Bleak Hill Primary School

Design and Technology Long Term Plan 2024-2025



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| Vision | Intent | Implementation | Impact |
| Design & Technology is an inspiring, practical, creative subject. At Bleak Hill, we wish to deepen children’s understanding of the technological and mechanical world in which we live in and excite children on how products and ideas have been developed over time to react to the ever-changing world. | At Bleak Hill, we understand that D&T allows pupils to solve problems, think creatively and develop ideas. Our curriculum offers children a chance to use creative thinking and activity within a defined purpose and tangible outcome. Bleak Hill is committed to nurturing children’s curiosity and creativity, as well as preparing them for living in a modern world where technology is rapidly changing and advancing.  In D&T, we aim to help pupils to:  Develop their design and making skills  Work individually and collaborate with other pupils in a variety of contexts  Evaluate products, made by themselves, their peer groups and companies.  Learn the principles of nutrition, healthy eating and how to cook. | Following the National Curriculum as a basis, teaching all statutory content, with a half term dedicated to D&T teaching every term (3 half terms per year group).  Topics build systematically on previous topics which contain over-arching transferable concepts.  Skills to apply previous knowledge to new learning (across topics and year groups).  Specialised D&T days are planned to allow for enterprise opportunities.  Key historical figures considered as wider curriculum links each term including famous creators per year group. | Retrieval based learning techniques for every lesson in the sequence.  Evaluations for each lesson to provide formative assessment.  Exit tasks to gain a summative judgment. |

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|  | Autumn | Spring | Summer |
| Reception | **Making Models**  Experimenting with joining techniques | **Creating houses**  Planning and Evaluating | **Towers and Bridges**  Planning and Evaluating |
| Year 1 | **Materials/Structure**  Moving Pictures | **Textiles**  Fabric Faces | **Food Technology**  Picnic snack |
| Year 2 | **Food Technology**  Dips and Dippers | **Textiles**  Fabric Bunting | **Mechanism/Structure**  Tudor Houses |
| Year 3 | **Mechanism/Structure**  Let’s go fly a kite | **Textiles**  Juggling Balls | **Food Technology**  Edible Garden |
| Year 4 | **Mechanism/Structure**  Making Mini Greenhouses | **Food Technology**  American Food | **Electronics**  Battery operated lights |
| Year 5 | **Textiles**  Felt Phone Cases | **Mechanism/Structure**  Marble Runs | **Food Technology**  Bread |
| Year 6 | **Mechanism/Structure**  Building Bridges | **Food Technology**  Global Food | **Electronics**  Fairground ride |

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| Materials/ Structure | Textiles | Food Technology | Electronics |

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| Threshold Concepts  (the big ideas that form the basis of the schema) | Master practical skills design | | Make, Evaluate and improve | | Take Inspiration from design throughout history | |
| Knowledge Categories  (the facets of each threshold concept that help strengthen the schema) | Mechanism/  Structure | Textiles | Purpose | Audience | Techniques | Vocabulary |
| CAD/ Electricity | Food |

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| EYFS  Reception | **Physical development-**   * Develop their small motor skills so that they can use a range of tools competently, safely and confidently.   **Expressive Arts and Design-**   * Explore, use and refine a variety of artistic effects to express their ideas and feelings. * Return to and build on their previous learning, refining ideas and developing their ability to represent them. * Create collaboratively, sharing ideas, resources and skills. |
| ELG | **Physical development-**  Use a range of small tools, including scissors, paintbrushes and cutlery.  **Expressive Arts and Design-**   * Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. * Share their creations, explaining the process they have used. |

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| Year 1 | Food:  Cut, peel or grate ingredients safely and hygienically.  Measure or weigh using measuring cups  Materials:  Cut materials safely using tools provided. Measure and mark out to the nearest centimetre.  Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).  Textiles:  Shape textiles using templates.  Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).  Computing:  Model designs using software. | Design products that have a clear purpose and an intended user. | Explore objects and designs to iden tify likes and dislikes of the designs. Suggest improvements to existing designs. |
| Year 2 | Food:  Measure or weigh using electronic scales.  Assemble or cook ingredients.  Materials:  Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).  Textiles:  Join textiles using running stitch. Electricals and electronics:  Diagnose faults in battery operated de- vices (such as low battery, water damage or battery terminal damage).  Construction:  Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.  Mechanics:  Create products using levers, wheels and winding mechanisms. | Make products, refining the design as work progresses.  Use software to design | Explore how products have been created |

