Imagine, Believe, Achieve

Springdale First School
DT Concept Map

Concepts – NC end points	Components	Foundation	Year 1	Year 2	Year 3	Year 4
		Mechanisms/food	Mechanisms/food/structures	Mechanisms/structures/textiles	Mechanisms/textiles/food	Mechanisms/structures/electrical.
	Recall & Retrieve	What do you already know? Whole class brain dump.	What do you already know? Brain dump.	What do you already know? Cops & Robbers.	What do you already know? Quiz, trade, trade.	What do you already know? Retrieval relay race.
Designers/Inventors **KS1** - Research person or product researching origins and characteristics. **KS2** - Understands how key events and individuals in design and technology have helped shape the world.	Person/product - knowledge	Research; **Mechanisms** – Sliders – create a simple slider that moves from left to right. Pop up books. **Food** – Dr Ranj – Get Well Soon. Research into what foods are healthy to eat and why and the importance of healthy eating. Fruit salad. Enquiry Questions - What can you find out about…?	Research; **Mechanisms -** Research different types of levers and sliders. Moving pictures. **Food** – research Jamie Oliver – what has he done for schools & healthy eating? Healthy picnic. **Structures** – chairs – research chairs in the 1600 – wooden made. Chair to hold a teddy. Enquiry Questions - What can you find out about…? Discuss how this can help to inform design and use of product. Record ideas as a class.	Research; **Mechanisms** – Research different wheels and axles. Cars. **Structures** – investigate different types of bridges - 1779 The Iron Bridge was built by Thomas Farnolls Pritchard structures. **Textiles** – cotton (1700's) – New World fabric. Templates and joining techniques to make a puppet. Enquiry Questions - What can you find out about…? Discuss how this can help to inform design and use of product. Record ideas as class.	Research; **Mechanisms** – Research different linkages & levers. Moving books. **Textiles** – Research drawstring bags 1800's – 3d shapes – joining & using patterns. **Food** – Deliciously Ella – research healthy snack bars. Enquiry Questions - What can you find out about…? Discuss how this can help to inform design and use of product. Record ideas and use to inform final product design.	Research; **Mechanisms** –linkages & pulleys. Jumping puppet. **Structures** – Richard Laramy – invented cool box. Research shell structures. **Electrical** – John Spinello (1964 Operation)/Hasbro – electrical games with buzz/light. Enquiry Questions - What can you find out about…? Discuss how this can help to inform design and use of product. Record ideas and use to inform final product design.

		Discuss how this can help to inform design and use of product. Record ideas as a class.				
	Characteristics	*Investigate the product.* Mechanisms – pop up books and sliding pictures. Food – fruit tasting.	*Investigate the purpose of the product.* Mechanisms – moving pictures and pop up books – how do they work? Food – taste different foods – what words well together? Why? Structures – what makes a chair strong – look at how it is made & why.	*Investigate the purpose of the product and the impact it has had on our lives.* Mechanisms – cars – wheels – what would be do without them> what has wheels… Structures – why do we need bridges? How do they help us today? Textiles – how and why do we have puppets?	*Investigate the purpose of the product.* *Research what impact has this had on our lives.* Mechanisms – what uses linkages & levers? How can you use them now? Textiles – how does the drawstring on a bag work? What is a pattern – why were they used? Food – What does DE do? What would a snack bar need to be healthy?	*Investigate the purpose of the product.* *Research what impact has this had on our lives.* *Use this to inform design ideas.* Mechanisms – what is a jumping puppet? Look at the movement & how it happens. Structures – why were cool boxes invented? What is their use today? Electrical – look into hoe the games work and why they might have been designed.
	Techniques	Research what might be used to make a product and some techniques that might be used.	Research the techniques that the designer may have used to make product – discuss what can be used to make product.	Research the techniques that the designer may have used to make product – discuss what can be used to make product. Use technical vocabulary related to product.	Research the techniques that the designer may have used to make product – record techniques and discuss how this will influence making product.	Research the techniques that the designer may have used to make product – record techniques and explain how this will influence making product. Use technical vocabulary related to product.

