

Dale Community Primary School: **Design and Technology** Curriculum Progression Document

National Curriculum	FOUNDATION STAGE Designers can:	YEAR ONE Designers can:	YEAR TWO Designers can:
<p>TECHNICAL KNOWLEDGE</p> <p>Build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p>	<p>Three <i>characteristics of effective teaching and learning</i> are:</p> <ul style="list-style-type: none"> • playing and exploring - children investigate and experience things, and ‘have a go’ • active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements • creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things. 	<p>Know how a mechanical system creates movement using a slider.</p>	<p>Know how a product using a wheel and axle mechanism creates movement.</p> <p>Know how freestanding structures can be made stronger, stiffer and more stable by using card and tape.</p>
<p>DESIGNING</p> <p>Design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>Design, generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p>	<p>Begin to use the language of designing and making, e.g. join, build and shape.</p> <p>Learn about planning and adapting initial ideas to make them better.</p>	<p>Use own ideas to design something purposeful, functional and appealing based on a given criteria.</p> <p>Make a simple plan before making and communicate their ideas through talk, drawing and where appropriate mock-ups and templates (textiles).</p> <p>Application</p> <p>Food and Nutrition- Design a menu for an afternoon tea party.</p> <p>Mechanisms- Design a product which uses a slider to create movement.</p> <p>Textiles- Design a textiles headdress.</p>	<p>Design a product which has a clear purpose and intended user based on a given criteria.</p> <p>Create a simple design using annotated drawings (labels).</p> <p>Explain what specific materials they have chosen for their product.</p> <p>Application-</p> <p>Food and Nutrition- Design a fruit salad as part of exploring foods from around the world.</p> <p>Mechanisms- Design a vehicle which uses a Wheels and Axles mechanism.</p> <p>Freestanding Structure- Design a boat that floats.</p>
<p>MAKING</p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p>	<p>To learn to construct with a purpose in mind.</p> <p>Select tools and techniques needed to shape, assemble and join materials.</p> <p>Explore/use construction kits to build basic structures.</p> <p>Develop appropriate holding of equipment.</p>	<p>Begin to make their design with help to cut and shape materials including card and fabric.</p> <p>Begin to cut materials safely using scissors and knives with support.</p> <p>Explore using temporary joining techniques including glue and masking tape.</p> <p>Begin to use finishing techniques to improve the appearance of their product, such as adding a simple decoration.</p> <p>Application-</p> <p>Food and Nutrition- Make sandwiches and party food for an afternoon tea party.</p> <p>Mechanisms- Make a product which uses a slider to create movement.</p> <p>Textiles- Make a headdress using textiles.</p>	<p>Make their design with help to mark out, cut and shape materials including card, plastic and dowel.</p> <p>Cut materials safely using scissors and knives. Demonstrate using a punch and saw with support.</p> <p>Show confidence when demonstrating joining techniques using glue, masking tape and Velcro.</p> <p>Begin to use finishing techniques to improve the appearance of their product, such as designing and decorating the exterior of their vehicle.</p> <p>Application-</p> <p>Food and Nutrition- Make a fruit salad as part of exploring foods from around the world.</p> <p>Mechanisms- Make a vehicle using a Wheels and Axles mechanism.</p> <p>Freestanding Structure- Make a boat that floats.</p>

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<p>EVALUATING</p> <p>Explore and evaluate a range of existing products</p> <p>Evaluate their ideas and products against design criteria.</p>	<p>Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method.</p> <p>Say what they like and do not like about items they have made and attempt to say why.</p> <p>Begin to talk about their designs as they develop and identify good and bad points.</p>	<p>Explore existing products and designs to identify likes and dislikes.</p> <p>Say what they like and dislike about their product.</p>	<p>Explore how existing products have been created, and begin to suggest improvements to existing designs.</p> <p>Evaluate their ideas and products against a design criteria given to them saying what worked well and how their product could be improved.</p>
