Concepts and Content Organiser- Design and Technology

	KS1	*Designing*	*Making*	*Evaluating*	*Technical Knowledge*
Y1/2	**Textiles- templates and joining techniques**	To generate ideas based on a simple design brief To develop ideas through talking, drawing, templates, prototypes and ICT.	To select from and use a range of tools and equipment To select from and use textiles according to their characteristics	To explore a range of existing textile products To evaluate their ideas against the original design brief	To understand how simple 3D textile products are made To understand how to join fabrics using different techniques (e.g. running stitch, glue, over stitch) To explore different finishing techniques (e.g. painting, fabric crayons, stitching, sequins) To use relevant technical vocabulary
	Mechanisms- sliders and levers	To generate ideas based on a simple design brief To develop ideas through drawings and prototypes	To plan by suggesting what to do next To select and use tools and explain their choices To use simple finishing techniques	To explore a range of existing products that use simple sliders and levers To evaluate their product against a design brief	To explore and use sliders and levers To understand that different mechanisms produce different movements To use relevant technical vocabulary
	Structures- free standing structures	To generate ideas based on a simple design brief To develop ideas through drawing, talking and prototypes	To plan by suggesting what to do next To select and use tools and explain their choices To select new and reclaimed materials to build a structure To use simple finishing techniques	To explore a range of existing freestanding structures in school and the local environment To evaluate their product against a design brief	To understand how to make freestanding structures stronger, stiffer and more stable To use relevant technical vocabulary
	Mechanisms- wheels and axles	To generate ideas based on a simple design brief To develop ideas through drawing, talking and prototypes	To select from and use a range of tools and equipment To select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics	To explore a range of existing products that use wheels and axles To evaluate their product against a design brief	To explore and use wheels, axles and axle holders To distinguish between fixed and freely moving axles To use relevant technical vocabulary
	Food Technology- Preparing fruit and vegetables	To design a product based on a simple design brief To generate ideas through investigating a variety of fruit and vegetables To communicate ideas through talk and drawings	To use simple utensil and equipment safely (e.g. to peel, cut, slice, squeeze and chop) To select from a range of fruit and vegetables based on their properties to create a finished product	To taste and evaluate a range of fruit and vegetables based on the intended user's likes and dislikes To evaluate ideas and finished products against a design brief	To understand where a range of fruit and vegetables come from To understand the basic principles of a healthy and varied diet To use relevant technical and sensory vocabulary

	KS2	Designing	Making	Evaluating	Technical Knowledge
Y3/4	**Textiles- from 2D shape to 3D product**	To generate ideas through discussion and a design brief for a specific purpose and user To use annotated sketches and prototypes to develop ideas.	To plan the main stages of making To select and use a range of appropriate tools with some accuracy To select fabrics and fastenings according to their functional and aesthetic qualities	To investigate and evaluate existing products To test their product against the original design brief To take other people's views into account To understand how a key individual/event has influenced the development of their chosen product	To know how to strengthen, stiffen and reinforce fabrics To know how to securely join two pieces of fabric together To understand the need for pattern and seam allowances To use appropriate technical vocabulary
	Food Technology- Healthy and varied diet	To generate ideas from a design brief To use annotated sketches to develop ideas	To plan the stages of a recipe To select and use appropriate utensils and equipment To select from a range of ingredients	To evaluate a variety of ingredients and products. To evaluate ongoing work and the finished product against the design brief	To use equipment and utensils appropriately to prepare food To know about a range of fresh and processed ingredients To use appropriate technical vocabulary
	Mechanical systems- levers and linkages	To generate ideas from a design brief To use sketches and prototypes to develop ideas	To order stages of making To select and use appropriate tools with accuracy	To investigate and evaluate existing products To evaluate their product against the design brief	To understand lever and linkage mechanisms To distinguish between fixed and loose pivots To use appropriate technical vocabulary
	Structures- shell structures	To generate ideas from a design brief collaboratively, focussing on a specific user and purpose To use annotated sketches and prototypes to develop ideas	To order stages of making To select and use a range of appropriate tools with some accuracy To explain their choice of materials according to their properties To use suitable finishing techniques	To evaluate a range of existing products To test and evaluate their own products against the design brief	To develop knowledge of how to construct strong and stiff shell structures To develop their understanding of nets of 3D shapes To use appropriate relevant technical vocabulary
	Electrical systems- simple circuits and switches	To generate ideas from a design brief, focussing on a specific user and purpose To use annotated sketches and diagrams to develop ideas.	To order stages of making To select and use appropriate tools with accuracy To select from and use materials according to their functional and aesthetic qualities	To investigate a range of existing battery-powered products To evaluate their product against the design brief To identify strengths and areas for improvement in their work	To understand and use electrical systems in their products (e.g. switches, bulbs and buzzers) To apply their understanding of computing to program and control their products To use appropriate relevant technical vocabulary
	Electrical systems- simple programming and control	To generate ideas from a design brief, focussing on a specific user and purpose To use annotated sketches and diagrams to develop ideas.	To order stages of making To select and use appropriate tools with accuracy To connect electrical components in a series circuit to achieve a functioning outcome Program using a control or interface box to enhance how the product works	To investigate a range of existing battery-powered products To evaluate their product against the design brief To identify strengths and areas for improvement in their work	To apply their understanding of computing to program and control their products To use appropriate relevant technical vocabulary

