



St Helen's Catholic Primary School  
Design & Technology Curriculum Map 2017 – 2018

Topics that lend themselves to supporting British Values    **Democracy**    **The Rule of Law**    **Individual Liberty**    **Mutual Respect**    **Tolerance**

### Subject content - Key stage 1

*Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. 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].*

#### 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 existing 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.

	Autumn 2	Spring 2	Summer 2
Year 1	<b>Sliders and Levers</b> Explore and evaluate products that have moving parts including those with levers and sliders e.g. Who is it for? Develop understanding e.g. What do you think will move? How will you make it move? How do you think the mechanism works? What else could move in the product? Design an appealing product for themselves to use based on a design criteria e.g. to design a Christmas card for a year 1 pupil. Generate, develop and communicate their ideas through talking and creating a mock-up. Select from a range of materials to create their products. Verbally evaluate their finished products.	<b>Playground Structures</b> Build structures, exploring how they can become stronger, stiffer and more stable. Create a mock-up before final design. Evaluate ideas and products against the design criteria.	<b>Fruit Salads</b> Experience fruits and where these come from. Undertake sensory activities i.e. appearance, taste, smell. Design a product based on a design criteria. Communicate these ideas through talk and drawing. Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Evaluate ideas and products against design criteria, including intended user and purpose.
	Autumn 1	Spring 1	Summer 2
Year 2	<b>Wheels and Axles</b> Explore and evaluate wheeled products. Use questioning to support observations e.g. How do you think the wheels move? How do you think the wheels are fixed on? Why do you think the product has that number of wheels? Distinguish between fixed and freely moving axles and axle holders. Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles, and axle holders. Experiment with different ways to hold free moving axles. Generate simple design criteria using initial experiences. Select and use a range of materials and components such as paper, card plastic and wood according to their characteristics. Evaluate their ideas throughout and their products against the design criteria.	<b>Sandwiches</b> Teach the principles of a healthy and varied diet. Explore and evaluate types of sandwiches and wraps available. Design a sandwich or wrap based on a particular design criteria. Understand where the ingredients come from Discuss healthy eating advice. Evaluate ideas and products against design criteria, including intended user and purpose. Design and print a label for their sandwich packaging.	<b>Puppets</b> Provide a design criteria based on can purpose and user. Explore and evaluate a range of existing products. Create own design using an annotated sketch. Create a template based on this. Chn to understand how simple 3-D textile products are made, using a template to create two identical shapes. Explore how to join fabrics using different techniques. Explore different finishing techniques. Evaluate against the design criteria.

Subject Leader: Sarah Stack

Shadow Leader: Jessica Odufuye

Team Design: Sarah Stack, Jessica Odufuye, Tara Smith



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**Subject content - Key stage 2**

*Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].*

**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.

	<b>Autumn 1</b>	<b>Spring</b>	<b>Summer 1</b>
<b>Year 3</b>	<p><b>2D Shape to 3D Product</b></p> <p>Investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes. Explore products from the past and the changes in textile production and products e.g. the invention of the zip. Demonstrate a range of stitching techniques and allow the children to practise them. Stitching two pieces of fabric together demonstrating the use of, and the need for seam allowances. Generate ideas through discussion to create design criteria for an appealing, functional product fit for purpose and specific users. Produce pattern pieces to use in their product. Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. Take into consideration others views when evaluating their product.</p>	<p><b>Spring 2 - Indian Meals - Cooking modern &amp; traditional Egyptian foods/meals</b></p> <p>Research a typical Indian meal. Find out how a variety of ingredients used in Indian cuisine. How are these grown and harvested, reared, caught and processed? Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. Use a range of questions to support children's ability to evaluate food ingredients and products e.g. What ingredients help to make the product smooth/crisp /crunchy etc.? What is the impact of added ingredients/finishes /shapes?</p>	<p><b>Mechanisms (Levers &amp; Linkages)</b></p> <p>Generate own design criteria focusing on the needs of the user. Use annotated sketches and prototypes to develop, model and communicate ideas. Order the main stages of making. Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. Select from and use finishing techniques suitable for the product they are creating. Evaluate their own products and ideas against criteria and user needs, as they design and make. Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots.</p>
<b>Year 4</b>	<p><b>Autumn 1 - European Meals - Cooking traditional foods from countries in Europe</b></p> <p>Have some basic knowledge and understanding about healthy eating and The eatwell plate. Investigate a range of food products e.g. the content of school meals.. Link to the principles of a varied and healthy diet. Design a meal for a particular user and purpose. Plan the main stages of a traditional recipe, listing ingredients, utensils and equipment. Use annotated sketches to communicate ideas. Evaluate against the design criteria.</p>	<p><b>Spring 1 Shell Structures</b></p> <p>Investigate a collection of different shell structures including packaging. Use questions to develop children's understanding e.g. What is the purpose of the shell structure – protecting, containing, presenting? Children take a small package apart identifying and discussing parts of a net including the tabs. Judge the suitability of the shell structures for their intended users and purposes. Discuss graphics including colours/impact of style/logo/size of font. Create design criteria focusing on the needs of the user and purpose of the product. Use prototypes to communicate ideas. Use objects with flat faces to construct nets. Use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Use computer-aided design (CAD) software to design the net, text and graphics for their products according to purposes. Demonstrate how to use different ways of stiffening and strengthening their shell structures e.g. corrugating. Evaluate the final products against the intended purpose, drawing on the design criteria previously agreed.</p>	<p><b>Torches</b></p> <p>Investigate and analyse a range of existing battery-powered products. Review knowledge of circuits. Gather information about needs and wants and develop a design criteria. Communicate ideas through cross-sectional diagrams. Plan and order the main stages of making. Select from and use tools and equipment to cut, shape, join and finish with some accuracy. Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</p>
<b>Year 5</b>	<p><b>Autumn 1 Electrical Systems</b></p> <p>Children to understand how Thomas Edison influenced the world. Using research, discuss a range of relevant products that respond to changes in the environment using a computer control program such as automatic nightlights, alarm systems, security lighting. Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as toggle switches. To gain an understanding of how they are operated and how they work, use each component to control a bulb in a simple circuit. Demonstrate and enable children to practise methods for making secure electrical connections e.g. screw connections. Explore a range of electrical systems that could be used to control their products, including a simple series circuit where a single output device is controlled, a series circuit where two output devices are controlled by one switch and, where appropriate, parallel circuits where two output devices are controlled independently by two separate switches. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. Test the system to demonstrate its effectiveness for the intended user and purpose.</p>	<p><b>Spring Tudors</b></p> <p>Design the food based on a design criteria. Know how to prepare ingredients safely &amp; hygienically. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</p>	<p><b>Summer 1 Bird Hides - Frame structures</b></p> <p>Develop design criteria. Generate ideas through an exploded diagram. Develop a prototype. Select from and use a wider range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing, accurately. Apply understanding of how to strengthen, stiffen and reinforce more complex structures. Evaluate the product against the design criteria.</p>
<b>Year 6</b>	<p><b>Autumn Pulleys or Gears</b></p> <p>Understand how gears and pulleys can be used. Investigate famous manufacturing and engineering companies relevant to the project. Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate gear or pulley systems. Develop an authentic and meaningful design brief with the children. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. Investigate combinations of two different sized pulleys to learn about direction and speed of rotation and/or explore combinations of two different size gears meshed together. Investigate the direction and speed of rotation focusing on how the size of the driver gear affects the speed of the follower gear. Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, functionality and fitness for purpose Consider the views of others to improve their work.</p>	<p><b>Autumn - Cooking meals using foods available during World War II (Focus on foods available and rationing)</b></p> <p>Understand the source, seasonality and characteristics of their ingredients. Use information and communication technology as appropriate to develop and communicate ideas. Use CAD to develop packaging for foods available during the war. Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/ graphs/charts such as star diagrams. Research key chefs and how they have promoted seasonality, local produce and healthy eating.</p>	

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