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| Year 3 | Food:  Prepare ingredients hygienically using appropriate utensils.  Measure ingredients to the nearest gram accurately.  Materials:  Cut materials accurately and safely by selecting appropriate tools.  Measure and mark out to the nearest mil limetre.  Mechanics:  Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).  Construction:  Choose suitable techniques to construct products or to repair items. | Design with purpose by identifying opportunities to design.  Make products by working efficiently (such as by carefully selecting materials). | Identify some of the great designers in all the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.  Improve upon existing designs, giving reasons for choices. |
| Year 4 | Food:  Follow a recipe.  Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).  Materials:  Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).  Select appropriate joining techniques.  Textiles:  Understand the need for a seam allowance.  Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles.  Computing:  Control and monitor models using software designed for this purpose.  Construction:  Strengthen materials using suitable techniques.  Electricals:  Create series and parallel circuits | Refine work and techniques as work progresses, continually evaluating the product design.  Use software to design and represent product designs. | Disassemble products to understand how they work. |
| Year 5 | Food:  Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).  Measure accurately and create and refine recipes, including ingredients, methods, cooking times and temperatures.  Materials:  Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).  Mechanics:  Convert rotary motion to linear using cams. Use innovative combinations of electronics (or computing) and mechanics in product designs.  Computing:  Write code to control and monitor models or products  Textiles:  Create objects (such as a cushion) that employ a seam allowance. Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). | Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).  Make products through stages of prototypes, making continual refinements. | Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.  Create innovative designs that improve upon existing products. |
| Year 6 | Food:  Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Demonstrate a range of baking and cooking techniques.  Materials:  Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).  Construction:  Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sand ing).  Electricals and electronics:  Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). | Ensure products have a high-quality finish, using art skills where appropriate.  Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. | Evaluate the design of products so as to suggest improvements to the user experience. |

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| EYFS | Autumn | Spring | Summer |
| Theme | During their time in the Early Years the children will complete tasks in continuous provision and planning will be interest led. Themes will vary to reflect this  Children will be supported by staff and their knowledge and skills will be developed on an individual basis.  Development matters supports this – DT has strong links to the following areas: Making Relationships, Self Confidence & Self Awareness, Communication & Language, Moving  & Handling, Health & Self Care, Expressive Arts & Design. | During their time in the Early Years the children will complete tasks in continuous provision and planning will be interest led. Themes will vary to reflect this  Children will be supported by staff and their knowledge and skills will be developed on an individual basis.  Development matters supports this – DT has strong links to the following areas: Making Relationships, Self Confidence & Self Awareness, Communication & Language, Moving & Handling, Health & Self Care, Expressive Arts & Design. | During their time in the Early Years the children will complete tasks in continuous provision and planning will be interest led. Themes will vary to reflect this  Children will be supported by staff and their knowledge and skills will be developed on an individual basis.  Development matters supports this – DT has strong links to the following areas: Making Relationships, Self Confidence & Self Awareness, Communication & Language, Moving & Handling, Health & Self Care, Expressive Arts & Design. |
| Key Stage End Points | To use one-handed tools and equipment, e.g. makes snips in paper with child scissors.  To understand that equipment and tools have to be used safely.  To show an interest in technological toys with knobs or pulleys, or real objects.  To show skill in making toys work by pressing parts or lifting flaps to achieve effects, such as sound, movements or new images.  use various construction materials.  To beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces.  To join construction pieces together to build and balance.  To realise that tools can be used for a purpose.  To talk about a healthy range of foodstuffs and understands need for variety in food. | To use simple tools to effect changes to materials.  To handle tools, objects, construction and malleable materials safely and with increasing control.  To show understanding of the need for safety when tackling new challenges and consider and manage some risks. To show understanding of how  to transport and store equipment safely.  To practise some appropriate safety measures without direct supervision.  To explore what happens when they mix colours.  To experiment to create different textures.  To understand that different media can be combined to create new effects.  To manipulate materials to achieve a planned effect.  To construct with a purpose in mind, using a variety of resources.  To use simple tools and techniques competently and appropriately.  To select appropriate resources and adapt work where necessary.  To select tools and techniques needed to shape, assemble and join materials they are using.  To create simple representations of events, people and objects.  To choose particular colours to use for a purpose.  To talk about a healthy range of food- stuffs and understands need for variety in food. | To handle equipment and tools effectively, including pencils for writing.  To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.  To use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.  To talk about a healthy range of foodstuffs and understands need for variety in food. |

