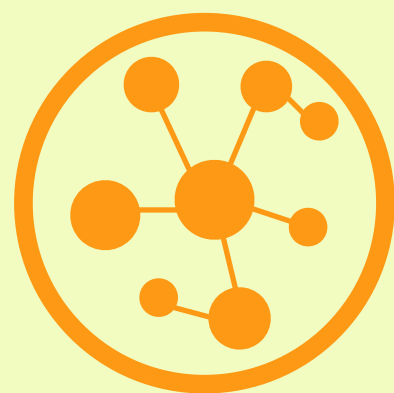




Information

Isolated facts that can have no organisational basis or links



Schema

Knowledge organised in a meaningful way - memories (emotional), concepts, knowledge



Key Concepts (Big Ideas)

Key concepts identify the content or focus areas of study



Electrical Systems

A system which uses all the electrical components that are needed to distribute electrical power

Textiles

A type of cloth or woven fabric.



Structures

A building or other object, constructed from several parts.

Food

Any nutritious substance that humans or animals eat or drink, or that plants absorb, in order to maintain life and growth.



Mechanisms

The machinery or working parts of something.

Digital Systems

A system which uses the digital world to control, programme and monitor products.



KS2 Only



Upper KS2 Only

Second Order Concepts

'The kinds of questions an Innovator asks'

Second-order concepts: these shape the key questions asked in a subject and organise the subject knowledge.

Designing

Can you draw and annotate a design?
What do you want the product to achieve?
How will you break the process down?
Can you make a template?
What is a prototype?

Making

What tools will you need?
How will you going the materials?
Can you measure accurately?
How can this be carried out safely?
Is there only one way to assemble this?

Technical Knowledge

Describe a mechanism?
Which mechanical systems create movement?
How does it work?
How can simple electrical circuits be used in your design?
How could we make the structure stronger?

Evaluating

Who is the product for?
How will it work?
What materials is it made from? Why?
How much would your product cost to make?
How sustainable are the materials?
Can it be recycled or reused?
When do you think this product was designed?

Cooking and Nutrition

Where does food come from?
What makes us choose certain ingredients?
What is the Eatwell plate?
Can you describe how to cook hygienically?
Which techniques could be used to prepare this food?



Year group	Term Two - Textiles	Term four - Structures	Term six - Cooking & Nutrition	Additional units: Mechanisms, Digital Systems & Electrical Systems
EYFS	Textiles: Bookmarks	Structures: Boats	Cooking and nutrition: Soup	Structures: Junk modelling
Year one	Textiles: Puppets	Structures: Constructing windmills	Cooking and nutrition: Fruit and vegetables	Mechanisms: Wheels and axles
Year two	Textiles: Pouches	Structures: Baby Bear's chair	Cooking and nutrition: A balanced diet	Mechanisms: Moving monsters
Year three	Textiles: Cross stitch and applique	Structures: Constructing a castle	Cooking and nutrition: Eating seasonally	Mechanical system: pneumatic toys Digital world: Wearable technology
Year four	Textiles: Fastenings	Structures: Pavilions	Cooking and nutrition: Adapting a recipe	Mechanical systems: Making a slingshot car. Digital world: Torches
Year five	Textiles: Stuffed toys	Structures: Bridges	Cooking and nutrition: What could be healthier	Mechanical systems: Making a pop up book. Digital world: Monitoring devices Electrical systems: Doodlers
Year six	Textiles: Waistcoats	Structures: Playgrounds	Cooking and nutrition: Come dine with me	Mechanical systems: Automata toys Digital world: Navigating the world Electrical systems: Steady hand game

