tents, toys etc. (Revisit from Year 3 Summer 1) Textiles can be joined to make items by sewing, gluing, stapling, weaving etc. (Revisit from Year 3 Summer 1) In order to make a product look a certain way, textiles can be dyed, embroidered, embossed, printed upon etc. (Revisit from Year 3 Summer 1) Dyed means to use an ink to change the colour of a material (Revisit from Year 3 Summer 1) Embroidered means decorated with patterns sewn on with thread (Revisit from Year 3 Summer 1) Fabric refers to any material made by weaving, knitting or felting Weaving is a method which involves interlacing two distinct sets of yarns or threads at right angles to form a fabric Woven fabrics are made up of a weft, a warp and a selvedge. The weft is the yarn going across the length of the fabric. The warp is the yarn going down the length of the loom The selvedge is the side of the fabric where the wefts are doubled back to form a non-fraying edge.  <ul style="list-style-type: none"> A loom is a device used to weave cloth and tapestry A loom can be made from card or wood 	<p>Make disciplinary knowledge</p> <ul style="list-style-type: none"> Select and use appropriate tools Select materials and components (according to our functional properties and aesthetic qualities and explain our choice) Measure, mark, cut out and shape materials and components with accuracy Assemble, join and combine materials - Use finishing techniques to strengthen and improve the appearance of our products (linked to Art curriculum) <p>Textiles Disciplinary Knowledge</p> <p>Know how to...</p> <p>(Using a cardboard loom) Add the warp thread to your loom by:</p> <ul style="list-style-type: none"> Starting at the bottom left-hand side put the warp thread (string is good) around the first 'tooth' and tie a double knot or use sticky tape to secure it to the back. Take the warp thread to the top of the loom and secure it in the opposite groove. Pass the warp thread behind and bring it forward through the next groove. Take the warp thread back to the bottom and secure it in the opposite groove. Keep going until you have 12 threads. Make them secure but not too tight. Once complete, tie another double knot around the final 'tooth' or secure the warp thread with sticky tape on the back of the loom. <p>Start weaving by:</p> <ul style="list-style-type: none"> Put a pencil under the warp threads to make it easier to weave. Start weaving at the START line marked on the loom. Tie the weft thread onto the first warp thread on the loom. Take the weft thread and pass it under the next warp thread, then over the next and so on. At the end of the row, continue weaving back the other way but this time do the opposite. If the weft thread went over the warp thread, now pass it under. If the weft thread is short, only one row needs to be complete but tie it to the warp threads at both ends. <p>Stop weaving when you reach the FINISH line marked on the loom.</p>
Vocabulary		
Enrichment & wider development		

Year 4 - Spring 2: Textiles (Make)

Milestone LO

Children will select from and use a wider range of tools and equipment (pattern pieces) to perform practical tasks and make an aesthetically pleasing product.

(Sewing – a flag to make a whole class piece of bunting?)

Concepts	Substantive Knowledge	Disciplinary Knowledge
<p>Making Experimenting Safety Accuracy</p> <p>Textiles</p>	<ul style="list-style-type: none"> • A pattern piece is a paper template that we can use to cut around to make fabric shapes • A pattern piece should be placed carefully at the edge of the fabric and secured using pins • It is important to hold fabric scissors straight so that they make an even cut across the fabric. • You can use a running stitch to sew seams, hems and gathers.  <ul style="list-style-type: none"> • Back stitch is used through hand embroidery designs to outline shapes and add interesting details.  <ul style="list-style-type: none"> • Cross stitch involves making images out of small crosses  <ul style="list-style-type: none"> • Applique is the technique whereby a person attaches one piece of fabric to another  <p>Revisit required measurement knowledge from Maths mapping.</p>	<p>Make disciplinary knowledge</p> <ul style="list-style-type: none"> - Select and use appropriate tools - Select materials and components (according to our functional properties and aesthetic qualities and explain our choice) - Measure, mark, cut out and shape materials and components with accuracy - Assemble, join and combine materials - Use finishing techniques to strengthen and improve the appearance of our products (linked to Art curriculum) <p>Sewing disciplinary knowledge</p> <p>Know how</p> <ul style="list-style-type: none"> • To use a pattern piece to cut fabrics to shape and size • To position the pattern piece correctly so as not to waste fabric • To pin the pattern piece to the fabric so that it does not move. • To use fabric scissors to carefully and accurately cut the fabric. • To carefully thread a needle • To join fabrics together using running stitch, back stitch or cross-stitch • To sew fabric onto other fabric (applique) • To attach buttons for purpose or decoration
Vocabulary		
Enrichment & wider development		



