Design Technology Long Term Disciplinary Knowledge Map

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	EYFS	Year 1	Year 2	*End of KS1 National Curriculum Expectations*	Year 3	Year 4	Year 5	Year 6	*End of KS2 National Curriculum Expectations*
Design	Know how to select appropriate resources. Know how to use gestures, talking and arrangements of materials to show design. Know how to use the language of designing and making (join, build, shape, longer, shorter, heavier etc) *ELG: Creating with materials.* *To be able to share their creations, explaining the process they have used.*	To have own ideas and can explain what they want to do, what the product is for and how it will work. Know how to use pictures and words to plan and begin to use models. Know how to design a product following design criteria.	Know how to explain the purpose of a product and how it will be suitable for the user. Know how to choose the best materials and tools and explain choices. Know how to use knowledge of existing products to produce ideas.	*To be able to design purposeful, functional, appealing products for themselves and others based on design criteria.* *To be able to generate, develop, model and communicate ideas through talking, drawing, templates, mock-ups and ICT.*	Know how to research the needs of others. Know how to create a plan and labelled sketch that includes order, equipment and tools required.	Know how to create own design criteria based on a brief and suggest improvements to the design. Know how to include an annotated sketch to explain design decisions. Know how to use a prototype and begin to use ICT to show design ideas.	Know how to use the internet and questionnaires for research and design ideas. Know how to take the users view into account when designing to ensure the product is fit for purpose. Know how to use cross-sectional planning. Know how to clearly explain how different parts of a model will work.	Know how to use market research to inform design and the needs, wants and requirements of the intended user. Know how to make design decisions that consider resources and cost.	*To be able to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.* *To 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	Know how to construct with a purpose using a variety of resources. Know how to use simple tools and techniques and how to build and construct with a range of objects. Know how to join familiar materials and components. Know how to record experiences by drawing, writing and talking. ***ELG: Creating with materials. To be able to share their creations, explaining the process they have used.***	Know how to cut, shape, measure, mark-out and join simple materials. Know how to choose suitable materials and explain choices. Know how to work in a safe and hygienic manner.	Know how to join materials and components together in different ways. Know how to use simple finishing techniques to make a product look good.	***To be able to select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].*** ***To be able to select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.***	Know how to select suitable tools/equipment, explain choices; begin to use them accurately and how to choose appropriate materials that are fit for purpose. Know how to work through a plan and consider how good the product will be. Know how to apply some finishing techniques with some accuracy and purpose.	Know how to work through a plan in order and realise if the product will be of good quality. Know how to measure, mark, cut-out and shape materials and components with accuracy.	Know how to use tools and equipment with a good level of precision. Know how to select materials that consider their functionality. Know how to explain how the product will appeal to an audience.	Know how to select materials considering their aesthetics. Know how to explain how the product will appeal to an audience: make changes to improve quality. Know how to be resourceful with practical problems.	***To be able to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.*** ***To be able to select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.***
Evaluate	Know how to practise some appropriate safety measures independently. Know how to talk about how some familiar things work. Show an interest in age-appropriate technical toys. Know how to	Know how to talk about what they have made and existing product, saying what they think is and isn't good about how it has been made.	Know how to express a personal opinion. Know how to talk about what I would do differently if I were to do it again and why, using appropriate vocabulary.	***To be able to explore and evaluate a range of existing products.*** ***To be able to evaluate their ideas and products against design criteria.***	Know how to look at design criteria to evaluate the finished product. Know how begin to evaluate existing products, considering how well they have been made.	Know how to explain how I could improve the original design. Know how to evaluate existing products, considering if they are fit for purpose. Know how to research whether products can be recycled or reused.	Know how to evaluate the quality of design during the designing and making, making changes if necessary. Know how to test and evaluate the final product. Know how to evaluate how much products cost to	Know how to consider the impact of products beyond their intended purpose. Know how to discuss some key inventors, designers, engineers, chefs, manufacturers of ground-breaking products. Know how to research how	***To be able to investigate and analyse a range of existing products.*** ***To be able to evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.*** ***To be able understand how key***