Knowledge and Understanding

	EYFS	Y1/2	Y3/4	Y5/6
Designing <i>Second order concept questions</i>	Say who they are making things for • Talk about how their products work Use ideas from imagination or the world to make something	<ul style="list-style-type: none"> • Say who their products are for • Talk about how their products will work • Use own ideas to make something • Test out some ideas and materials with support <ul style="list-style-type: none"> • Describe what their products are for & say how their products will work • Say how they will make their products suitable for their intended users • Use simple design criteria to help develop their ideas • Use own experiences in their ideas • Draw ideas and explain why they have been chosen • Model ideas (try materials, parts and construction kits) • Make a templates and mock-ups 	Design a product, how it looks and works <ul style="list-style-type: none"> • Think through ideas with someone else • Model ideas using prototypes and pattern pieces • Draw and label designs • Use ICT to design to develop and communicate ideas <ul style="list-style-type: none"> • Share and clarify ideas through discussion • Model ideas using prototypes and pattern pieces • Use annotated sketches to develop and communicate ideas • Use ICT to design to develop and communicate their ideas.. • Design a product, how it looks and works • Think through ideas with someone else • Model ideas using prototypes and pattern pieces • Draw and label designs • Use ICT to design to develop and communicate ideas <ul style="list-style-type: none"> • Share and clarify ideas through discussion • Model ideas using prototypes and pattern pieces • Use annotated sketches to develop and communicate ideas • 	Describe the purpose of their products <ul style="list-style-type: none"> • Indicate the design features of their products that will appeal to the intended users • Explain how particular parts of their products work • Gather information about the needs and wants of particular individuals and groups • Develop a simple design specification to guide their thinking <ul style="list-style-type: none"> Use market research to inform ideas • Develop a design specification to guide their thinking. • Share and clarify ideas through discussion • Model ideas using prototypes and pattern pieces • Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • Use ICT to develop and communicate their ideas • Generate innovative ideas, drawing on research • Make design decisions, taking account of constraints such as time and resources.
Possible Questions	<i>Who are you making this for? How will this work?</i>	<i>Who are you making this for? How will this work? How will you choose the materials for your product? Who is your product for? Can you draw and label your design? Why have you chosen that idea/material? Can you make a model of your design/</i>	<i>Who are you making this for? How will this work? How will you choose the materials for your product? Who is your product for? Can you draw and annotate your design? Why have you chosen that idea/material? Can you make a prototype of your design/</i>	<i>Can you draw and annotate a design? What do you want the product to achieve? How will you break the process down? Can you make a template? What is a prototype? Who will your design appeal to?</i>
				<ul style="list-style-type: none"> • Describe the purpose of their products

Knowledge and Understanding

	EYFS	Y1/2	Y3/4	Y5/6
<p>Making</p> <p>Second order concept questions</p>	<ul style="list-style-type: none"> • Talk about how their idea will work. • Use scissors to cut straight and curved lines. • Cut around marked lines with increased accuracy • Colour finished work 	<p>Explain how they will make their product.</p> <p>Use scissors safely to cut around a marked line</p> <ul style="list-style-type: none"> • Make a product which moves. • Colour finished product. <p>Choose tools and materials and explain why they have been chosen.</p> <p>Make a simple plan before making.</p> <ul style="list-style-type: none"> • Join and combine materials different ways • Choose appropriate resources and tools safely • Measure, mark out, cut and shape materials • Use finishing techniques including those from art and design 	<p>Select tools and equipment suitable for the task</p> <ul style="list-style-type: none"> • Follow a step by step plan, choosing the right materials and tools <ul style="list-style-type: none"> • Explain their choice of tools and equipment in relation to the skills and techniques they will be using and the task • Choose materials and components according to how they work and look <ul style="list-style-type: none"> • Order the main stages of making <ul style="list-style-type: none"> • Select tools and equipment suitable for the task • Explain their choice of tools and equipment in relation to the skills and techniques they will be using • Select materials and components suitable for the task 	<p><i>Who are you making this for? What tools will you need?</i></p> <p><i>How will your choose the materials? Why have you chosen that tool? Will that improve the look of your product? Can you order the different stages of making your product?</i></p> <p><i>Can you measure accurately?</i></p> <p><i>How can this be carried out safely?</i></p> <p><i>Is there only one way to assemble this?</i></p>
<p>Possible Questions</p>	<p><i>Who are you making this for?</i></p> <p><i>How will this work?</i></p>	<p><i>Who are you making this for? What tools will you need?</i></p> <p><i>How will your choose the materials?</i></p> <p><i>Can you measure accurately?</i></p> <p><i>How can this be carried out safely?</i></p> <p><i>Is there only one way to assemble this?</i></p>	<p><i>Who are you making this for? What tools will you need?</i></p> <p><i>How will your choose the materials? Why have you chosen that tool? Will that improve the look of your product? Can you order the different stages of making your product?</i></p> <p><i>Can you measure accurately?</i></p> <p><i>How can this be carried out safely?</i></p> <p><i>Is there only one way to assemble this?</i></p>	<p><i>Who are you making this for? What tools will you need?</i></p> <p><i>How will your choose the materials? Why have you chosen that tool? Will that improve the look of your product? Can you order the different stages of making your product?</i></p> <p><i>Can you measure accurately?</i></p> <p><i>How can this be carried out safely?</i></p> <p><i>Is there only one way to assemble this?</i></p>

