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|  | **Castle Academy**  **DT Curriculum Overview** | | | | | |  |
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| **Mechanisms** | | **Food** | **Textiles** | **Structures** | **Mechanical Systems** | **Electrical Systems** | |
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|  | Year 1 | Year 2 | Year3 | Year 4 | Year 5 | Year 6 |
| Autumn | Sliders and Levers | Templates and Joining Techniques | Levers and Linkages | Shell Structures / Shell Structures using Computer-Aided Design (CAD) | Cams | Combining Different Fabric Shapes / Using CAD in Textiles |
|  | Mechanisms | Textiles | Mechanical Systems | Structures | Mechanical Systems | Textiles |
| Spring | Freestanding Structures | Preparing Fruit and Vegetables | Pneumatics | 2-D Shape to 3-D Product | Frame Structures | More Complex Switches and Circuits |
| Structures | Food | Mechanical Systems | Textiles | Structures | Electrical Systems |
| Summer | Wheels and Axles |  | Healthy and Varied Diets | Simple Circuits and Switches | Celebrating Culture and Seasonality | Pulleys or Gears |
| Mechanisms |  | Food | Electrical Systems | Food | Mechanical Systems |

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|  | | | **Castle Academy – DT Curriculum** | | | | | | | | | | | | | |  |
| **Year 1** | | | | | | Aut | | | Spr | | Sum | | Key Vertical DT Links | | Horizontal/Diagonal Links | | |
| 1 | | 2 | 1 | 2 | 1 | 2 |
| Sliders and Levers – Making Toys | Design | Generate ideas based on simple design criteria and their own experiences, explaining what they could make | | | |  | |  |  |  |  |  | **Moving and Handling**  Children show good control and co-ordination in large and small movements  They move confidently in a range of ways, safely negotiating space  They handle equipment and tools effectively, including pencils for writing.  **Exploring and using media and materials**  children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.    **Being imaginative**  Children use what they have learnt about media and materials in original ways, thinking about users and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories  **Shape, space and measures**  Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.  **Technology**  Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.  **Understanding**  Children follow instructions involving several ideas or actions. They answer ‘how’ and ‘why’ questions about their experiences and in response to stories or events. | | **Year 1 Autumn 2 Science**  Identify the material objects are made from. Describe some simple physical properties of materials. Group together materials by their physical properties. Explore everyday materials which are opaque or transparent. | | |
| Develop, model and communicate their ideas through drawings and mock-ups with card and paper. | | | |  | |  |  |  |  |  |
| Make | Plan by suggesting what to do next. | | | |  | |  |  |  |  |  |
| Select and use tools, explaining their choices, to cut, shape and join paper and card. | | | |  | |  |  |  |  |  |
| Use simple finishing techniques suitable for the product they are creating. | | | |  | |  |  |  |  |  |
| Evaluate | Explore a range of existing books and everyday products that use simple sliders and levers. | | | |  | |  |  |  |  |  |
| Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Explore and use sliders and levers. | | | |  | |  |  |  |  |  |
| Understand that different mechanisms produce different types of movement. | | | |  | |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project | | | |  | |  |  |  |  |  |
| Freestanding Structures – Building Playground Equipment | Design | Generate ideas based on simple design criteria and their own experiences, explaining what they could make. | | | |  | |  |  |  |  |  | **Year 1 Autumn 2 Science**  Identify the material objects are made from. Describe some simple physical properties of materials. Group together materials by their physical properties. Explore everyday materials which are opaque or transparent.  **Year 1 Spring 1 Science**  Recognise a variety of widely used materials. Understand why materials are chosen for specific tasks. Know how to test materials for their strength; understand that some materials are nature, and some are man-made.  **Year 1 Autumn 2 Maths**  Recognise and name 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] | | |
| Develop, model and communicate their ideas through talking, mock-ups and drawings. | | | |  | |  |  |  |  |  |
| Make | Plan by suggesting what to do next. | | | |  | |  |  |  |  |  |
| Select and use tools, skills and techniques, explaining their choices. | | | |  | |  |  |  |  |  |
| Select new and reclaimed materials and construction kits to build their structures. | | | |  | |  |  |  |  |  |
| Use simple finishing techniques suitable for the structure they are creating. | | | |  | |  |  |  |  |  |
| Evaluate | Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. | | | |  | |  |  |  |  |  |
| Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Know how to make freestanding structures stronger, stiffer and more stable | | | |  | |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project. | | | |  | |  |  |  |  |  |