Year 4 - Summer 1: Food (Evaluate)

Milestone LO

Children will investigate and analyse a range of existing products through a sensory evaluation (Food tasting) Biscuits?

Concepts	Substantive Knowledge	Disciplinary Knowledge
Evaluate Using Criteria Responding to feedback Making comparisons Referring back to design brief Recognising potential for improvement Considering aesthetics	<ul style="list-style-type: none"> • Evaluate means to identify strengths of a product and the areas for improvement in line with the design criteria. (Revisit Year 3 Summer 1) • Taste is the sensation of flavour perceived in the mouth • Smell means to detect or perceive the odour or scent of something • Appearance means the way that someone or something looks • Texture means the feel, appearance or consistency of a surface or a substance • Target audience is a particular group at which a product is aimed • Packaging helps to protect products (Revisit from Year 3 Spring 1) • Packaging helps to preserve products (keep them fresh) • Packaging carries information about the products, some of which is required by law. • Packaging can make products attractive • Packaging is used to communicate with customers, telling them about the product quickly and effectively using design • It is important that we wash our hands effectively before handling and sampling food 	<p>Evaluate disciplinary knowledge</p> <p>Know how to...</p> <ul style="list-style-type: none"> - Evaluate ideas during the design process and adapt our plans - Evaluate products using appropriate tests and our own design criteria - Consider the views of others, including intended users, to improve work <p>Food disciplinary skills</p> <p>Know how to...</p> <ul style="list-style-type: none"> • Know how to demonstrate hygienic food preparation • know safe practices in the kitchen and can identify hazards (e.g. hazards when using an oven)
Vocabulary		
Enrichment & wider development		



Year 4 - Summer 2: Food (Evaluate)

Milestone LO

Children will make their own product and evaluate whether it has met the design criteria. (making biscuits)

Concepts	Substantive Knowledge	Disciplinary Knowledge
Evaluate Using Criteria Responding to feedback Making comparisons Referring back to design brief Recognising potential for improvement Considering aesthetics	<ul style="list-style-type: none"> • Evaluate means to identify strengths of a product and the areas for improvement in line with the design criteria. (Revisit Year 3 Summer 1) • Taste is the sensation of flavour perceived in the mouth (Revisit Year 4 Summer 1) • Smell means to detect or perceive the odour or scent of something (Revisit Year 4 Summer 1) • Appearance means the way that someone or something looks (Revisit Year 4 Summer 1) • It is important that we wash our hands effectively before handling and sampling food • The amount of an ingredient in a recipe is known as the 'quantity.' • It is important to use oven gloves when removing hot food from an oven. • Sieving means to put a solid or a liquid through a sieve to separate and break up clumps. • Creaming means mixing butter and sugar together • Rubbing means to coat flour grains with fat by gently rubbing between fingertips and thumbs 	<p>Evaluate disciplinary knowledge</p> <p>Know how to...</p> <ul style="list-style-type: none"> - Evaluate ideas during the design process and adapt our plans - Evaluate products using appropriate tests and our own design criteria - Consider the views of others, including intended users, to improve work <p>Food disciplinary skills</p> <p>Know how to...</p> <ul style="list-style-type: none"> • Know how to demonstrate hygienic food preparation • know safe practices in the kitchen and can identify hazards (e.g. hazards when using an oven) • Prepare and cook a variety of predominantly dishes using a range of cooking techniques
Vocabulary		
Enrichment & wider development		



Year 5

Year 5 - Autumn 1: Textiles (Research)

Milestone LO

Stuffed toy? Ugly doll?