<p>COOKING AND NUTRITION</p> <p>Use the basic principles of a healthy and varied diet to prepare dishes</p> <p>Understand where food comes from.</p>	<p>To begin to understand some of the tools, techniques and processes involved in food preparation.</p> <p>Children have basic hygiene awareness.</p>	<p>Know how to prepare simple dishes safely and hygienically, without using a heat source. - Afternoon Tea.</p> <p>Know that everyone should eat at least five portions of fruit and vegetables every day</p>	<p>Know that all food comes from plants or animals</p> <p>Use techniques such as cutting, peeling and grating. - Fruit salad.</p> <p>Measure ingredients using cups, jugs, spoons or a countable quantity.</p>
<p>KEY VOCABULARY</p> <p>(Bold denotes new/ project specific vocabulary)</p>		<p><i>plan, investigate, design, make, user, purpose, ideas, product, function, mechanism movement, slider, , draw, mark, cut, shape, materials, safety, join, finish, textile, evaluate, like, dislike, prepare, hygiene, fruit, vegetables, (names of food used).</i></p>	<p><i>planning, investigating design, make, user, purpose, ideas, product,, design criteria, function, mechanism, movement, wheel, axel, saw, dowel, punch, shanther, structure, stronger, stable, draw, annotate, materials, cut, shape, tear, fold, join, finish, decorate, evaluate, improve, plants, animals, cut, peel, grate, measure, quantity.</i></p>

	YEAR THREE Designers can:	YEAR FOUR Designers can:	YEAR FIVE Designers can:	YEAR SIX Designers can:
<p>TECHNICAL KNOWLEDGE</p> <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Apply their understanding of computing to program, monitor and control their products.</p>	<p>Know how to strengthen a frame structure by stiffening a given part and reinforcing a part of the structure using triangle supports. (bridges)</p> <p>Design and make a product using moving parts showing an understanding of how levers and linkages create movement. (toy/ pop-up book).</p>	<p>Know how to apply techniques to strengthen, stiffen and reinforce shell structures by laminating or corrugating card.</p>	<p>Apply techniques previously learnt to make a strong, stiff frame structure by using glue and triangulation (for a light box).</p> <p>Understand and use a mechanical system of pulleys in their product and know how it creates movement.</p> <p>Know how electrical systems can be incorporated into their products by using a series circuit and bulb.</p>	<p>Use and apply previous knowledge to improve their product by strengthening, stiffening or reinforcing the structure.</p> <p>To understand the mechanics of and make a product using a cam mechanism.</p> <p>Know how to create a product with a rotating part by incorporating an electrical system with a series circuit and a motor.</p>
<p>DESIGNING</p> <p>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</p>	<p>Know how to create a simple design criteria and discuss how their design meets this.</p> <p>Create designs using annotated sketches and test using prototypes (bridges).</p>	<p>Use ideas from existing design products to create their own design criteria.</p> <p>Create designs using annotated drawings and pattern pieces which include measurements to the nearest cm.</p> <p>Model and communicate ideas through annotated sketches and pattern pieces when making a textile product.</p>	<p>Create innovative designs that improve on existing products.</p> <p>Design using cross-sectional and exploded diagrams including measurements to the nearest mm.</p> <p>Explain how a product will appeal to a specific audience by carrying out research using given questions and interview questions</p>	<p>Create innovative designs that improve on existing products using market research to inform their decisions.</p> <p>Generate and develop ideas through the use of prototypes (eg using knex to create fairground rides) and computer aided design which include accurate measurements.</p>

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<p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p>	<p>Design a product and make sure that it looks attractive, is fit for purpose and meets the children’s (class) design criteria.</p> <p>Application-</p> <p>Food and Nutrition- Design a healthy lunch (pasta salad) linked to the ‘eat well’ plate.</p> <p>Mechanisms- Design a moving toy (pop-up book?) using a lever and linkage mechanism.</p> <p>Framework Structures- Design a bridge which is strong enough to hold a weight (toy car?)</p>	<p>Design a product and make sure that it looks attractive and is fit for purpose and meets the children’s (individual) design criteria.</p> <p>Application-</p> <p>Food and Nutrition- Design a soup.</p> <p>Shell Structures- Design a musical instrument which shapes, combines and joins materials effectively.</p> <p>Textiles- Design an under the sea creature which joins textiles using basic sewing techniques.</p>	<p>Application-</p> <p>Food and Nutrition- Design a pizza/flat bread (links to allotments).</p> <p>Mechanisms- Design a product which uses a pulleys.</p> <p>Electrical systems- Design a light box around a wooden frame structure which uses a series circuit and bulb.</p>	<p>Justify how a product will appeal to a specific audience by carrying out research using their own questionnaires and web-based resources Follow and refine original plans.</p> <p>Application-</p> <p>Food and Nutrition- Use market research to support the designing of a salsa product.</p> <p>Mechanisms- Use Computer Aided Design to design a moveable toy with a CAM mechanism (Tinker CAD?)</p> <p>Electrical Systems- Design a product (fairground ride/ vehicle)(frame structure) which uses a series circuit and motor to create movement.</p> <p>https://www.tts-group.co.uk/blog/2018/12/07/ks2-merry-go-round.html (example with instructions). Alternatively Rolls Royce moving vehicle project.</p>