| Wheels and Axels – Making a Vehicle | Design | Generate initial ideas and simple design criteria through talking and using own experiences. | | | |  | |  |  |  |  |  | **Year 1 Autumn 2 Science**  Identify the material objects are made from. Describe some simple physical properties of materials. Group together materials by their physical properties. Explore everyday materials which are opaque or transparent.  **Year 1 Spring 1 Science**  Recognise a variety of widely used materials. Understand why materials are chosen for specific tasks. Know how to test materials for their strength; understand that some materials are nature, and some are man-made.  **Year 1 Autumn 2 Maths**  Recognise and name 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] | | |
| Develop and communicate ideas through drawings and mock-ups. | | | |  | |  |  |  |  |  |
| Make | Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. | | | |  | |  |  |  |  |  |
| Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. | | | |  | |  |  |  |  |  |
| Evaluate | Explore and evaluate a range of products with wheels and axles. | | | |  | |  |  |  |  |  |
| Evaluate their ideas throughout and their products against original criteria. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Explore and use wheels, axles and axle holders. | | | |  | |  |  |  |  |  |
| Distinguish between fixed and freely moving axles. | | | |  | |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project. | | | |  | |  |  |  |  |  |
| *Mechanisms* | | | | *Food* | *Textiles* | | *Structures* | | | | | | | *Mechanical Systems* | | *Electrical Systems* | |

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|  | | | **Castle Academy – DT Curriculum** | | | | | | | | | | | | | |  |
| **Year 2** | | | | | | Aut | | | Spr | | Sum | | Key Vertical DT Links | | Horizontal/Diagonal Links | | |
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| **Templates and Joining Tech**n**iques** - *Creating a Character* | Design | Design a functional and appealing product for a chosen user and purpose based on simple design criteria. | | | |  | |  |  |  |  |  | **EYFS**  Explored and used different fabrics.  **EYFS**  Cut and joined fabrics with simple techniques.  **Year 1 DT**  Thought about the user and purpose of products. | | **Year 1 Autumn 2 Science**  Identify the material objects are made from. Describe some simple physical properties of materials. Group together materials by their physical properties. Explore everyday materials which are opaque or transparent.  **Year 1 Spring 1 Science**  Recognise a variety of widely used materials. Understand why materials are chosen for specific tasks. Know how to test materials for their strength; understand that some materials are nature, and some are man-made.  **Year 1 Autumn 2 Maths**  Recognise and name 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] | | |
| Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology | | | |  | |  |  |  |  |  |
| Make | Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. | | | |  | |  |  |  |  |  |
| Select from and use textiles according to their characteristics | | | |  | |  |  |  |  |  |
| Evaluate | Explore and evaluate a range of existing textile products relevant to the project being undertaken. | | | |  | |  |  |  |  |  |
| Evaluate their ideas throughout and their final products against original design criteria. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Understand how simple 3-D textile products are made, using a template to create two identical shapes. | | | |  | |  |  |  |  |  |
| Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. | | | |  | |  |  |  |  |  |
| Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. | | | |  | |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project | | | |  | |  |  |  |  |  |
| Pr**eparing Fruit and Vegetables** - *Food from around the world* | Design | Design appealing products for a particular user based on simple design criteria. | | | |  | |  |  |  |  |  | **EYFS**  Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.  **EYFS**  Experience of cutting soft fruit and vegetables using appropriate utensils.  **Year 1 DT**  Design and Evaluate | | **Year 1 Autumn 1 Science**  Understand the importance of taking care of your body. Learn about the senses of hearing and smell.  **Year 1 Spring 2 Science**  Understand that some food is grown as a crop on a farm.  Know about different arable crops grown by farmers.  **Year 2 Autumn 1 Science**  Know about different sources of food grown by farmers.  Understand the journey food makes form the farm to the supermarket. | | |
| Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. | | | |  | |  |  |  |  |  |
| Communicate these ideas through talk and drawings. | | | |  | |  |  |  |  |  |
| Make | Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. | | | |  | |  |  |  |  |  |
| Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. | | | |  | |  |  |  |  |  |
| Evaluate | Taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences. | | | |  | |  |  |  |  |  |
| Evaluate ideas and finished products against design criteria, including intended user and purpose | | | |  | |  |  |  |  |  |
| Technical Knowledge | Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. | | | |  | |  |  |  |  |  |
| Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate. | | | |  | |  |  |  |  |  |
| Know and use technical and sensory vocabulary relevant to the project. | | | |  | |  |  |  |  |  |