The children will use research (interviews and questionnaires) and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.

Concepts	Substantive Knowledge	Disciplinary Knowledge
Research: Inspiration Exploration Function	<ul style="list-style-type: none"> • <i>Textiles means a type of cloth or woven fabric (Revisit from Year 3 Summer 1, Year 4 Spring 1)</i> • <i>Products made from textiles include clothing, bedding, shelters such as tents, toys etc. (Revisit from Year 3 Summer 1, Year 4 Spring 1)</i> • <i>Textiles can be joined to make items by sewing, gluing, stapling, weaving etc. (Revisit from Year 3 Summer 1, Year 4 Spring 1)</i> • <i>In order to make a product look a certain way, textiles can be dyed, embroidered, embossed, printed upon etc. (Revisit from Year 3 Summer 1, Year 4 Spring 1)</i> • <i>Dyed means to use an ink to change the colour of a material (Revisit from Year 3 Summer 1, Year 4 Spring 1)</i> • <i>Embroidered means decorated with patterns sewn on with thread (Revisit from Year 3 Summer 1, Year 4 Spring 1)</i> • <i>Research is the process of solving problems and finding facts in an organised way. (Revisit from Year 4 Autumn 1)</i> • <i>Research in DT involves asking questions to understand the needs of a user of a certain product. (Revisit from Year 4, Autumn 1)</i> <p><i>Aesthetics refers to how a product looks and feels</i></p>	Know how to: <ul style="list-style-type: none"> - Use research to identify the needs, wants, preferences and values of our intended users (e.g. surveys, interviews and internet resources) (could link to Maths curriculum - Statistics) - Investigate and analyse a range of existing products (e.g. by looking at function, materials, construction, purpose, audience, cost, design process, innovation and sustainability) - Explain the impact of inventors, designers, engineers or manufacturers who have developed ground-breaking products - Consider how sustainable our products are and the impact they may have beyond our intended purpose
Vocabulary		
Enrichment & wider development		

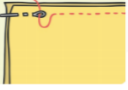


FOXHILLS
FEDERATION



Year 5 - Autumn 2: Textiles (Design)

Milestone LO

Children will generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design (To design their own soft toy)

Concepts	Substantive Knowledge	Disciplinary Knowledge
Design and Creativity: Innovation Making Choices (colour, texture, finish, form, materials) Processes Equipment Drawing	<p>Revisit from Year 4 Autumn 2:</p> <ul style="list-style-type: none"> • A prototype is a 3D model that designers use to represent a flat illustration (Revisit from Year 3 Autumn 2) • We can use a labelled diagram to show the shape, size and features of an object (Revisit from Year 3 Autumn 2) • A design is a plan or drawing produced to show the look and function or <i>workings</i> of a building, garment, or other object before it is made. (Revisit from Year 3 Autumn 2) • A designer is someone who produces drawings and diagrams to show the look and function of a product that hasn't yet been made. (Revisit from Year 3 Autumn 2) • A design is more than just a drawing – it should include information about: the materials chosen, the processes to be used, the equipment required and how the product will be finished. • A prototype is a functional 3D model that designers use to represent a flat illustration. <p>Revisit from Year 4 Spring 2:</p> <ul style="list-style-type: none"> • A pattern piece is a paper template that we can use to cut around to make fabric shapes • A pattern piece should be placed carefully at the edge of the fabric and secured using pins • It is important to hold fabric scissors straight so that they make an even cut across the fabric. • You can use a running stitch to sew seams, hems and gathers. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • Back stitch is used through hand embroidery designs to outline shapes and add interesting details. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • Cross stitch involves making images out of small crosses <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • Applique is the technique whereby a person attaches one piece of fabric to another 	<p>Know how:</p> <ul style="list-style-type: none"> - Develop a design specification (using our own research and subject knowledge) - Use annotated sketches, cross-sectional drawings and CAD to generate and communicate our ideas (building on LKS2 DT curriculum) - Model our ideas using prototypes and pattern pieces - Develop a plan for the design process (with adult or peer support - including materials, tools and techniques to be used)



Revisit required measurement knowledge from Maths mapping.

