

| | | Year 3 – Electronic Charm | |
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| | | Kapow Skills and Knowledge Progression | National Curriculum |
| Skills | Design | Problem solving by suggesting potential features on a Micro: bit and justifying my ideas. | 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. Investigate and analyse a range of existing products. Apply their understanding of computing to program, monitor, and control their products. |
| | | Developing design ideas for a technology pouch. | 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 materials and components, including construction materials, textiles, and ingredients, according to their functional properties and aesthetic qualities. |
| | | Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks accurately. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. |
| | Make | Using a template when cutting and assembling the pouch. | Select from and use a wider range of tools and equipment to perform practical tasks accurately. |
| | | Following a list of design requirements. | 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. |

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| | | | Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. |
| | | Selecting and using the appropriate tools and equipment for cutting, joining, shaping, and decorating a foam pouch. | Select from and use a wider range of tools and equipment to perform practical tasks accurately. |
| | | Applying functional features such as using foam to create soft buttons. | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. Apply their understanding of how to strengthen, stiffen, and reinforce more complex structures. |
| | Evaluate | Analysing and evaluating an existing product. | 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. Investigate and analyse a range of existing products. |
| | | Identifying the key features of a pouch. | 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. Investigate and analyse a range of existing products. |
| | Knowledge | Technical | To understand that in programming a 'loop' is code that repeats something again and again until stopped. |
| To know that a Micro:bit is a pocket-sized, code able computer. | | | Apply their understanding of computing to program, monitor, and control their products. |
| Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. | | | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. Apply their understanding of computing to program, monitor, and control their products. |

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| | Additional | To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request. | 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. |
| | | To know that 'multifunctional' means an object or product has more than one function. | 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. |
| | | To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing. | Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors]. |

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| | | Year 6 – Navigating the World | |
| | | Kapow Skills and Knowledge Progression | National Curriculum |
| Skills | Design | Writing a design brief from information submitted by a client. | 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. |
| | | Developing design criteria to fulfil the client's request. | 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. |
| | | Considering and suggesting additional functions for my navigation tool. | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. |
| | | Developing a product idea through annotated sketches. | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. |
| | | Placing and manoeuvring 3D objects, using CAD. | Technical knowledge: understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers, and linkages]. |

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| | | Changing the properties of, or combine one or more 3D objects, using CAD. | Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers, and linkages]. |
| | Make | Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). | 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. |
| | | Explaining material choices and why they were chosen as part of a product concept. | Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. |
| | | Programming an N, E, S, W cardinal compass. | Apply their understanding of computing to program, monitor, and control their products. |
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| | Evaluate | Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. | 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. |
| | | Developing an awareness of sustainable design. | Understand how key events and individuals in design and technology have helped shape the world. |
| | | Identifying key industries that utilize 3D CAD modelling and explaining why. | Investigate and analyse a range of existing products. |
| | | Describing how the product concept fits the client's request and how it will benefit the customers. | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. |
| | | Explaining the key functions in my program, including any additions. | Apply their understanding of computing to program, monitor, and control their products. |
| | | Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. | 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. |
| | | Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. | Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design. |
| | | Demonstrating a functional program as part of a product concept. | Select from and use a wider range of tools and equipment to perform practical tasks, accurately. |
| Knowledge | Technical | To know that accelerometers can detect movement. | Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors]. |

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| | | To understand that sensors can be useful in products as they mean the product can function without human input. | 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. |
| | Additional | To know that designers write design briefs and develop design criteria to enable them to fulfill a client's request. | 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. |
| | | To know that 'multifunctional' means an object or product has more than one function. | 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. |
| | | To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing. | Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors]. |