| *Mechanisms* | | | | *Food* | *Textiles* | | *Structures* | | | | | | | *Mechanical Systems* | | *Electrical Systems* | |

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|  | | | **Castle Academy – DT Curriculum** | | | | | | | | | | | | | |  | |
| **Year 3** | | | | | | Aut | | | Spr | | Sum | | Key Vertical DT Links | | Horizontal/Diagonal Links | | |
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| **Levers and Linkages -** *Human Joints* | Design | Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. | | | |  | |  |  |  |  |  | **Year 1 Autumn**  Explored and used mechanisms such as flaps, sliders and levers.  **Year 2 Autumn**  **Year 1 Summer**  Gained experience of basic cutting, joining and finishing techniques with paper and card. | | **Year 3 Autumn 2 Science**  Introduction to the skeleton. Know about the skeleton – tendons and ligaments. Explore how skeletons and muscles are used for support, protection and movement.  **Year 2 Spring 2 Science**  Explain why we use certain materials. Investigate squashing, bending, twisting and stretching. Compare the uses of everyday materials.  **Year 1 Spring 1 Science**  Recognise a variety of widely used materials. Understand why materials are chosen for specific tasks. Know how to test materials for their strength; understand that some materials are nature, and some are man-made. | | |
| Use annotated sketches and prototypes to develop, model and communicate ideas. | | | |  | |  |  |  |  |  |
| Make | 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 | Investigate and analyse books and, where available, other products with lever and linkage mechanisms. | | | |  | |  |  |  |  |  |
| Evaluate their own products and ideas against criteria and user needs, as they design and make. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Understand and use lever and linkage mechanisms. | | | |  | |  |  |  |  |  |
| Distinguish between fixed and loose pivots. | | | |  | |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project. | | | |  | |  |  |  |  |  |
| **Pneumatics -** *Forces and movement* | Design | Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. | | | |  | |  |  |  |  |  | **Year 1 Autumn**  Explored simple mechanisms, such as sliders and levers, and simple structures.  **Year 1 Autumn**  **Year 1 Summer**  Learnt how materials can be joined to allow movement.  **Year 1 Spring**  **Year 2 Autumn**  Joined and combined materials using simple tools and techniques. | | **Year 3 Autumn 2 Science**  Compare how things move on different surfaces.  **Year 2 Spring 2 Science**  Explain why we use certain materials. Investigate squashing, bending, twisting and stretching. Compare the uses of everyday materials.  **Year 1 Spring 1 Science**  Recognise a variety of widely used materials. Understand why materials are chosen for specific tasks. Know how to test materials for their strength; understand that some materials are nature, and some are man-made. | | |
| Use annotated sketches and prototypes to develop, model and communicate ideas. | | | |  | |  |  |  |  |  |
| Make | Order the main stages of making. | | | |  | |  |  |  |  |  |
| Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. | | | |  | |  |  |  |  |  |
| Select from and use finishing techniques suitable for the product they are creating. | | | |  | |  |  |  |  |  |
| Evaluate | Investigate and analyse books, videos and products with pneumatic mechanisms. | | | |  | |  |  |  |  |  |
| Evaluate their own products and ideas against criteria and user needs, as they design and make. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Understand and use pneumatic mechanisms. | | | |  | |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project | | | |  | |  |  |  |  |  |
| **Healthy and Varied Diets -** *Lunch on the road* | Design | Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. | | | |  | |  |  |  |  |  | **Year 2 Spring**  Know some ways to prepare ingredients safely and hygienically.  **Year 2 Spring**  Have some basic knowledge and understanding about healthy eating and The Eatwell plate.  **Year 2 Spring**  Have used some equipment and utensils and prepared and combined ingredients to make a product. | | **Year 1 Autumn 1 Science**  Understand the importance of taking care of your body. Learn about the senses of hearing and smell.  **Year 1 Spring 2 Science**  Understand that some food is grown as a crop on a farm.  Know about different arable crops grown by farmers.  **Year 2 Autumn 1 Science**  Know about different sources of food grown by farmers.  Understand the journey food makes form the farm to the supermarket.  **Year 2 Spring 2 PSHE**  I can sort foods into the correct food groups and know which foods my body needs every day to keep me healthy. I can decide which foods to eat to give my body energy. I can make some healthy snacks and explain why they are good for my body. | | |
| Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. | | | |  | |  |  |  |  |  |
| Make | Plan the main stages of a recipe, listing ingredients, utensils and equipment. | | | |  | |  |  |  |  |  |
| Select and use appropriate utensils and equipment to prepare and combine ingredients. | | | |  | |  |  |  |  |  |
| Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. | | | |  | |  |  |  |  |  |
| Evaluate | Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. | | | |  | |  |  |  |  |  |
| Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. | | | |  | |  |  |  |  |  |