- In order to create a product that is worthy to the customer we must understand what they need in that product. This is why we research before we design.
- An important factor to consider when designing is what materials must be used
- When we know what our customer wants/needs and potential materials, we can develop our design specification
- A design specification is a set of design criteria that is created before the designing process begins.
- A design specification is used to set targets for the designer in order to ensure their product is relevant for what it is being designed for.

Vocabulary

Enrichment &
wider
development



FOXHILLS
FEDERATION



Year 5 - Spring 1: Food (Make – learning about seasonality in preparation for making a seasonal meal)

Milestone LO

Children will understand and apply the principles of a healthy and varied diet. They will understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Concepts	Substantive Knowledge	Disciplinary Knowledge
Making Experimenting Safety Accuracy	<p>Seasonal food is food that is readily available at certain times of year in the area where you live. Seasonal food is not the same in other parts of the world.</p> <ul style="list-style-type: none"> • Food can be grown ‘out of season’ in greenhouses, where the climate can be controlled. • Food that is not grown in season in Britain can be grown in other countries, and imported here. <p>Some foods grown in Britain are available all year, such as corn, wheat and barley. They can be stored for a long time without going bad.</p> <p>Meat gives us lots of nutrients which we need to stay healthy.</p> <ul style="list-style-type: none"> • Chicken and pork are in season all year round in Britain, because they eat a type of feed that is available all year round. <p>When fruit is ‘in season’, it means that they are at their best.</p> <ul style="list-style-type: none"> • Most fruits are harvested during the summer or at the beginning of Autumn. • Fruits can be preserved by being stored in huge refrigerators, as well as by making jam. The sugar keeps it fresh for a very long time. 	<p>Know how:</p> <p><i>Revisit from Year 4 Summer 1:</i></p> <ul style="list-style-type: none"> • <i>It is important that we wash our hands effectively before handling and sampling food</i> • <i>The amount of an ingredient in a recipe is known as the ‘quantity.’</i> • <i>It is important to use oven gloves when removing hot food from an oven.</i> <p>To use the seasonality calendar to identify when different foods are in season</p> <p>How to use packaging to identify the origin of a food</p> <p>Know and use relevant technical and sensory vocabulary.</p>
Vocabulary		
Enrichment & wider development		



Year 5 - Spring 2: Food (Make – making a seasonal meal)

Milestone LO:

Children will understand and apply the principles of a healthy and varied diet. They will prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. They will understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed

Concepts	Substantive Knowledge	Disciplinary Knowledge
Making Experimenting Safety Accuracy	<p>Revisit from Year 5 Spring 1</p> <ul style="list-style-type: none"> • <i>Seasonal food is food that is readily available at certain times of year in the area where you live. Seasonal food is not the same in other parts of the world.</i> • <i>Food can be grown 'out of season' in greenhouses, where the climate can be controlled.</i> • <i>Food that is not grown in season in Britain can be grown in other countries, and imported here.</i> • <i>Some foods grown in Britain are available all year, such as corn, wheat and barley. They can be stored for a long time without going bad.</i> • <i>Meat gives us lots of nutrients which we need to stay healthy.</i> • <i>Chicken and pork are in season all year round in Britain, because they eat a type of feed that is available all year round.</i> • <i>When fruit is 'in season', it means that they are at their best.</i> • <i>Most fruits are harvested during the summer or at the beginning of Autumn.</i> • <i>Fruits can be preserved by being stored in huge refrigerators, as well as by making jam. The sugar keeps it fresh for a very long time.</i> <p>Revisit from Year 4 Summer 1:</p> <ul style="list-style-type: none"> • <i>It is important that we wash our hands effectively before handling and sampling food</i> • <i>The amount of an ingredient in a recipe is known as the 'quantity.'</i> • <i>It is important to use oven gloves when removing hot food from an oven.</i> <p>Revisit measure unit (maths)</p> <ul style="list-style-type: none"> • Whisking puts tiny air bubbles in liquids like eggs, cream or batter, making them thicker. • Sifting powdered ingredients like icing sugar gets rid of any lumps and separates the tiny grains. • When slicing, make sure your fingers are well out of the way. Try to make the slices the same size. • Dicing means chopping an ingredient into cubes. 	<p>Know how:</p> <ul style="list-style-type: none"> • To use the seasonality calendar to identify when different foods are in season • Produce detailed lists of equipment and ingredients relevant to their tasks • Write a step-by-step plan, including a list of resources required. • Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and resources. • Know how to use utensils and equipment including heat sources to prepare and cook food.
Vocabulary		
Enrichment & wider development		