Y5/6	**Mechanical systems- pulleys or gears**	To generate ideas by carrying out research, including surveys, interviews and web-based resources To develop a simple design brief To develop and communicate ideas through talking, prototypes and annotated sketches.	To formulate detailed step-by-step plans To select and use appropriate tools and materials accurately	To compare the finished product to the original design brief To test products with the intended user To consider the views of others to improve their work To investigate relevant manufacturing and engineering companties	To understand that mechanical and electrical systems have an input, process and output. To understand how gears and pulleys can be used to speed up, slow down or change the direction of movement To use relevant technical vocabulary
	Textiles- using computer aided design	To generate ideas by carrying out research, including surveys and interviews To develop and communicate ideas through talking, drawing, templates and prototypes using CAD Design functional and appealing products for an intended user that are based on a design brief	To produce detailed lists of equipment and fabrics To formulate detailed step-by-step plans To select and use a range of tools and equipment, including CAD, to make products that are well finished	To investigate and analyse a range of textile products To compare the finished product to the original design brief To test products with the intended user To consider the views of others to improve their work	To understand that a 3D textile product can be made from a combination of accurately made pieces and shapes To understand that fabrics can be strengthened, stiffened and reinforced
	Structures- frame structures	To generate ideas by carrying out research, including surveys, interviews and web-based resources To develop and communicate ideas through talking, prototypes and annotated sketches.	To formulate detailed step-by-step plans To select and use appropriate tools and materials accurately To use suitable finishing and decorative techniques	To investigate and evaluate a range of existing frame structures To evaluate the finished product against the original design brief To test products To research key events and individuals relevant to frame structures	To understand how to strengthen, stiffen and reinforce 3D frameworks To use relevant technical vocabulary
	Textiles- combining different fabric shapes	To generate ideas by carrying out research, including surveys and questionnaires To develop and communicate ideas through talking, drawing, templates and prototypes To design functional and appealing products for the intended user	To produce detailed lists of equipment and fabrics To formulate detailed step-by-step plans To select and use a range of tools and equipment to make products that are well finished	To investigate and analyse a range of textile products To compare the finished product to the original design brief To test products with the intended user To consider the views of others to improve their work	To understand that a 3D textile product can be made from a combination of accurately made pieces and shapes To understand that fabrics can be strengthened, stiffened and reinforced
	Food technology- celebrating culture and seasonality	To develop a design brief through research and discussion with peers To explore a range of ideas and develop a final product linked to the design brief To use sketches, words and prototypes to develop and communicate ideas	To write a step-by-step recipe, including a list of ingredients and utensils To select and use appropriate utensils and equipment accurately to measure and combine ingredients To make and present the food product for the intended user and purpose	To evaluate a variety of products and ingredients To evaluate the final product, with reference to the design brief, including taking into account the views of others To understand how key chefs have influenced eating habits	To know how to use utensils and equipment, including heat sources, to prepare and cook food To understand the seasonality of food products To use relevant technical vocabulary
	Electronic systems- more complex switches and circuits	To develop a design brief through research and discussion with peers To develop and communicate ideas through annotated sketches and circuit diagrams.	To formulate detailed step-by-step plans To select and use appropriate materials accurately and connect electrical components to create a reliable product To create a computer control program to enable the product to respond automatically to changes in the environment	To evaluate and modify the product to match the original design brief To test the system to demonstrate its effectiveness for the intended user and purpose To investigate relevant famous inventors	To understand and use electrical systems in their products To apply their understanding of computing to program, monitor and control their products To use relevant technical vocabulary