| Technical Knowledge | Know how to use appropriate equipment and utensils to prepare and combine food. | | | |  | |  |  |  |  |  |
| Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. | | | |  | |  |  |  |  |  |
| Know and use relevant technical and sensory vocabulary appropriately. | | | |  | |  |  |  |  |  |
| *Mechanisms* | | | | *Food* | *Textiles* | | *Structures* | | | | | | | *Mechanical Systems* | | *Electrical Systems* | | |

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|  | | | **Castle Academy – DT Curriculum** | | | | | | | | | | | | | |  |
| **Year 4** | | | | | | | Aut | | Spr | | Sum | | Key Vertical DT Links | | Horizontal/Diagonal Links | | |
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| **Shell Structures (using CAD)** - *Containers for equipment* | Design | Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. | | | | |  |  |  |  |  |  | **Year 3 Autumn**  Experience of using different joining, cutting and finishing techniques with paper and card. | | **Year 2 Spring 2 Science**  Explain why we use certain materials. Investigate squashing, bending, twisting and stretching. Compare the uses of everyday materials.  **Year 3 Spring 2 Maths**  Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them | | |
| Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. | | | | |  |  |  |  |  |  |
| Make | 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 | | | | |  |  |  |  |  |  |
| Evaluate | 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 | | | | |  |  |  |  |  |  |
| Technical Knowledge | Develop and use knowledge of how to construct strong, stiff shell structures. | | | | |  |  |  |  |  |  |
| Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.  Know and use technical vocabulary relevant to the project | | | | |  |  |  |  |  |  |
| **2-D Shape to 3-D Product** - *Reusable products* | Design | Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. | | | | |  |  |  |  |  |  | **Year 2 Autumn**  Have joined fabric in simple ways by gluing and stitching.  **Year 2 Autumn**  Have used simple patterns and templates for marking out.  **Year 2 Autumn**  **Year 2 Spring**  Have evaluated a range of textile products | | **Year 2 Spring 2 Science**  Explain why we use certain materials. Investigate squashing, bending, twisting and stretching. Compare the uses of everyday materials.  **Year 3 Spring 2 Maths**  Draw 2-D Shapes.  Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. | | |
| Produce annotated sketches, prototypes, final product sketches and pattern pieces. | | | | |  |  |  |  |  |  |
| Make | Plan the main stages of making. | | | | |  |  |  |  |  |  |
| Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. | | | | |  |  |  |  |  |  |
| Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. | | | | |  |  |  |  |  |  |
| Evaluate | Investigate a range of 3-D textile products relevant to the project. | | | | |  |  |  |  |  |  |
| Test their product against the original design criteria and with the intended user. | | | | |  |  |  |  |  |  |
| Take into account others’ views. | | | | |  |  |  |  |  |  |
| Understand how a key event/individual has influenced the development of the chosen product and/or fabric. | | | | |  |  |  |  |  |  |
| Technical Knowledge | Know how to strengthen, stiffen and reinforce existing fabrics. | | | | |  |  |  |  |  |  |
| Understand how to securely join two pieces of fabric together. | | | | |  |  |  |  |  |  |
| Understand the need for patterns and seam allowances. | | | | |  |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project. | | | | |  |  |  |  |  |  |
| **Simple Circuits and Switches** - *Light* | Design | Gather information about needs and wants and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. | | | | |  |  |  |  |  |  | **Year 2 Autumn**  **Year 3 Autumn/Spring**  Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. | | **Year 3 Summer 2 Science**  Light - Describe how light travels  **Year 4 Summer 2 Science**  Describe the basic parts of a circuit. Identify when a lamp will light in a simple series circuit. Understand the difference between a series and a parallel circuit. Explain how to recognise electrical conductors and insulators. Explore how electricity is transported. To know how to work safely with electricity. | | |
| Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. | | | | |  |  |  |  |  |  |
| Make | 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 | Investigate and analyse a range of existing battery-powered products. | | | | |  |  |  |  |  |  |
| Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. | | | | |  |  |  |  |  |  |
| Technical Knowledge | Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. | | | | |  |  |  |  |  |  |
| Apply their understanding of computing to program and control their products. | | | | |  |  |  |  |  |  |
| Know and use technical vocabulary relevant to the project. | | | | |  |  |  |  |  |  |
| *Mechanisms* | | | | *Food* | *Textiles* | *Structures* | | | | | | | | *Mechanical Systems* | | *Electrical Systems* | |

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|  | | | | **Castle Academy – DT Curriculum** | | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| **Year 5** | | | | | | | | | | | | | Aut | | | | | Spr | | | | | Sum | | | Key Vertical DT Links | | | Horizontal/ Diagonal Links | | |