Year 5 - Summer 1: Mechanisms – Gears and Pulleys (Evaluate)

Milestone LO

Make something using a pulleys and gear system and evaluate it (given design brief and make)
Squashed tomato challenge – using a pulley to transport goods up and down a mountain?

Milestone LO

Concepts

Evaluate
Using Criteria
Responding to feedback
Making comparisons
Referring back to design brief
Recognising potential for improvement
Considering aesthetics

Substantive Knowledge

Revisit from Year 3 Autumn 1

- *A mechanism is a device which takes one type of motion or force and produces a different one.*
- *A force is an action that changes or maintains the motion of an object.*
- *Motion means the change of the position of an object.*
- *The role of a mechanism is to make a job easier to do.*
- *Some examples of mechanisms include: sliders, levers and linkages.*
- *A slider is something that slides.*
- *A lever is a simple machine consisting of a rigid bar or rod pivoted at one point along its length.*
- *Pivot means a fixed point, supporting something that turns or balances.*
- *A linkage is produced by combining the mechanisms of sliders and levers.*
- *Research is the process of solving problems and finding facts in an organised way.*

- Evaluate means to identify strengths of a product and the areas for improvement in line with the design criteria (Year 3 Summer 1)
- Mechanisms are the parts that make something work.
- Mechanisms are all around us.
- A set of related mechanisms used to create movement is called a mechanical system.
- Gears are toothed wheels (cogs) that lock together and turn one another. When one gear is turned the other turns as well.
- The wheels are usually different sizes, so that one gear speeds up to slow down the next gear. They therefore increase the power of a turning force.
- Pulleys are like gears, but the wheels do not lock together. The wheels are instead joined together by a drive belt.
- Pulleys can be used to affect the speed, direction or force of a movement.
- A flag being raised/ lowered on a flagpole is a prime example of a pulley mechanism in action
- A can opener is an example of a gear mechanism in action
- Bicycle gears are an example of a multiple gear and pulley mechanism in action.

Disciplinary Knowledge

Know how to:

- Evaluate our own work throughout the design and making process, making adaptations as necessary
- Carry out tests or surveys to check our products carry out our intended purpose (with adult support) (e.g. to check our products carry out our intended purpose or appeal to the intended user) - Critically evaluate our products (using the design specification and the results of appropriate tests/surveys)

Vocabulary

Enrichment & wider development

Year 5 - Summer 2: Mechanisms (Evaluate)

Milestone LO

Make something using a pulleys and gear system and evaluate it (given design brief and make)
Squashed tomato challenge – using a pulley to transport goods up and down a mountain?

Concepts	Substantive Knowledge	Disciplinary Knowledge
Evaluate Using Criteria Responding to feedback Making comparisons Referring back to design brief Recognising potential for improvement Considering aesthetics	Revisit all knowledge from Year 5 Summer 1	Know how to: - Evaluate our own work throughout the design and making process, making adaptations as necessary - Carry out tests or surveys to check our products carry out our intended purpose (with adult support) (e.g. to check our products carry out our intended purpose or appeal to the intended user) - Critically evaluate our products (using the design specification and the results of appropriate tests/surveys)
Vocabulary		
Enrichment & wider development		



Year 6

Year 6 - Autumn 1: Food (Research)