	describe some simple textures. *ELG: Creating with materials.* ***To be able to share their creations, explaining the process they have used.***						make and how innovative they are.	sustainable materials are.	***events and individuals in design and technology have helped shape the world.***
Technical Knowledge: Structures	Have experience of using a range of different materials and structures during play. *ELG: Creating with materials.* ***To be able to share their creations, explaining the process they have used.*** ***To be able to safely use and explore a variety of materials***	Know how to begin to measure and join materials with some support. Know how to describe differences in materials. Know how to suggest ways how to make material or product stronger.	Know how to describe some different characteristics of materials and structures. Know how to use rolling or folding to make a material or structure stronger.	***To be able to build structures exploring how they can be made stronger, stiffer and more stable.***		Know how to measure carefully to avoid mistakes. Know how to continue to work on a product, even if the original didn't work. Know how to make a strong, stiff structure. Know how to begin to reinforce and strengthen a 3D frame. Know how to consider a products aesthetics and functionality, and explain how it meets the design criteria.			***To be able to apply their understanding of how to strengthen, stiffen and reinforce more complex structures.***
Technical Knowledge: Mechanical Systems	Have experience of different mechanisms through playing with a variety of mechanical toys. ***To be able to***	Know how to begin to use wheels and axels		***To be able to explore and use mechanisms, such as levers, sliders, wheels and axels, in their products.***	Know how to use simple pneumatics to create movement.		Know how to use mechanisms such as levels & pivot, sliders and pop-up folds to create a book with moving parts.		***To be able to understand and use mechanical systems in their products, for example gears, pulleys, cams, levers and***

	safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.								*linkages.*
Technical Knowledge: Textiles	Know how to create simple products using a range of different textiles *ELG: Creating with materials.* *To be able to explain the process they have used.* *To be able to safely use and explore a variety of materials, tools and techniques, experimenting with texture.*	.	Know how to measure textiles, join together to make a product and explain how I did it. Know how to carefully cut textiles to produce accurate pieces. Know how to explain choice of textiles and understand that a 3D textile structure can be made from 2 identical fabric shapes.	*To be able to select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).* *To be able to select from and use a wide range of materials and components including textiles.*				Know how to think about the users wants, needs and aesthetics when choosing textiles. Know how to make a product attractive and strong. Know how to use a range of joining techniques. Know how to think about how a product might be sold. Know to think carefully about what would improve a product. Know how a single 3D textile project can be made from a combination of fabric shapes.	*To be able to select from and use a wider range of tools and equipment to perform practical tasks (fro example cutting, shaping, joining and finishing), accurately.* *To be able to select from and use a wider range of materials and components including textiles.*
Technical Knowledge: Electrical Systems						Know how to incorporate a switch into a product. Know how to confidently use a		Know how to use different types of circuits in a product and think of ways in which adding a circuit would improve	*To be able to understand and use electrical systems in their products (for example, series circuits*

						number of electrical components in a circuit		product design.	*incorporating switches, bulbs, buzzers and motors).*
Technical Knowledge: Digital World					Know about how to program a computer to control a product.		Know how to program a computer to monitor changes in the environment and control the product.		*To be able to apply their understanding of computing to program, monitor and control their products.*
Cooking & Nutrition: Food	Know how to practise stirring, mixing, pouring and blending. Know how to use their senses while preparing and eating food. Know how to describe textures of a variety of different foods, using age-appropriate vocabulary.	Know variety in food is important and begin to understand that eating well contributes to good health. Know how to wash hands and clean surfaces correctly. Know where some foods come from (plant or animal). Know how to describe the differences between some food groups in simple terms, e.g. sweet & meaty, salty, etc Know the names of some fruits and vegetables.	Know how to explain hygiene and keep a hygienic kitchen. Know how to describe properties of ingredients and the importance of a varied diet. Know how to describe how some food is farmed, home-grown, caught. Know how to cut, peel and grate with increasing confidence.	*To be able to use the basic principles of a healthy and varied diet to prepare dishes.* *To be able to understand where food comes from.*	Know how to carefully select ingredients, use equipment safely and make a product look attractive. Know that food comes from the UK and from the wider world. Know how to describe how a healthy diet = variety, balance of food and drinks. Know how use some of the following techniques; peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. Know how to describe "Five-a-Day".	Know how to present food in interesting and attractive ways. Know that a recipe can be adapted, improved and developed. Know that ingredients can be fresh, pre-cooked and processed. Know about food being grown, reared or caught in the UK or wider world. Know how to grow some varieties of plants to use in cooking. Know the seasonality of food.	Know that food can be grown, reared or caught in the UK and the wider World. Know about and name some constituents of food & drink that are necessary for good health, and some that can be detrimental.	Know how to adapt recipes to change the appearance, taste, texture and aroma. Know how to prepare, cook and serve a variety of savoury dishes safely and hygienically.	*To be able to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.* *To be able to prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.* *Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.*