Kneesall C of E Primary School

Design and Technology Progression of Skills and Knowledge

Working towards	Working at expected	Greater Depth learning
Children acquire new knowledge and skills Learning tasks Name, label, describe, report, measure, list, illustrate, tell, recognise, repeat, arrange, define, memorise, calculate, recite, draw	Children use higher order thinking skills to apply their previous knowledge and make links Learning tasks Explain, classify, compare, contrast, organise, predict, interpret, summarise, demonstrate, point out	Children extend their learning through independent tasks that requires critical thinking skills Learning tasks CREATE: Design, build, construct, devise, invent EVALUATE: judge, criticise, test, defend Investigate

Early Years Foundation Stage	
Development Matters 3-4	<u>Physical Development</u> • Use a comfortable grip with good control when holding pens and pencils. • Start to eat independently and learning how to use a knife and fork <u>Expressive art and design</u> • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • • Create collaboratively sharing ideas, resources and skills
Development Matters Reception Year	<u>Physical Development</u> Choose the right resources to carry out their own plan. For example, choosing a spade to enlarge a small hole they dug with a trowel. • Use one-handed tools and equipment, for example, making snips in paper with scissors. • Use a comfortable grip with good control when holding pens and pencils. • Develop confidence, competence, precision and accuracy when engaging in activities that involve a ball. • Develop the foundations of a handwriting style which is fast, accurate and efficient. <u>Expressive art and design</u> • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects • Draw with increasing complexity and detail, such as representing a face with a circle and including details. • Use drawing to represent ideas like movement or loud noises. • Show different emotions in their drawings and paintings, like happiness, sadness, fear etc • • Explore colour and colour-mixing
Early Learning Goals	<u>Fine Motor Skills</u> • Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases. • Use a range of small tools, including scissors, paintbrushes and cutlery. • Begin to show accuracy and care when drawing <u>Creating with materials</u> • 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. • • Make use of props and materials when role playing characters in narratives and stories

Concept	Key Stage One	Lower Key Stage Two	Upper Key Stage Twow
Develop Idea This concept involves understanding how ideas develop through a design process	<u>Food</u> • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients.	<u>Food</u> • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking)	<u>Food</u> • Understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. Create and refine recipes, including ingredients, methods, cooking times and temperatures
	<u>Materials</u> • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen)	<u>Materials</u> • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). Select appropriate joining techniques.	<u>Materials</u> • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper)
	<u>Textiles</u> • Shape textiles using templates. • Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).	<u>Textiles</u> • Understand the need for a seam allowance. • Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles.	<u>Textiles</u> • Create objects (such as a cushion) that employ a seam allowance. • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).
	<u>Electricals</u>	<u>Electricals</u>	<u>Electricals</u>

	• Identify products that are battery operated e.g. car, and notice/ diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	• Create series and parallel circuits	• Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).
	<u>Structures</u> • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.	<u>Structures</u> • Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques.	<u>Structures</u> • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding)
	<u>Mechanisms</u> • Create products using levers, wheels and winding mechanisms	<u>Mechanisms</u> • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears)	<u>Mechanisms</u> • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs •
Design	Know that there are similar existing products relating to what is being made. Know that products serve a purpose. Model and plan own ideas and share these with others – talking, drawing, mock-ups, models, ICT State what they are making, who they are making it for and why they are making it. State how their product will work and how it will impact their intended users. Draw upon own experiences and knowledge to create drawings to aid ideas.	Know that a design must meet a range of requirements. Know that a design can be based upon research. Describe the purpose of their products. Indicate the design features of their products that will appeal to intended users. Use computer-aided design, diagrams and annotated sketches to develop and communicate their ideas. Make design decisions that take account of the availability of resources.	Know that design criteria can be developed. Know that a design specification is used to guide thinking. Describe the purpose of their products and indicate the design features of their products that will appeal to intended users. Explain how particular parts of their products work. Carry out research, using surveys, interviews, questionnaires and web-based resources. Identify the needs, wants, preferences and values of particular individuals and groups and develop a simple design specification to guide their thinking.
Make	Select and use tools / equipment to cut, shape, join and finish. Know the purpose for what is being made. Select from a range of materials and components according to characteristics. Measure and mark,	Select tools and equipment suitable for the task and explain their choice of tools and equipment in relation to the skills and techniques they will be using.	Use appropriate tools / materials with precision. Select tools and equipment suitable for the task and explain their choice of tools and equipment in relation to the skills and techniques they will be using.

	cut assemble and join materials and components.	Select materials and components suitable for the task, explain their choice of materials and components according to functional properties and aesthetic qualities and formulate step-by-step plans as a guide to making. Measure, mark out, cut and shape materials and components and assemble, join and combine materials and components with some accuracy. Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components.	Explain their choice of materials and components according to functional properties and aesthetic qualities Tack or attach wadding or stiffening and learn how to start and finish off a row of stitches.
Evaluate	Explore and evaluate a range of existing products Make a final product is linked to what has been asked. Describe the strengths and weaknesses of products they have made. Talk about ideas and how they could be improved. Make simple judgements about their products and ideas against a design criteria.	Know that a design can be changed to improve it if the product were to be created again. Evaluate existing products. Identify the strengths and areas for development in their ideas and products and consider the views of others, including intended users, to improve their work. Use their design criteria to evaluate their completed products. Understand how key events and individuals in design and technology have helped shape the world.	Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Evaluate their ideas and products against their original design specification. Investigate how well products have been designed and made to a criteria. Investigate what impact products have beyond their intended purpose. Investigate how well products meet user needs and wants.
Technical knowledge	Use levers to create movement. Know that textiles can be cut and joined to make a product. Know that materials can be measured. Use wheels and axles to create movement. Build a structure or mechanism using simple working characteristics, materials or components. Make free standing structures and know how they can be made stronger, stiffer and more stable.	Make cuts and holes accurately. Use simple linkages to create movement. Know that textiles can be joined in different ways. Know that mistakes can be avoided by measuring carefully. Know that pneumatics can be used to create movement. Know that there are ways to join textiles in order to make the product strong. Know that materials have both functional properties and aesthetic qualities Use the correct technical vocabulary for the projects they are undertaking.	Know that products need to be strong and fit for purpose by being precise. Consider user and aesthetics when choosing and joining textiles. Know that a 3D frame can be reinforced and strengthened. Use cams, pulleys and gears to create movement. Know that materials can be combined and mixed to create more useful characteristics. Know that mechanical and electrical systems have an input, process and output and use them in their products. Use the correct technical vocabulary for the projects they are undertaking.

Food and Nutrition	Know that food comes from plants or animals. Know that food has to be farmed, grown or caught. With support, be able to safely cut, peel, spread and grate food and display good hygiene. Talk about the 'Eat well' plate and suggest healthy food swaps.	Know that food is grown in the UK, Europe and wider world. Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens) or caught (fish). Use a range of techniques such as peeling, chopping, slicing, grating, mixing, and spreading. Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate.	Know that the seasons affect the food available. Know that different preparation techniques are used depending on the food type. Demonstrate a range of cooking techniques- chopping, kneading, grating, mixing, baking etc. (e.g. bread). Know that recipes can be adapted to change appearance, taste, texture and aroma.
	Evaluate existing food products and plan and make a similar food product using relevant tools and equipment.	Plan, prepare and make a savoury food/meal using a range of techniques learnt.	Create, plan, prepare and cook a healthy and balanced savoury food/meal using a heat source.