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| **Cams -** *Viking Longboat* | Design | Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  | **Year 1 Summer**  Experience of axles, axle holders and wheels that are fixed or free moving.  **Year 3 Autumn/Spring**  Basic understanding of different types of movement.  **Year 3 Autumn**  **Year 3 Spring**  Experience of cutting and joining techniques with a range of materials including card, plastic and wood.  **Year 4 Autumn**  An understanding of how to strengthen and stiffen structures. | | | **Year 5 Autumn 1** **Science**  Describe the properties of different materials. Compare the properties and uses of different materials.  **Year 3 Spring 1 Science**  Compare how things move on different surfaces.  **Year 5 Autumn 2 History**  Britain’s Settlement by the Anglo Saxons, Vikings and Scots. | | |
| Develop a simple design specification to guide their thinking. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Make | Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Work within the constraints of time, resources and cost. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Evaluate | Compare the final product to the original design specification. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Consider the views of others to improve their work.  Investigate famous manufacturing and engineering companies relevant to the project. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Technical Knowledge | Understand that mechanical systems have an input, process and an output. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Understand how cams can be used to produce different types of movement and change the direction of movement. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Know and use technical vocabulary relevant to the project. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| **Frame Structures -** *Shelter Building* | Design | Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  | **Year 3 Autumn**  **Year 4 Autumn**  Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.  **Year 3 Autumn**  **Year 4 Autumn**  Basic understanding of what structures are and how they can be made stronger, stiffer and more stable. | | | **Year 5 Autumn 1 Science**  Describe the properties of different materials. Compare the properties and uses of different materials.  **Year 3 Autumn 2 Maths**  Draw 2-D Shapes.  Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. | | |
| Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Make | Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Use finishing and decorative techniques suitable for the product they are designing and making. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Evaluate | Investigate and evaluate a range of existing frame structures. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Research key events and individuals relevant to frame structures. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Technical Knowledge | Understand how to strengthen, stiffen and reinforce 3-D frameworks. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Know and use technical vocabulary relevant to the project. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| **Celebrating Culture and Seasonality -** *Savoury Food* | Design | Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  | **Year 3 Summer**  Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.  **Year 3 Summer**  Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. | | | **Year 4 Autumn 2 Science**  Understand the food pyramid and why it is important. Know about vitamins and minerals. Know the different types of teeth. Understand the food chain, know how natural cycles work.  **Year 5 Spring 2 PSHE**  Know what makes a healthy lifestyle including healthy eating and the choices needed to made to be healthy and happy. | | |
| Explore a range of initial ideas and make design decisions to develop a final product linked to user and purpose. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Make | Write a step-by-step recipe, including a list of ingredients, equipment and utensils | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Make, decorate and present the food product appropriately for the intended user and purpose | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Evaluate | 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. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Understand how key chefs have influenced eating habits to promote varied and healthy diets. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Technical Knowledge | Know how to use utensils and equipment including heat sources to prepare and cook food. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Understand about seasonality in relation to food products and the source of different food products. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| Know and use relevant technical and sensory vocabulary. | | | | | | | | | | |  | |  | | |  | | |  | |  | |  |
| *Mechanisms* | | | | | *Food* | | *Textiles* | | *Structures* | | | | | | | | | | | *Mechanical Systems* | | | | | | | | *Electrical Systems* | | | |
|  | | | | **Castle Academy – DT Curriculum** | | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| **Year 6** | | | | | | | | | | | Aut | | | Spr | | | | | Sum | | | | | Key Vertical DT Links | | | | | Horizontal/ Diagonal Links | |