Milestone LO

Concepts	Substantive Knowledge	Disciplinary Knowledge
Research: Inspiration Exploration Function Food	Know that: (Revisit from Year 5 Autumn 1) <ul style="list-style-type: none"> Seasonal food is food that is readily available at certain times of year in the area where you live. Seasonal food is not the same in other parts of the world. Food can be grown 'out of season' in greenhouses, where the climate can be controlled. Food that is not grown in season in Britain can be grown in other countries, and imported here. Some foods grown in Britain are available all year, such as corn, wheat and barley. They can be stored for a long time without going bad. Meat gives us lots of nutrients which we need to stay healthy. Chicken and pork are in season all year round in Britain, because they eat a type of feed that is available all year round. When fruit is 'in season', it means that they are at their best. Most fruits are harvested during the summer or at the beginning of Autumn. Fruits can be preserved by being stored in huge refrigerators, as well as by making jam. The sugar keeps it fresh for a very long time. 	Know how to: (Revisit from Year 5 Autumn 1) <ul style="list-style-type: none"> Use research to identify the needs, wants, preferences and values of our intended users (e.g. surveys, interviews and internet resources) (could link to Maths curriculum - Statistics) Investigate and analyse a range of existing products (e.g. by looking at function, materials, construction, purpose, audience, cost, design process, innovation and sustainability) Explain the impact of inventors, designers, engineers or manufacturers who have developed ground-breaking products Consider how sustainable our products are and the impact they may have beyond our intended purpose Use the seasonality calendar to identify when different foods are in season Use packaging to identify the origin of a food.
Vocabulary		
Enrichment & wider development		

FOXHILLS
FEDERATION



Year 6 - Autumn 2: Food (Design)

Milestone LO

Celebrating culture and seasonality – global foods? Masterchef

Concepts	Substantive Knowledge	Disciplinary Knowledge
Design and Creativity: Innovation Making Choices (colour, texture, finish, form, materials) Processes Equipment Drawing	<p>Know that...Revisit from Year 5 Autumn 2:</p> <ul style="list-style-type: none"> <i>In order to create a product that is worthy to the customer we must understand what they need in that product. This is why we research before we design.</i> <i>An important factor to consider when designing is what materials must be used</i> <i>When we know what our customer wants/needs and potential materials, we can develop our design specification</i> <i>A design specification is a set of design criteria that is created before the designing process begins.</i> <i>A design specification is used to set targets for the designer in order to ensure their product is relevant for what it is being designed for.</i> <p>Know that...</p> <ul style="list-style-type: none"> Diets are varied around the world but still consist of the same food groups. 	<p>Know how to...Revisit from Year 5 Autumn 2:</p> <ul style="list-style-type: none"> <i>Develop a design specification (using our own research and subject knowledge)</i> <i>Use annotated sketches, cross sectional drawings and CAD to generate and communicate our ideas (building on LKS2 DT curriculum)</i> <i>Model our ideas using prototypes and pattern pieces</i> <i>Develop a plan for the design process (with adult or peer support - including materials, tools and techniques to be used)</i> <p>Know how to...</p> <ul style="list-style-type: none"> Use research using surveys, interviews, questionnaires and web-based resources to develop a design specification for a range of functional products. Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.
Vocabulary		
Enrichment & wider development		

FOXHILLS
FEDERATION



Year 6 - Spring 1: Electrical systems – Link with Science learning/Prior knowledge

Milestone LO

Revisit switches and circuits and the associated vocabulary
 Explore how multiple switches and components can be included in a circuit
 Incorporate multiple switches and components into a product to meet a design brief

