Furness Vale Primary School - Design and Technology Progression Map

<table>
<tr><th></th><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Year 5</th><th>Year 6</th></tr>
<tr><td rowspan="2">NC Objectives</td><td colspan="2">KS 1
By the end of key stage pupils are expected to apply knowledge, understanding and skills needed to engage in an iterative process of designing, making and evaluating. They should work in a range of relevant contexts (for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment.</td><td colspan="4">KS2
By the end of key stage pupils are expected to apply knowledge, understanding and skills needed to engage in an iterative process of designing, making and evaluating. They should work in a range of relevant contexts (for example, the home, school, gardens and playgrounds, the local community, industry and the wider environment).</td></tr>
<tr><td colspan="2">Pupils should be taught:
Design
• 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 and, where appropriate, information and communication technology
Make
• Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing)
• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
Evaluate
• Explore and evaluate a range of exiting products
• Evaluate their ideas and products against design criteria
Technical knowledge
• Build structures, exploring how they can be made stronger, stiffer and more stable
• Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</td><td colspan="4">Pupils should be taught:
Design
• 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
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
Make
• Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately
• 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
• 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
• Understand how key events and individuals in design and technology have helped shape the world
Technical knowledge
• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
• 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)
• Apply their understanding of computing to program, monitor and control their products.</td></tr>
</table>

Furness Vale Primary School - Design and Technology Progression Map

Design	By the end of Year 1/2 pupils will be able to: • Use pictures and words to convey what they want to design/make. • Propose more than one idea for their product. • Use kits/reclaimed materials to develop more than one idea. • Model ideas / make mock ups with kits, reclaimed materials. • Select appropriate technique explaining: First… Next… Last…. • Explore ideas by rearranging materials/ingredients. • Select pictures to help develop ideas. • Use drawings to record ideas as they are developed. • Add notes to drawings to help explanations. • Use ICT to communicate their ideas. • Describe their models and drawings of ideas and intentions.	By the end of Year 3/4 pupils will be able to: • Develop more than one design or adaptation of an initial design. • Plan a sequence of actions to make a product. • Record the plan by drawing using annotated sketches. • Begin to use cross sectional and exploded diagrams. • Use prototypes to develop and share ideas. • Think ahead about the order of their work and decide upon tools and materials/ingredients. • Propose realistic suggestions as to how they can achieve their design ideas. • Consider aesthetic qualities of materials/ingredients chosen.	By the end of Year 5/6 pupils will be able to: • List tools needed before starting the activity. • Plan the sequence of work e.g. using a storyboard. • Record ideas using annotated diagrams. • Use models, kits and drawings to help formulate design ideas. • Combine modelling and drawing to refine ideas. • Devise step by step plans which can be read / followed by someone else. • Use exploded diagrams and cross-sectional diagrams to communicate ideas. • Sketch and model alternative ideas. • Decide which design idea to develop.
Make	By the end of Year 1/2 pupils will be able to: • Discuss their work as it progresses. • Select materials/ingredients from a limited range that will meet the design criteria. • Select and name the tools needed to work the materials/ingredients. • Explain what they are making. • Explain which materials/ingredients they are using and why. • Name the tools they are using. • Describe what they need to do next	By the end of Year 3/4 pupils will be able to: • Prepare pattern pieces as templates for their design. • Cut slots. • Cut internal shapes. • Select from a range of tools for cutting shaping joining and finishing. • Use tools with accuracy. • Select from techniques for different parts of the process. • Select from materials according to their functional properties. • Plan the stages of the making process. • Use appropriate finishing techniques.	By the end of Year 5/6 pupils will be able to: • Make prototypes. • Develop one idea in depth. • Use researched information to inform decisions. • Produce detailed lists of ingredients / components / materials and tools. • Use a computer to model ideas. • Select from and use a wide range of tools. • Cut accurately and safely to a marked line. • Select from and use a wide range of materials. • Use appropriate finishing techniques for the project. • Refine their product – review and rework/improve.
Evaluate	By the end of Year 1/2 pupils will know • Explore existing products and investigate how they have been made. • Decide how existing products do/do not achieve their purpose. • Talk about their design as they develop and identify good and bad points. • Note changes made during the making process as annotation to plans/drawings.	By the end of Year 3/4 pupils will know: • Investigate similar products to the one to be made to give starting points for a design. • Draw/sketch products to help analyse and understand how products are made. • Research needs of user. • Identify the strengths and weaknesses of their design ideas in relation to purpose/user. • Decide which design idea to develop.	By the end of Year 5/6 pupils will know: • Research and evaluate existing products. • Consider user and purpose. • Identify the strengths and weaknesses of their design ideas. • Give a report using correct technical vocabulary. • Consider and explain how the finished product could be improved related to design criteria.