<p>MAKING</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>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</p>	<p>Work efficiently to make products by selecting the most appropriate tools (scissors, split pins) and techniques (leavers and linkages) for the given task.</p> <p>Safely measure, mark out, cut and shape with some accuracy using non-standard measurements (eg using the width of a ruler or lolly pop stick)</p> <p>Assemble, join and combine materials and components with some accuracy by using tape, glue and string</p> <p>Choose a material for both its suitability and its appearance (cardboard, paper, art straws, lolly pop sticks)</p> <p>Application-</p> <p>Food and Nutrition- Make and evaluate a healthy lunch (pasta salad) linked to the ‘eat well’ plate.</p> <p>Mechanisms- Make a moving toy (pop-up book?) using a lever and linkage mechanism.</p> <p>Framework Structures- Make and evaluate a bridge which is strong enough to hold a weight (toy car?).</p> <p>https://www.stem.org.uk/resources/elibrary/resource/25329/bridges-and-structures</p> <p>https://www.stem.org.uk/resources/elibrary/resource/467665/bridge-bonanza</p>	<p>Apply appropriate cutting and shaping techniques (joining strips that include cuts within the perimeter of the material (such as slots or cut outs).</p> <p>Accurately measure, mark out, cut and shape to the nearest cm.</p> <p>Begin to select and use different and appropriate finishing techniques to improve the appearance of a product by attaching buttons or sequins and using fabric paints</p> <p>Choose a material for both its suitability and its appearance (cardboard, fabric, elastic bands, string)</p> <p>Application-</p> <p>Food and Nutrition- Make a soup.</p> <p>Shell Structures- Make and evaluate a musical instrument which shapes, combines and joins materials effectively.</p> <p>Textiles- Make and evaluate an under the sea creature which joins textiles using a running stitch, and backstitch (GD).</p>	<p>Use a range of tools (saws) and equipment competently</p> <p>Accurately measure, mark out, cut and shape to the nearest mm.</p> <p>Refine work and techniques as work progresses, continually evaluating the product design.</p> <p>Choose a material for both its suitability and its appearance (wood, cardboard, paper, cellophane)</p> <p>Application-</p> <p>Food and Nutrition- Make a pizza/flat bread (links to allotments) and evaluate against own success criteria.</p> <p>Mechanisms- Make a product which uses a pulleys and gears system. (* Linked to Space ILP).</p> <p>Electrical systems- Make a light box (shell structure using a net?) which uses a series circuit and bulb.</p>	<p>Know which tool to use for a specific practical task</p> <p>Make careful and precise measurements so that joins, holes and openings are in exactly the right place</p> <p>Know how to use a range of tools including saws and hand drills correctly and safely Explain why a specific tool is best for a specific action</p> <p>Choose a material for both its suitability and its appearance (wood, cardboard) and explain why this has been chosen by making reference to the products purpose.(fairground ride)</p> <p>Application-</p> <p>Food and Nutrition- Make a salsa, and evaluate against criteria established from market research.</p> <p>Mechanisms- Use their Computer Aided Design to make a moveable toy using a CAM mechanism.</p> <p>Electrical Systems- Make a fairground ride (frame structure) which uses a series circuit and motor to create movement.</p>

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<p>EVALUATING</p> <p>Investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Understand how key events and individuals in design and technology have helped shape the world</p>	<p>Understand how key events and individuals in DT have helped shape the world – eg Horace Jones and George D Stevenson (architects and designers of Tower Bridge). http://www.historyofbridges.com/famous-bridges/list-of-famous-bridges/ (website has general overview of famous bridges and their designers- prompt for discussions around what makes them strong).</p> <p>Improve upon existing designs and give reasons for their choices.</p> <p>Know why a model has or has not been successful.</p> <p>Explain how to improve a finished model.</p>	<p>Understand how key events and individuals in DT have helped shape the world – Orville Gibson (founder and creator of Gibson guitars)</p> <p>Disassemble existing products to understand how they work.