Assessment framework

	Acquire	Apply (challenge)
By the end of Y2, children can:	**Designing** • To generate ideas based on a simple design brief • To develop and communicate ideas through talking, drawing, templates, prototypes, ICT	**Designing** • Evaluate a design brief and make adjustments to my plan. • Compare and contrast ideas with others and use these to improve my own design. • To explain my design to others giving reasons for my choices.
	Making • To plan by suggesting what to do next • To select and use tools and explain their choices • To select and use materials (inc. textiles and food ingredients) according to their characteristics • To use simple finishing techniques	**Making** • To understand when adjustments need to be made to my plan whilst making my design. • To understand that a range of materials may work well and to explain my choices.
	Evaluating • To explore a range of existing products • To evaluate their product against a simple design brief	**Evaluating** • To modify my design based on evaluation and testing.
	Technical Knowledge • To use relevant technical vocabulary • To understand how simple 3D textile products are made • To understand how to join fabrics using different techniques (e.g. running stitch, glue, over stitch) • To explore different finishing techniques (e.g. painting, fabric crayons, stitching, sequins) • To explore and use sliders and levers • To understand that different mechanisms produce different movements • To understand how to make freestanding structures stronger, stiffer and more stable • To explore and use wheels, axles and axle holders • To distinguish between fixed and freely moving axles • To understand where a range of fruit and vegetables come from • To understand the basic principles of a healthy and varied diet	**Technical Knowledge** • To use scientific knowledge to inform technical knowledge e.g. using the science learnt in materials topic to inform my design.

By the end of Y4, children can:	**Designing** • To generate ideas through discussion for a design brief with a specific purpose and user • To use annotated sketches, prototypes and diagrams to develop ideas	**Designing** • To peer-review a design brief and make changes based on peer feedback. • To explain designs to others, giving reasons for decisions
	Making • To plan the main stages of making • To select and use a range of appropriate tools with some accuracy • To select appropriate materials based on their functional and aesthetic properties • To use suitable finishing techniques • To use a control or interface box to enhance how a product works	**Making** • To understand when adjustments need to be made to my plan whilst making my design. • To explain why I have chosen certain tools and materials, either verbal or in writing. • To use tools and materials with increasing accuracy to make well-finished products.
	Evaluating • To investigate and evaluate a range of existing products • To evaluate their product against the original design brief • To take other people's views into account • To identify strengths and areas for development in their work • To understand how the development of a product has been influenced by a key individual or event	**Evaluating** • To explain why and how improvements have been made after an initial evaluation. • To respond to the input of others when developing/improving work.
	Technical Knowledge • To use appropriate technical vocabulary • To know how to strengthen, stiffen and reinforce fabrics • To know how to securely join two pieces of fabric together • To understand the need for pattern and seam allowances • To use equipment and utensils appropriately to prepare food • To know about a range of fresh and processed ingredients • To understand lever and linkage mechanisms • To distinguish between fixed and loose pivots • To develop knowledge of how to construct strong and stiff shell structures • To develop their understanding of nets of 3D shapes • To understand and use electrical systems in their products (e.g. switches, bulbs and buzzers) • To apply their understanding of computing to program and control their products	**Technical Knowledge** • To explain why certain techniques have to be used e.g. why it is important to strengthen, stiffen and reinforce fabrics. • To name different basic methods of cooking food and state which should be used for each food e.g. baking a cake, frying an egg (knowing that putting cake batter in a frying pan wouldn't give the desired effect, don't necessarily need to know why). • use an increasingly technical vocabulary when talking or writing about what they might change as their work develops.

By the end of Y6, children can:	**Designing** • To generate ideas by carrying out research, including surveys, interviews and web-based resources • To develop a simple design brief • To develop and communicate ideas through talking, sketches, templates prototypes and annotated sketches.	**Designing** • Make changes to their plan based on self-evaluation or peer feedback. • Demonstrate a secure understanding of who they are designing and making for, the purpose of the product and how it would work, and the specific criteria their product must meet to be successful • Communicate their innovative ideas and plans clearly and accurately
	Making • To formulate detailed step-by-step plans • To select and use appropriate tools and materials accurately • To use suitable finishing and decorative techniques	**Making** • develop technical competence, applying measurement and using tools and components with increasing accuracy to safely make well-finished products
	Evaluating • To investigate and analyse a range of suitable products • To compare the finished product to the original design brief • To test products with the intended user • To consider the views of others to improve their work • To research key events and individuals relevant to the subject area	**Evaluating** • modify their designs and prototypes in light of their testing and evaluation
	Technical Knowledge • To use relevant technical vocabulary • To understand that mechanical and electrical systems have an input, process and output. • To understand how gears and pulleys can be used to speed up, slow down or change the direction of movement • To understand that a 3D textile product can be made from a combination of accurately made pieces and shapes • To understand that fabrics can be strengthened, stiffened and reinforced • To understand how to strengthen, stiffen and reinforce 3D frameworks • To understand that a 3D textile product can be made from a combination of accurately made pieces and shapes • To understand that fabrics can be strengthened, stiffened and reinforced • To know how to use utensils and equipment, including heat sources, to prepare and cook food • To understand the seasonality of food products • To understand and use electrical systems in their products • To apply their understanding of computing to program, monitor and control their products	**Technical Knowledge** • draw effectively upon their scientific understanding and their knowledge of mechanisms, structures, forces or the effect of heat to create and explain how their products work • use an increasingly technical vocabulary when talking or writing about what they might change as their work develops.