BIG IDEAS	Strand	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design		explore how things work		• Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment. • State what products they are designing and making • Say whether their products are for themselves or other users • 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		• Gather information about the needs and wants of particular individuals and groups • Develop their own design criteria and use these to inform their ideas		• Carry out research, using surveys, interviews, questionnaires and web-based resources • Identify the needs, wants, preferences and values of particular individuals and groups • Develop a simple design specification to guide their thinking	
						• Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and wider environment • Describe the purpose of their products • Indicate the design features of their products that will appeal to intended users • Explain how particular parts of their products work			
Design	***Planning***	explore different materials freely in order to develop ideas about how to use them and what to make develop their own ideas and then decide which	return to and build upon their previous learning, refining ideas experiment with colour, design, texture, form and function	• Plan by suggesting what to do next • Select from a range of tools and equipment, explaining their choices • Select from a range of materials and components according to their characteristics		• Order the main stages of making		• Produce appropriate lists of tools, equipment and materials that they need • Formulate step-by-step plans as a guide to making	
						• 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 • Explain their choice of materials and components according to functional properties and aesthetic qualities			

			materials to use				
	Making	***Practical skills and techniques***	select and use activities and resources to achieve a goal make imaginative and complex 'small worlds' create closed shapes with continuous lines, begin to represent objects use one-handed tools e.g. scissors	develop their small motor skills to use a range of tools explore, use and refine a variety of artistic effects to express ideas and feelings create collaboratively, sharing ideas and resources ,	• Follow procedures for safety and hygiene • Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • Measure, mark out, cut and shape materials and components • Assemble, join and combine materials and components • Use finishing techniques, including those from art and design	• Measure, mark out, cut and shape materials and components with some accuracy • Assembly, join and combine materials and components with some accuracy • Apply a range of finishing techniques, including those from art and design, with some accuracy	• Accurately measure, mark out, cut and shape materials and components • Accurately assemble, join and combine materials and components • Accurately apply a range of finishing techniques, including those from art and design • Use techniques that involve a number of steps • Demonstrate resourcefulness when tackling practical problems
						• Follow procedures for safety and hygiene • Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components	
	Cooking and nutrition	***Where food comes from***	They may engage in activities like planting seeds or observing the life cycle of plants (e.g., growing vegetables), linking food to its natural sources.	Children learn more about the journey of food, from farm to table, by exploring different types of food (e.g., fruits, vegetables, grains, and meats) and	• That all food comes from plants or animals • That food has to be farmed, grown elsewhere (e.g home) or caught	• That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world	• That seasons may affect the food available • How food is processed into ingredients that can be eaten or used in cooking

				how they are produced. They may engage in discussions about animals and plants that provide the foods they eat.			
		Food, cooking and nutrition	Beginning to understand the difference between healthy and unhealthy foods. Making healthy choices about food, drink Encouraged to participate in food preparation activities, such as making simple snacks.	Developing independence in making healthy choices and serving themselves.	• How to name and sort foods into the five groups in The Eatwell plate • That everyone should eat at least 5 portions of fruit and vegetables every day • How to prepare simple dishes safely and hygienically, without using a heat source • How to use techniques such as cutting, peeling and grating	• That a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate • That to be active and healthy, food and drink are needed to provide energy for the body	• That recipes can be adapted to change the appearance, taste, texture and aroma • That different food and drink contain different substances – nutrients, water and fibre – that are needed for health
	Evaluation	***Own ideas and products***		share their creation, explaining the process they have used	• Talk about their design ideas and what they are making • Make simple judgements about their products and ideas against design criteria • Suggest how their products could be improved	• *Identify the strengths and areas for development in their ideas and products* • *Consider the views of others, including intended users, to improve their work*	• *Identify the strengths and areas for development in their ideas and products* • *Consider the views of others, including intended users, to improve their work* • Critically evaluate the quality of the

						● Refer to their design criteria as they design and make ● Use their design criteria to evaluate their completed products	design, manufacture and fitness for purpose of their products as they design and make ● Evaluate their ideas and products against their original design specification
		Existing products			● What products are ● Who products are for ● What products are for ● How products work ● How products are used ● Where products might be used ● What materials products are made from ● What they like and dislike about products	● *How well products have been designed* ● *How well products have been made* ● *Why materials have been chosen* ● *What methods of construction have been used* ● *How well products work* ● *How well products achieve their purposes* ● *How well products meet user needs and wants* ● Who designed and made the products ● Where products were designed and made ● When products were designed and made	● *How well products have been designed* ● *How well products have been made* ● *Why materials have been chosen* ● *What methods of construction have been used* ● *How well products work* ● *How well products achieve their purposes* ● *How well products meet user needs and wants* ● How much products cost to make ● How innovative products are
	Technical Knowledge				● About the simple working characteristics of materials and components ● About the movement of simple mechanisms such as levers, sliders, wheels and axles	● How to use learning from science to help design and make products that work ● How to use learning from mathematics to help design and make products that work ● That materials have both functional properties and aesthetic qualities ● That materials can be combined and mixed to create more useful characteristics	

