Zetland Primary School

Curriculum skills and knowledge document

DESIGN TECHNOLOGY

Rationale: Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. The children should develop detailed knowledge, understanding and creative skills needed to engage in design and making.

Intent:	Implementation:	Impact:
The children will develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. Through exploring, questioning and innovating, they will develop **curiosity** about how products are designed, made and improved. They will build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users, demonstrating **equality** by considering the needs, wants and experiences of others. They will work **together** to share ideas, solve problems and learn from different perspectives. They will develop the skills and vocabulary to critique, evaluate and test their ideas and products, and those of others, showing **kindness** through respectful feedback and appreciation of others' contributions. The children will develop **resilience** by adapting designs, overcoming challenges and recognising that testing, refining and improving are important parts of the design process. The children will understand and apply the principles of nutrition and learn how to cook, developing knowledge and skills that support healthy, independent living.	The children will be provided opportunities to work with a range of materials, including scrap materials, wood, construction kits, textiles and food. They will follow the: evaluate product(s), plan, design, make and review the final product, process. Direct modelling will be used to teach the children the skills they require to make their products. Appropriate and plentiful resources provided to cover all strands of the DT curriculum. Links with other subject areas should be embedded in the teaching of design technology.	Children have the knowledge and skills to make realistic step by step plans, reflect on designs and review final products. Children can use tools and equipment safely and with confidence. Children can safely prepare and cook food. KS 1 children will explore, create and evaluate structures and mechanisms. KS2 children will explore mechanical and electrical systems. They will use their knowledge of computing to program, monitor and control products.

	EYFS Checkpoint	Y1		Y2		Y3	
Key concepts							
		Substantive Knowledge	Disciplinary Knowledge	Substantive Knowledge	Disciplinary Knowledge	Substantive Knowledge	Disciplinary Knowledge
Design	CM2 I can talk/draw about what I am going to make.	Know & understand the term 'design' • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper. • To know the difference between natural and manufactured (man-made) • Know & understand the term 'design'	Design appealing products for a particular user based on simple design criteria				

		• To generate ideas to solve problems using resources they are familiar with, to talk about their ideas and to draw them. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. • Communicate these ideas through talk and drawings.					
Make	CM3, CM1, CM2, FM2 I can create a picture with a purpose in mind.	Plan by suggesting what to do next.	Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating. Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating. Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Select new and reclaimed materials and construction kits to build their structures				
Evaluate	CM2 LAU2 I can talk about what I have made. I can select materials and tools appropriately.	Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. Mechanisms	Create a lever using a card strip and a paper fastener as a pivot. • Create a slider using a card strip and a guide				

		• Know the terms: slider, lever, pivot To say whether or not their ideas have or haven't worked. Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. • Evaluate ideas and finished products against design criteria, including intended user and purpose.					
Linear themes							
Food	I can talk about food that I like and don't like. I can try new foods from new cultures. I know that some foods are healthy, and some are unhealthy.	Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • To know that some foods are healthy and others aren't always	To cut using a vegetable knife using a bridge grip				
Mechanisms	I can show an interest of how things work exploring wheels, pulling and pushing.						
Structures	I can explore how things stack and can be connected.						
Electricity							
Textiles	I can use different materials for role play imagination. I can explore different objects and materials in the water area- floating and sinking						
Tools and materials	I can use one handled tools with some accuracy.						

		Y4		Y5		Y6	
Key concepts							
		Substantive Knowledge	Disciplinary Knowledge	Substantive Knowledge	Disciplinary Knowledge	Substantive Knowledge	Disciplinary Knowledge
Design		I know how a design can be modified and improved. I know that I can use a range of existing products to help me design my own.	I can create a labelled diagram, considering all the elements I need to combine. I can test out ideas by using a prototype.	I know how to use technology to help me research as part of the design process.	I can make and follow a set of detailed instructions when making my product. I can use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products.	I know that effective design occurs in stages and needs to be reviewed and modified. I know that products have specific functions and need to be designed with this in mind.	I can use my knowledge of a broad range of existing products to help generate ideas. I can create sketches, annotate diagrams, make prototypes, evaluate designs and make changes.
Make		I know an alternative way for fixing something if the first attempt is not successful.	I can measure and mark out to the nearest cm and mm.	I know about the properties of a range of materials and use this knowledge when making.	I can select and combine from a range of materials and components using appropriate techniques.	I know that there are a range of different tools and that they are suitable for different purposes.	I can select from a range of tools and use them safely and with precision.
Evaluate		I know how to evaluate a product by identifying what has been successful and suggesting areas for improvements.		I know how to evaluate a product effectively and identify improvements that could be made.	Following evaluation, I can make improvements to my products.	I know how to identify positives and negatives in my design and those of others.	I can critically evaluate the quality of design, manufacture and fitness for purpose of products. I can create designs and prototypes and change my designs after testing.
Food		I know about different foods and their nutritional values linked to a balanced diet.	I can use a range of cooking techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking.	I know about cuisine from Brazil.	I can follow a detailed recipe and write my own for someone else to follow. I can use a range of cooking techniques, such as griddling, grilling, frying and boiling.	I know about the types of food available to families weekly during rationing. I know about the importance of balanced diets and about the	I can plan, create and prepare a menu or dish using food types available during rationing. I can cut, prepare, cook and serve food in

						nutrient content of different foods.	different ways depending on the food type or task.
Mechanisms		I know how split pins can be used to produce a moving product.	I can choose where to put split pins.	I understand how cams and gears work to create movement.	I can use cams and gears in my models.	I know how a shadduf worked in Ancient Egypt. I know how a range of mechanical systems work, including wheels, axes, chassis, pulleys and cogs.	I can use pulleys and cogs to create a shadduf (Egyptian Irrigation System).
Structures				I know about different methods of strengthening structures.	I can make a Victorian bedroom with furniture.	I know about the different types of designs used for air raid shelters in WW2.	I can make my own strong and rigid air raid shelter using a range of different materials. I can test the strength of my design appropriately.
Electricity		I know how to create a circuit to make a device work, e.g., bulb, motor etc.	I can use an electrical circuit to make something work on my model.	I know how to create a circuit to make a device work, e.g., bulb, motor etc.	I can use an electrical circuit to make something work on my model.	I understand how renewable sources can be used to reduce our carbon footprint.	I can use electrical systems (including renewable sources) to power my model.
Textiles				I understand the importance of spinning and weaving in Viking culture.	I can use different weaving techniques to make decorative and practical products.	I know the types of designs created by Tibetans to make Kalachakra/Mandala.	I can research, design and make Kalachakra/Mandala.
Tools and materials		I know the different functions of a variety of tools and which materials they are most suited for.	I can select appropriate tools to use for a variety of purposes.	I know the names and uses of a variety of tools.	I can select the appropriate tools and equipment for a task based on their function.	I know the functions of different types of tools.	I can select and use a variety of different tools for different purposes.
Computer Programming					I can program my model to move using appropriate computing software.		I can alter variables in my program.