		• Say what they like and do not like about items they have made and attempt to say why. • Discuss how closely their finished product meets their design criteria and how well it meets the needs of the user.	• Consider and explain how the finished product could be improved. • Discuss how well the finished product meets the design criteria of the user. • Investigate key events and individuals in Design and Technology.	• Discuss how well the finished product meets the design criteria of the user. Test on the user! • Understand how key people have influenced design.
Technical knowledge	**Food**	By the end of Year 1/2 pupils will be able to • Develop a food vocabulary using taste, smell, texture and feel. • Group familiar food products e.g. fruit and vegetables. • Explain where food comes from • Cut, peel, grate and chop a range of fruit and vegetables. • Work safely and hygienically. • Understand the need for a variety of foods in a diet. • Measure and weigh food items, non-statutory measures e.g. spoons, cups	By the end of Year 3/4 pupils will be able to • Develop sensory vocabulary/knowledge using, smell, taste, texture and feel. • Analyse the taste, texture, smell and appearance of a range of foods. • Follow instructions/recipes. • Make healthy eating choices – use the Eatwell plate. • Join and combine a range of ingredients. • Prepare and cook using a range of cooking techniques. • Explore seasonality of vegetables and fruit. • Find out which fruit and vegetables are grown in countries/continents studied in Geography. • Develop understanding of how meat/fish are reared/caught.	By the end of Year 5/6 pupils will be able to • Prepare mostly savoury dishes using their own selection of ingredients, taking into account their nutritional properties and sensory characteristics. • Weigh and measure using scales. • Select and prepare foods for a particular purpose. • Work safely and hygienically. • Develop understanding of a healthy diet and apply in their ingredient choices. • Use a range of cooking techniques. • Join and combine a widening range of ingredients. • Know where and how ingredients are grown and processed.
	Textiles	By the end of Year 1/2 pupils will be able to: • Start to use the appropriate vocabulary to refer to fabrics and tools • Cut out shapes which have been created by drawing round a template onto the fabric. • Join fabrics by using e.g. running stitch, glue, staples, over sewing, tape. • Decorate fabrics with attached items e.g. buttons, beads, sequins, braids, ribbons. • Colour fabrics using a range of techniques e.g. fabric paints, printing, painting.	By the end of Year 3/4 pupils will be able to: • Develop vocabulary for tools materials and their properties. • Understand seam allowance. • Join fabrics using running stitch, over sewing, blanket stitch. • Use prototype to make pattern. • Explore strengthening and stiffening of fabrics. • Explore fastenings and recreate some. • Sew on buttons and make loops. • Use appropriate decoration techniques.	By the end of Year5/6 pupils will be able to: • Use the correct vocabulary appropriate to the project. • Create 3D products using patterns pieces and seam allowance. • Understand pattern layout. • Decorate textiles appropriately (often before joining components). • Pin and tack fabric pieces together. • Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (closer supervision). • Combine fabrics to create more useful properties. • Make quality products.

Furness Vale Primary School - Design and Technology Progression Map

	Structures	By the end of Year 1/2 pupils will be able to: • Refer to materials tools and techniques using appropriate vocabulary. • Explore how to make structures stronger. • Investigate different techniques for stiffening a variety of materials. • Test different methods of enabling structures to remain stable. • Join appropriately for different materials and situations e.g. glue, tape. • Mark out materials to be cut using a template. • Use a glue gun with close supervision.	By the end of Year 3/4 pupils will be able to: • Develop vocabulary related to the project. • Create shell or frame structures. • Strengthen frames with diagonal struts. • Make structures more stable by giving them a wide base. • Measure and mark square section, strip and dowel accurately to 1cm. • Explain how the shape of a structure affects its stability. • Know that the weight of the structure needs to be evenly spread on the base to make it secure. • Investigate wyas of making a structure more stable. • Select and use appropriate tools and materials.	By the end of Year 5/6 pupils will be able to: • Use the correct terminology for tools materials and processes. • Select appropriate materials and tools to create an instrument. • Join materials using appropriate methods. • Build frameworks to support mechanisms. • Investigate and analyse a range of African instruments. • Use different methods to strengthen or reinforce their designs. • Predict and test the strength of different beam shapes using paper and card. • Explain what a truss is and how they make bridges stronger • Can make an arch frame • Explain how suspension bridges use tension forces to work.
	Mechanical and Electrical	By the end of Year 1/2 pupils will be able to: • Make a sliding mechanism out of card. • Understand and use a pivot and lever mechanism using card and a split pin. • Make a wheel mechanism using card and a split pin. • Match a mechanism to the type of movement it makes. • Use technical vocabulary when describing mechanisms, tools and materials they use. • Join appropriately for different materials and situations e.g. glue, tape. • Try out different axle fixings and their strengths and weaknesses. • Make vehicles with construction kits which contain free running wheels. • Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels. • Cut dowel using hacksaw and bench hook. • Attach wheels to a chassis using an axle. • Use a hole punch and Insert paper fasteners for card.	By the end of Year 3/4 pupils will be able to: • Develop vocabulary related to the project. • Explain how simple pneumatic systems work using appropriate vocabulary. • Recognise familiar objects that use air to make them work. • Describe how objects use air to make them work. • Create simple effective pneumatic systems. • Investigate ways of using pneumatic systems with other materials to control movement. • Recognise the uses to which alarm systems can be put. • Understand that switches work in different ways. • Understand the dangers of main electricity. • Explain how a simple circuit works. • Investigate different ways of creating switches and circuits.	By the end of Year 5/6 pupils will be able to: • Develop a technical vocabulary appropriate to the project. • Explore how different transmissions create different movements. • Use a crank to change the motion on a transmission from circular to linear. • Explain how computers and computer programs are used in different products. • Explain how modern memory chips work to store information. • Know what a computer engineer is and what they do.