	EYFS	Y1/2	Y3/4	Y5/6
<p>Technical knowledge</p>	<ul style="list-style-type: none"> • Explore what materials are like.. • Explore building structures from construction materials (block 	<ul style="list-style-type: none"> • Know simple properties of materials <ul style="list-style-type: none"> • Know how to make part of a model move (slider, wheels) • Know characteristics of materials and components • Know that a 3-D textiles product can be assembled from two identical fabric shapes.. • Know how to make structures stronger, stiffer and more stable • Know how to make a model move using simple mechanisms such as levers, sliders, wheels and axles • Know about the movement of simple mechanisms such as levers, sliders, wheels and axles. 	<p>Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products</p> <p>Know that materials have both functional properties and aesthetic qualities</p> <ul style="list-style-type: none"> • Know that a single fabric shape can be used to make a 3D textiles project. • Know how to make strong, stiff shell structures. • Know how mechanical systems such as levers and linkages create movement • Use learning from science and maths helps design and make products that work. • Know materials can be combined and mixed to create more useful characteristics. • Know how simple electrical circuits and components can be used to create functional products. 	<ul style="list-style-type: none"> • Apply learning from science and maths to help design and make products that work • Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products <ul style="list-style-type: none"> • Know that materials have both functional properties and aesthetic qualities • Know that materials can be combined and mixed to create more useful characteristics. • Know that a 3D textiles product can be made from a combination of fabric shapes. <ul style="list-style-type: none"> • Know how to reinforce and strengthen a 3D framework (eg triangulation, Jinx Joints, Cross beams) • Know how mechanical systems such as cams or pulleys or gears create movement • Know that mechanical and electrical systems have an input, process and output • Know how to program a computer to monitor changes in the environment and control their products.
	<p><i>How have you made your structure strong?</i></p> <p><i>Why did you choose these materials?</i></p>	<p><i>Describe a mechanism?</i></p> <p><i>Which mechanical systems create movement?</i></p> <p><i>How does it work?</i></p> <p><i>How could we make the structure stronger?</i></p>	<p><i>Describe a mechanism?</i></p> <p><i>Which mechanical systems create movement?</i></p> <p><i>How does it work?</i></p> <p><i>How can simple electrical circuits be used in your design?</i></p> <p><i>How could we make the structure stronger?</i></p>	<p><i>Describe a mechanism?</i></p> <p><i>Which mechanical systems create movement?</i></p> <p><i>How does it work?</i></p> <p><i>How can simple electrical circuits be used in your design?</i></p> <p><i>How could we make the structure stronger?</i></p>

Knowledge and Understanding

	EYFS	Y1/2	Y3/4	Y5/6
<p>Evaluating</p> <p><i>Second order concept questions</i></p>	<ul style="list-style-type: none"> • Talk about their design ideas and what they are making • Say if their idea worked. • Talk about how toys work and what different parts do. 	<ul style="list-style-type: none"> • Talk about their design ideas and what they are making • Say if their idea worked • Make simple judgements about their products and ideas against design criteria 	<ul style="list-style-type: none"> • Show how their final product meets the design criteria • Explain what went well and what they would change in their final design. • Explain what went well and what they would change • Use design criteria as they design and make • Use their design criteria to evaluate their completed products • Explain how they improved their original design. 	<ul style="list-style-type: none"> • Identify the strengths and areas for development in their ideas and products • Consider the views of others, including intended users • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Evaluate their ideas and products against their original design specification
Possible Questions		<ul style="list-style-type: none"> • Who are they for? • What are they for? • How does it work? • How and where are they used • What materials is it made from? • What do you like and dislike about it? 	<ul style="list-style-type: none"> • How well have products been designed and made? • Why have those materials been chosen? • What methods of construction have been used? • How well do they work and achieve their purposes and meet user needs and wants 	<p>Who is the product for?</p> <p>How will it work?</p> <p>What materials is it made from? Why?</p> <p>How much would your product cost to make?</p> <p>How sustainable are the materials?</p> <p>Can it be recycled or reused?</p> <p>When do you think this product was designed?</p>
Food and Nutrition				<ul style="list-style-type: none"> • Describe the purpose of their products
<i>Second order concept questions</i>		<p>Prepare simple dishes safely and hygienically without heat</p> <ul style="list-style-type: none"> • Use techniques such as cutting, peeling and grating. 	<p>Prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source</p> <ul style="list-style-type: none"> • How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 	<p>How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source</p> <ul style="list-style-type: none"> • How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Adapt recipes to change the appearance, taste, texture and aroma
		<p>Where does food come from?</p> <p>What makes us choose certain ingredients?</p> <p>What is the Eatwell plate?</p> <p>Can you describe how to cook hygienically?</p> <p>Which techniques could be used to prepare this food?</p>	<p>Where does food come from?</p> <p>What makes us choose certain ingredients?</p> <p>What is the Eatwell plate?</p> <p>Can you describe how to cook hygienically?</p> <p>Which techniques could be used to prepare this food?</p>	<p>Where does food come from?</p> <p>What makes us choose certain ingredients?</p> <p>What is the Eatwell plate?</p> <p>Can you describe how to cook hygienically?</p> <p>Which techniques could be used to prepare this food?</p>