</p> <p>Evaluate products for both their purpose and appearance</p> <p>Evaluate and suggest improvements for their design.</p>	<p>Identify some of the great designers to generate ideas for designs and show an understanding of how key events and individuals in DT have helped shape the world- Thomas Edison</p> <p>Evaluate appearance and function against their own criteria.</p> <p>Evaluate product considering the views of others and use this to improve their work</p>	<p>Understand how key events and individuals in DT have helped shape the world- Henry Ford (introduced electric cars into the mass market).</p> <p>Know how to test and evaluate designed products</p> <p>Evaluate product against clear criteria using market research and views of others to improve their product and make it more fit for purpose.</p>
<p>FOOD AND NUTRITION</p> <p>Understand and apply the principles of a healthy and varied diet</p> <p>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed</p>	<p>Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the 'eat well' plate.</p> <p>Understand 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 and Europe.</p> <p>Use a range of techniques such as peeling, chopping, slicing and mixing to prepare dishes and assemble ingredients. (Healthy lunch- pasta salad).</p> <p>Prepare and cook a variety of predominantly savoury dishes safely and hygienically using a hob (to boil pasta).</p>	<p>Use information on food labels to inform healthy choices</p> <p>Understand the difference between a savoury and sweet dish.</p> <p>Know that seasons may affect the food available</p> <p>Use a range of techniques such as peeling, Chopping, slicing and mixing to prepare dishes. (soup)</p> <p>Weigh ingredients using electronic scales.</p> <p>Follow a simple recipe (to make a soup)</p>	<p>Understand that different food and drink contain different substances – nutrients, water and fibre – that are needed for health</p> <p>Know how food is processed into ingredients that can be eaten or used in cooking.</p> <p>Understand the importance of correct storage and handling of ingredients.</p> <p>Explain and use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking to prepare food (pizza)</p> <p>Measure ingredients to the nearest gram accurately using an analogue scale. (pizza dough)</p> <p>Prepare and cook a variety of predominantly savoury dishes safely and hygienically using an oven. (pizza/ flat bread)</p>	<p>Use a range of techniques such as peeling, chopping, slicing and mixing to prepare dishes (salsa).</p>
<p>KEY VOCABULARY</p>	<p><i>planning, investigating design, make, user, purpose, ideas, product, function, movement, lever, linkage, mechanism, draw, mark, cut, shape, materials, suitable, safety, join, finish, evaluate, framework structure, reinforce, triangle support, strengthen, sketch, annotate, prototype, tool, technique, measure, mark, shape, accurate), assemble, join, combine, improve, success, finish,</i></p> <p><i>ingredients, healthy, balanced, grow, rear, caught, peel, chop, slice, mix, assemble, prepare, cook, boil, hygiene.</i></p>	<p><i>planning, investigating design, make, user, purpose, ideas, product, function, draw, annotate mark, cut, shape, materials, suitable, safety, join, finish, evaluate, structure, reinforce, strengthen, sketch, model, communicate, pattern piece, textile, sew, running stitch, annotate, tool, technique, measure, mark, shape, accurate, centimetre (cm), assemble, join, combine, disassemble, improve, success, finish,</i></p> <p><i>ingredients ,healthy, savoury, sweet, season, peel, chop, slice, mix, boil, weigh, scale, recipe.</i></p>	<p><i>planning, investigating design, make, user, purpose, ideas, product, function, movement, pulley, electricity, bulb, circuit, mark, cut, shape, materials, suitable, safety, join, finish, evaluate, structure, reinforce, strengthen, sketch, model, communicate, innovative, cross sectional drawing, explored diagram , audience, interview, question, tool, technique, measure, mark, shape, refine, accurate, millimetre (mm), assemble, join, combine, disassemble, improve, success, finish,</i></p> <p><i>substance, nutrients, water, fibre, ingredients, processed, storage, peel, chop, slice, grate, mixing, spread, knead, bake, measure, weigh, gram, scale, savoury.</i></p>	<p><i>planning, investigating design, make, user, purpose, ideas, product, function, movement), CAM, electricity, motor, rotate, circuit, , mark, cut, shape, materials, suitable, safety, join, finish, evaluate, structure, reinforce, strengthen, apply, innovate, improve, market research, decision, generate, develop, prototype, Computer aided design (CAD), measure, accurate, justify, audience, questionnaire, market research, follow, refine, tool, precise, measure, appearance, test, evaluate, criteria, improve,</i></p> <p><i>Peel, chop, slice, mix.</i></p>