					Use technical vocabulary related to product.	
Design **ELG – C & L** Make comments about what they have heard and ask questions to clarify their understanding. Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. Express their ideas and feelings about their experiences using full sentences. **KS1 -** Design purposeful, functional, appealing products for themselves and other users based on design criteria. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups, where appropriate – information technology. **KS2** – Use research and develop design criteria to inform the design of innovative,	**Recall & Retrieve**	Discuss product – what do you already know? Brain dump.	Discuss product – what do you already know? Brain dump.	Discuss product – what do you already know? Cops & Robbers.	Discuss product – what do you already know? Quiz, trade, trade.	Discuss product – what do you already know? Retrieval relay race.
	Research	Use product knowledge to research to understand that products are designed for users.	Use product knowledge to research to understand that products are designed for users based on criteria.	To know what design criteria is and how it can be used to create a product. To know the purpose of their product.	Use generated ideas, based on research, to develop design criteria for an appealing product for a particular use or individual.	Generate innovative ideas through research to generate a design criteria for a functional and purposeful product.
	Talking	Generate ideas through talk.	Generate initial ideas through talk.	Generate and develop initial ideas about specific product and use through talk.	Generate and clarify considered ideas through talk with peers and adults.	Generate innovative and considered ideas through discussion with peers and adults.
	Experimenting Written/drawn ideas	Investigate design ideas through experimenting with product design.	Investigate design ideas through experimenting with product design. Explore ideas using drawings and mock-ups.	Investigate design ideas through experimenting with product design. Explore ideas using drawings and mock-ups. Suggest steps in the creation phase.	Investigate design ideas through experimenting with product design. Explore ideas using annotated sketches and prototypes. Plan and suggest steps in the creation stage.	Investigate design ideas through experimenting with product design. Explore ideas using annotated sketches, prototypes, and cross-sectional diagrams. Begin considering resources. Plan creation steps.

functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Be able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.						
Make **ELG – PSED** Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Understand the importance of healthy food choices. **EAD-** Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.	Mechanisms	Sliders. **Slider** - a rigid bar resting on a pivot, used to move a heavy or firmly fixed load with one end when pressure is applied to the other. Select and use tools to cut and shape paper.	Sliders and levers. Understand the steps to make a moving part. Revisit - **Slider** - a rigid bar resting on a pivot, used to move a heavy or firmly fixed load with one end when pressure is applied to the other. **Lever** - a stiff bar which moves around a pivot. The pivot can be loose or fixed. It can be moved horizontally or vertically.	Wheels and axels. **Wheel** and **axle** consists of a round disk, known as a wheel, with a rod through the centre of it, known as the axle. To know what components are needed to construct a moving vehicle (wheels, axles, chassis) and use this to select materials according to which are most suitable. Use a range of tools and equipment to perform	Levers and linkages. **Linkage** - a mechanism made by connecting together levers around a pivot to produce the type of movement required. To know that systems have an input, process and an output. In a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls.	Gears, pulleys, cams. **Gears** - toothed wheels that lock together and turn one another – used to change direction of movement. **Pulleys** - two wheels that do not lock together - the wheels are joined by a belt. Pulleys can be used to change the speed, direction or force of a movement. Know how to measure and cut different materials, including dowel, accurately and safely.

Make use of props and materials when role playing characters in narratives and stories. **PD** - Use a range of small tools, including scissors, paintbrushes and cutlery. **KS1** - Select from and use a range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing). Select from and use a wide range of material and components, including construction materials, textiles and ingredients, according to their characteristics. Build structures and explore and use mechanisms (levers, sliders, wheels, axels). **KS2** - Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping,			Select and use tools, explaining their choices, to cut, shape and join paper and card which allow movement.	practical tasks, such as cutting and joining to allow movement and finishing. Select from and using a range of materials and components, such as paper, card, plastic and wood, according to their characteristics.	The 'output movement' is where one or more parts moves. Order the main stages of making. Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. Select from and use finishing techniques suitable for the product they are creating.	Follow step-by step plans with referral to lists of tools, equipment and materials needed. Select from and use finishing techniques suitable for the product they are creating.
	Structures		Build a simple structure and explore how to make it stronger. Explore how to join components together effectively. Know a range of tools that can be used to for different purposes, cutting, sticking, joining.	Freestanding structures – build a structure and explore how to make it stronger and stiffer. Investigate ways to reinforce. To know how to join components together effectively. Know a range of tools that can be used to for different purposes, cutting, sticking, curling, bending, joining.	Freestanding structures – build a more complex stable structure and apply understanding of how to strengthen, stiffen and reinforce. Look at different shell structures, composition & use. Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. Select from and use finishing techniques	