					● How freestanding structures can be made stronger, stiffer and more stable ● That a 3D textiles product can be assembled from two identical fabric shapes ● That food ingredients should be combined according to their sensory characteristics ● The correct technical vocabulary for the products they are undertaking	● That mechanical and electrical systems have an input, process and output ● The correct technical vocabulary for the projects they are undertaking	
						● How mechanical systems such as levers and linkages or pneumatic systems create movement ● How simple electrical circuits and components can be used to create functional products ● How to program a computer to control their products ● How to make strong, stiff shell structures ● That a single fabric shape can be used to make a 3D textiles product ● That food ingredients can be fresh, pre-cooked and processed	● How mechanical systems such as cams or pulleys or gears create movement ● How more complex electrical circuits and components can be used to create functional products ● How to program a computer to monitor changes in the environment and control their products ● How to reinforce and strengthen a 3D framework ● That a 3D textiles product can be made from a combination of fabric shapes ● That a recipe can be adapted by adding or substituting one or more ingredients
	Diversity		● Begin to understand that people make things and meet a range of designers from around the world		● Understand that people make things and meet a range of designers from around the world, from a range of backgrounds from around the world.	● About inventors, designers, engineers, chiefs and manufacturers who have developed ground-breaking products (including people from a range of backgrounds)	

	Environment and Sustainability		• Begin to explore natural materials and their properties. • Understand basic concepts of waste, such as reusing and recycling simple materials in play. • Develop curiosity about the environment and how materials are sourced (e.g., wood from trees). • Participate in simple discussions about looking after the world.	• Recognise the difference between natural and man-made materials. • Learn about basic recycling and how different materials can be reused. • Understand the importance of looking after resources and avoiding waste. • Explore sustainable materials in simple design projects (e.g., using recycled cardboard to create models). • Begin to discuss the impact of littering and pollution on the environment.	• Identify different types of sustainable and non-sustainable materials. • Explore how products are made and their impact on the environment. • Understand the concept of the 3Rs (Reduce, Reuse, Recycle) and apply them in projects.	• How sustainable the materials in products are • What impact products have beyond their intended purposes • Discuss innovations in sustainability, such as biodegradable plastics and renewable energy in design.

Year	Term 2	Term 4	Term 6
N			
R	**Once upon a time**	**Healthy and Healthy**	**Home and Away**
	Introduce bridge building and junk modelling. Exploring a range of different materials, using and developing cutting skills.	Fruit and vegetable tasting. Asda visit- where food comes from.	Farm visit- where food comes from, farm to table.
1	**Sliders and Levers**	**Freestanding Structures**	**Preparing Fruit and Vegetables**
	Explore and evaluate a collection of books. Demonstrate and replicate sliders and levers. Design and make a traction man based slider and lever character. Evaluate.	Investigate a range of bridge structures. 3 main bridge types- beam, truss, suspension . Explore and make different joining techniques. Design and make a bridge and evaluate.	Fruit and Vegetable tasting. Design and make a smoothie and evaluate.
2	**Wheels and Axles**	**Shell Structures**	**Templates and Joining Textiles**
	Investigate a variety of wheeled products and name key parts. Explore the difference between fixed and free axles. Design and make a fire engine and evaluate.	Explore a range of shell structures. Investigate and make shell structure nets. Design and make a box to take to the moon and evaluate.	Investigate a range of glove puppets. Explore joining techniques. Design and make a glove puppet animal and evaluate.
3	**Shell Structures using Computers**	**2D shape to 3D product**	**Food- Healthy and Varied**
	Investigate a range of packaging . Create a net on a computer. Design and make a 'My favourite things' box. Evaluate.	Investigate a range of bags and sewing techniques. Design and make a bag suitable for a book and evaluate.	Investigate and try a range of pizzas. Identify ingredients and skills used to make a pizza. Using equipment safely. Design and make a healthy pitta pizza and evaluate.
4	**Levers and Linkages**	**Healthy and Varied Diet**	**Simple circuits and switches. Simple programming and control**
	Investigate a range of levers and linkages. Make a range of levers and linkages. Design and make a christmas card and evaluate.	Investigate and try a range of crumbles/ fruit. Identify ingredients and skills used to make a crumble. Using equipment safely. Design and make a healthy crumble and evaluate. *(or Pitta Pizzas)*	Investigate a range of torches and switches. Make switches (paper clips). Design and make a small torch to use to read in bed. Evaluate.
5	**Pulleys**	**Frame Structure**	**Combining different fabric shapes**
	Investigate and analyse toys that incorporate pulleys or gears. Use construction to investigate a range of pulleys and build a working circuit. Design and make a toy bus and evaluate.	Explore a range of bird houses. Exploring wooden joining techniques. Design and make a bird house and evaluate.	Investigate a range of phone cases and carriers. Investigate a range of stitch types (attaching sequins, buttons, beads etc). Design and make phone cases and evaluate.
6	**Cams**	**Celebrating Culture and Seasonality Food**	**Using CAD in Textiles. Monitoring and Control**

	Explore a range of moving toys. Explore how to create cams. Design and make a toy for a child in reception involving cams. Evaluate.	Investigate and taste a range of breads. Explore the use of yeast. Make a simple bread. Design and make a celebration bread. Evaluate.	Investigate a range of pencil cases, explore shapes. Design and make a pencil case, creating the design on the computer. Evaluate or. Explore a range of computer controlled products. Use a model circuit and microbit to design and make a security light system for the MUGA to use when dark.