| 1 | 2 | | 1 | | 2 | | | 1 | | | 2 | |
| **Combining Different Fabric Shapes -** *Tool / Equipment Belt* | Design | | Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. | | | | | | | |  |  | |  | |  | | |  | | |  | | **Year 4 Spring**  Experience of basic stitching, joining textiles and finishing techniques.    **Year 4 Spring**  Experience of making and using simple pattern pieces. | | | | | **Year 5 Autumn 1 Science**  Describe the properties of different materials. Compare the properties and uses of different materials.  **Year 3 Autumn 2 Maths**  Draw 2-D Shapes.  Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. | |
| Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer aided design (CAD). | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Make | | Produce detailed lists of equipment and fabrics relevant to their tasks. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Formulate step-by-step plans and, if appropriate, allocate tasks within a team. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Work within the constraints of time, resources and cost | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Evaluate | | Investigate and analyse textile products linked to their final product. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Compare the final product to the original design specification. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Consider the views of others to improve their work. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Technical Knowledge | | A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Fabrics can be strengthened, stiffened and reinforced where appropriate. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| **More Complex Switches and Circuits -** *Security Alarms* | Design | | Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. | | | | | | | |  |  | |  | |  | | |  | | |  | | **Year 4 Summer**  Understanding of the essential characteristics of a series circuit and experience of creating a battery powered, functional, electrical product.  **Year 4 Summer**  Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off. | | | | | **Year 6 Autumn 2 Science**  Explain how objects become charged. Describe the parts of an electric circuit. Explain what effects the output of a circuit. Explain how variable resistors can work like a switch. Compare electrical conductors and insulators.  Build a set of traffic lights. | |
| Generate and develop innovative ideas and share and clarify these through discussion. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Make | | Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Evaluate | | Continually evaluate and modify the working features of the product to match the initial design specification. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Test the system to demonstrate its effectiveness for the intended user and purpose. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Investigate famous inventors who developed ground-breaking electrical systems and components. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Technical Knowledge | | Understand and use electrical systems in their products. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Apply their understanding of computing to program, monitor and control their products. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Know and use technical vocabulary relevant to the project. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| **Pulleys or Gears -** *Vehicles* | Design | | Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. | | | | | | | |  |  | |  | |  | | |  | | |  | | **Year 5 Autumn**  Experience of axles, axle holders and wheels that are fixed or free moving.  **Year 6 Spring**  Basic understanding of electrical circuits, simple switches and components.  **Year 5 Autumn**  **Year 5 Spring**  Experience of cutting and joining techniques with a range of materials including card, plastic and wood.  **Year 5 Spring**  An understanding of how to strengthen and stiffen structures. | | | | | **Year 6 Autumn 2 Science**  Explain how objects become charged. Describe the parts of an electric circuit. Explain what effects the output of a circuit. Explain how variable resistors can work like a switch. Compare electrical conductors and insulators.  **Year 5 Summer 2 Science**  Explore gravity and air resistance. Investigate mechanisms – gears  Investigate. mechanisms – levers and pulleys. | |
| Develop a simple design specification to guide their thinking. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Make | | Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Evaluate | | Compare the final product to the original design specification. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Consider the views of others to improve their work. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Investigate famous manufacturing and engineering companies relevant to the project. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Technical Knowledge | | Understand that mechanical and electrical systems have an input, process and an output. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| Know and use technical vocabulary relevant to the project. | | | | | | | |  |  | |  | |  | | |  | | |  | |
| *Mechanisms* | | | | | | *Food* | | *Textiles* | | *Structures* | | | | | | | *Mechanical Systems* | | | | | | | | | | *Electrical Systems* | | | | |