joining and finishing). Can accurately select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.					suitable for the product they are creating.	
	Textiles			Select appropriate textiles – explain choices. Join textiles together to make a product. Select and use a range of tools to perform practical tasks; measuring, stitching, joining and cutting.	Choose appropriate textiles for task through considered options. Join textiles together using appropriate tools and methods to make a product. Consider aesthetic and functional properties of textiles. Understand that a 3D textile structure can be made from two identical fabric shapes.	
	Electrical devices					Follow step-by step plans with referral to lists of tools, equipment and materials needed. Attach a battery with wires to a motor. Create a series of circuits with switches, bulbs, buzzers and motors.
	Food	Use simple utensils and equipment to; cut, grate, and chop safely.	Use simple utensils and equipment to; peel, cut, slice, squeeze, grate and chop safely.		Plan the main stages of a recipe, listing ingredients, utensils and equipment.	

		Taste a range of fruit and vegetables to determine the users' preferences.	Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.		Select and use appropriate utensils and equipment to prepare and combine ingredients. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.	
Evaluate **KS1** - Explore and evaluate a range of existing products. Evaluate their ideas and products against a design criteria. **KS2** - Investigate and analyse a range of existing products. Can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understands how key events and individuals in design and technology have helped shape the world.						
	Product	Discuss finished products and evaluate ideas as a class.	Evaluate ideas and finished products against design criteria, including intended user and purpose. Evaluate own and each other's product(s) against the design criteria. Evaluate the success of their product against the design criteria.	To know how to evaluate their product against the design criteria and suggest improvements.	Carry out sensory evaluations of a variety of ingredients or products. Record the evaluations using e.g. tables and simple graphs. Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Evaluate different materials and their suitability for use. Investigate, analyse and evaluate familiar objects; What does it do? How has it been used in the design of	Evaluate a range of existing products in order to inform their own. Record findings and evaluate use - include considered reasoning. Carrying out and articulating the findings of research carried out. Evaluate different materials and their suitability for use. Investigate, analyse and evaluate familiar objects; What does it do? How has it been used in the design of these products? How can it be used in the design?

					these products? How can it be used in the design?	
	Techniques and tools	What could be improved and what went well. Use relevant technical vocabulary.	Discuss use of tools and the techniques – think about what could be improved and what went well. Use relevant technical vocabulary.	Discuss and evaluate the use of tools and the techniques – record discussions. From this choose appropriate tools and techniques to use.	Evaluate the tools techniques used to make product. Investigate and analyse books, videos and products with pneumatic mechanisms. To use technical and sensory vocabulary.	Evaluate the tools techniques used to make product. Use skills and techniques to measure, mark out, cut, join and finish. To use technical and sensory vocabulary.
	Compare	Compare their products to their peers.	Look at similarities and differences between existing products and their own.	Evaluate the success of their own and others' dishes, involving critique of how could be improved.	Evaluate their own products and ideas against criteria and user needs, as they design and make. To investigate the construction of existing structures and evaluate their own design against the design criteria.	Investigate and analyse books and evaluate other products prior to making their own. Record evaluative data in a table to support comparison.
	Review	What went well? Even better if…	What went well? Even better if…	What went well? Even better if…	Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.	Evaluate their own products and ideas against criteria and user needs, as they design and make. What went well? Even better if…

					What went well? Even better if…	