Concepts	Substantive Knowledge	Disciplinary Knowledge
Making Experimenting Safety Accuracy	<p>Know that:</p> <ul style="list-style-type: none"> • Batteries, bulbs, motors, switches and buzzers are components of electrical circuits • A continuous flow of electrical energy is needed to enable an appliance to work A switch is a control mechanism used to interrupt the flow of electricity in a circuit • Some switches have more than one function • There are different types of switches • Some switches perform one function only, whilst others are multi-functional • A circuit diagram is a graphical representation of an electrical circuit • Series circuits are where components are connected together in one loop If one component fails or is turned off in a series circuit then none of the components will work In series circuits, components work simultaneously • Parallel circuits are where components are connected in separate loops • If one component is switched off in a parallel circuit, the rest of the components will still work In parallel circuits, components work independently of each other 	<p>Know how to:</p> <ul style="list-style-type: none"> • Explore types and functions of switches in a range of products Identify switches that have a single function and those that are multi-purpose • Suggest reasons why specific switches have been used in particular appliances • Draw circuit diagrams to represent a circuit including a bulb or buzzer and a switch • Make accurate recordings • Build circuits according to specific criteria, using a range of components • Explore and build circuits that will allow components to work independently of each other and simultaneously (series and parallel) • Identify the circuits required for everyday appliances • Draw circuit diagrams to represent those circuits (series and parallel) • Identify the difference between series and parallel circuits • Define the term brief • Apply knowledge of circuits and switches to design and make a product to fulfil a design brief • Explain how a product works and the circuits involved Identify and explain the advantages and disadvantages of the functionality of different products
<p>Vocabulary</p>		
<p>Enrichment & wider development</p>		



Year 6 - Spring 1: Electrical systems – Link with Science learning/Prior knowledge

Milestone LO

Revisit switches and circuits and the associated vocabulary
 Explore how multiple switches and components can be included in a circuit
 Incorporate multiple switches and components into a product to meet a design brief

Concepts	Substantive Knowledge	Disciplinary Knowledge
Making Experimenting Safety Accuracy	<p>Know that:</p> <ul style="list-style-type: none"> • Batteries, bulbs, motors, switches and buzzers are components of electrical circuits • A continuous flow of electrical energy is needed to enable an appliance to work A switch is a control mechanism used to interrupt the flow of electricity in a circuit • Some switches have more than one function • There are different types of switches • Some switches perform one function only, whilst others are multi-functional • A circuit diagram is a graphical representation of an electrical circuit • Series circuits are where components are connected together in one loop If one component fails or is turned off in a series circuit then none of the components will work In series circuits, components work simultaneously • Parallel circuits are where components are connected in separate loops • If one component is switched off in a parallel circuit, the rest of the components will still work In parallel circuits, components work independently of each other 	<p>Know how to:</p> <ul style="list-style-type: none"> • Explore types and functions of switches in a range of products Identify switches that have a single function and those that are multi-purpose • Suggest reasons why specific switches have been used in particular appliances • Draw circuit diagrams to represent a circuit including a bulb or buzzer and a switch • Make accurate recordings • Build circuits according to specific criteria, using a range of components • Explore and build circuits that will allow components to work independently of each other and simultaneously (series and parallel) • Identify the circuits required for everyday appliances • Draw circuit diagrams to represent those circuits (series and parallel) • Identify the difference between series and parallel circuits • Define the term brief • Apply knowledge of circuits and switches to design and make a product to fulfil a design brief • Explain how a product works and the circuits involved Identify and explain the advantages and disadvantages of the functionality of different products
<p>Vocabulary</p>		
<p>Enrichment & wider development</p>		



Year 6 - Summer 1: Structures with CAD (Evaluate)

Milestone LO

Concepts

Substantive Knowledge

Disciplinary Knowledge

Evaluate
Using Criteria
Responding to feedback
Making comparisons
Referring back to design brief
Recognising potential for improvement
Considering aesthetics

Know how to:

- Evaluate our own work throughout the design and making process, making adaptations as necessary
- Plan and carry out tests or surveys to obtain feedback (e.g. to check our products carry out our intended purpose or appeal to the intended user)
- Critically evaluate our products (using the design specification and the results of appropriate tests/surveys)

Vocabulary

Enrichment & wider development



Year 6 - Summer 2: Structures with CAD (Evaluate)

Milestone LO		
Concepts	Substantive Knowledge	Disciplinary Knowledge
Evaluate Using Criteria Responding to feedback Making comparisons Referring back to design brief Recognising potential for improvement Considering aesthetics		Know how to: - Evaluate our own work throughout the design and making process, making adaptations as necessary - Plan and carry out tests or surveys to obtain feedback (e.g. to check our products carry out our intended purpose or appeal to the intended user) - Critically evaluate our products (using the design specification and the results of appropriate tests/surveys)
Vocabulary		
Enrichment & wider development		

