



## Inventions

Year 4 | Summer 1

CURRICULUM SPOTLIGHT: D&T, Computing and Science

### ENQUIRY

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How can we invent or innovate using technology?

### OUTCOMES

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STEM Coding and Design Project Exhibition

### VOCABULARY

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**Computing:** Algorithms, instructions, logical reasoning, errors, debugging, input, output, predictions, block coding, sequential algorithm, digital devices, sequencing, repetition, metaverse, cyber space, technology, online, offline, social media, fake news, misinformation, application, programming, code, python, binary, console

**D&T:** Shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating,

### ENGLISH KEY TEXTS

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Werewolf club rules!  
The Land of Roar  
The Barnabus Project

### RESOURCES

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Little bits STEAM kit, card, squared paper, coloured paper, adhesive tape, masking tape, PVA glue, glue spreaders, pencils, felt-tip pens, rulers, scissors

CORE CURRICULUM LEARNING OUTCOMES

English	Mathematics	Science	Physical Education
<p><b>Spelling</b></p> <ul style="list-style-type: none"> <li>Phonemes: ee, ie, er, k, l</li> </ul> <p><b>Grammar</b></p> <p>Use the present perfect form of verbs in contrast to the past tense</p>	<p><b>Fractions</b></p> <ul style="list-style-type: none"> <li>Fractions review – finding fractions of amounts</li> <li>Improper fractions and mixed numbers</li> </ul> <p>Multiplying fractions by whole numbers</p>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>Identify common appliances that run on electricity</li> <li>Construct a simple series electrical circuit, identifying and naming its basic parts</li> <li>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> </ul> <p>Recognise some common conductors and insulators</p>	<p><b>Physical</b></p> <ul style="list-style-type: none"> <li>Agility- reaction and response</li> <li>Static balance- floor work</li> </ul> <p>Tennis</p>
PSHCE	Spanish	Computing	Design and Technology
<p><b>PSHCE</b></p> <ul style="list-style-type: none"> <li>Managing safety and risks</li> </ul>	<p><b>School</b></p> <p>The classroom</p>	<p><b>Computer Science</b></p> <p><i>Substantive knowledge</i></p> <ul style="list-style-type: none"> <li>Computers work by following a set of clear instructions. These instructions are called algorithms.</li> <li>Logical reasoning is used to explain how algorithms work and to detect and correct errors in algorithms and programs.</li> <li>Understand that changing an algorithm/ instructions will change the output. Predictions can be made about the impact.</li> <li>There are different types of programming language. We are using block coding</li> <li>Know the metaverse is an immersive virtual world facilitated by virtual and augmented reality.</li> <li>Explore ethical and consequential issues surrounding interacting in a metaverse</li> </ul> <p><i>Disciplinary focus</i></p> <ul style="list-style-type: none"> <li>Create, describe and debug algorithms, explaining actions using logical reasoning.</li> <li>Code a program to achieve a sequential algorithm (creating an algorithm with more than one step).</li> <li>Create programs to accomplish specific goals. Using an increased number of digital devices (IPad) and use sequencing and repetition.</li> <li>Use logical reasoning to identify and resolve problems.</li> </ul>	<p><b>Designing</b></p> <p>Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.</p> <p><b>Making</b></p> <p>Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Explain their choice of materials according to functional properties and aesthetic qualities. Use finishing techniques suitable for the product they are creating</p> <p><b>Evaluating and improving</b></p> <p>Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. Test and evaluate their own products against design criteria and the intended user and purpose.</p>
Philosophy, Religion and Ethics			
<p><b>Christianity</b></p> <p>Substantive knowledge</p> <ul style="list-style-type: none"> <li>Baptism and its significance for Christians</li> <li>Holy Communion and its origins</li> <li>How different Christians worship</li> <li>Understanding that ‘church’ is less about the physical building and more about the people – the community of believers.</li> </ul> <p>Philosophy: What makes a place ‘special?’</p> <p>Evaluation: Assess the importance of churches for Christians</p> <p>Personal reflection: Children to reflect on their own special places</p>			<p><b>Substantive knowledge: Structures</b></p> <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Develop and use knowledge of how to construct strong, stiff shell structures.</p> <p>Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes</p> <p>Know and use technical vocabulary relevant to the project.</p> <p><b>Programming</b></p> <p>Apply their understanding of computing to programme and control their products</p>