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| Knowledge | To help to develop the skills they need to use equipment safely, e.g. cutting with scissors or using tools.  To help to develop the skills of how to use tools and materials effectively and safely and give them opportunities to do so.  To support and extend the skills children need to develop to enable them to become familiar with simple equipment.  To draw young children’s attention to pieces of ICT apparatus they see or that they use with adult supervision support children in thinking about what they want to make, the processes that may be involved and the materials and resources they might need, such as a photograph to remind them what the climbing frame is like.  To talk with children about where they can see models and plans in the environment  To demonstrate and teach skills and techniques associated with the thing’s children are doing.  To eat a healthy range of foodstuffs and taste a variety in food. | To use tools in playdough to effect change.  To be able to manipulate media to change it.  To use tools, objects, construction, materials to construct.  be able to work safely with materials and tools  To be aware how to transport tools safely.  know how the use scissors safely.  To experiment colour, design, texture and form.  To know how to join materials together. To know that different materials have different properties.  To eat a healthy range of foodstuffs and taste a variety in food. | To know how to use scissors, printing items and other media.  To be able to use a pencil effectively to draw and mark make.  To know how the use scissors safely.  To experiment colour, design, texture and form.  know how to join materials together.  To know that different materials have different properties.  To eat a healthy range of foodstuffs and taste a variety in food. |

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| Vocabulary | Cut, snip, join, make, fold, draw, glue, stick, safe, scissors, materials, soft, hard, fluffy, smooth, rough, computer, iPad, laptop, colour, pencil, paint, print, rubbing, works, better, food, eat, like, dislike, new, exercise. | Cut, snip, join, make, fold, draw, glue, stick, safe, scissors, materials, soft, hard, fluffy, smooth, rough, computer, iPad, laptop, colour, pencil, paint, print, rubbing, works, better, food, eat, like, dislike, new, exercise. | Cut, snip, join, make, fold, draw, glue, stick, safe, scissors, materials, soft, hard, fluffy, smooth, rough, computer, iPad, laptop, colour, pencil, paint, print, rubbing, works, better, food, eat, like, dislike, new, exercise. |
| Health & Safety | Consider the materials, tools and equipment being used. Scissor safety rules should always be followed and extra care and adult supervision will be required when using sharp objects.  Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation  should be done hygienically, surfaces need to be wiped down and hands washed. | | |

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| Year 1 | Autumn | Spring | Summer |
| Theme | Moving Pictures  (Mechanics) | Our Fabric Faces  (Textiles) | Picnic Snacks  (Food) |
| Key Stage 1 End Points | Create products using levers and wheels and winding mechanisms.  Make products refining the design as work progresses.  Use software to design.  Explore how products have been created. | Demonstrate a range of joining techniques.  Join textiles using a running stitch.  Make products, refining the design as work progresses.  Explore how products have been created. | Cut, peel or grate ingredients safely and hygienically.  Measure or weigh using measuring cups. Design products that have a clear purpose and an intended user.  Suggest improvements to existing designs. |
| Knowledge | Explore and use mechanisms such as sliders, wheels, axels and levers in a product.  Design purposeful, functional and appealing products based on design criteria.  Design a working product thinking about who it is for and what it needs.  Generate, develop, model and communicate their ideas through talking, drawing, templates and mock-ups.  Make decisions about a product design and use an annotated sketch to show them.  Evaluate ideas against design criteria.  Explore and evaluate a range of existing products. | Select a material and shape it.  Join textiles using running stitch.  Select from and use a range of tools and equipment to perform practical tasks such as joining, using templates and cutting.  Join fabrics together and attach different materials.  Cut on a line.  Select appropriate fabric materials for a product from a range.  Design purposeful, functional, appealing products.  Create and follow a design criteria.  Generate, develop, model and communicate ideas through talking, drawing and templates.  Follow a design carefully.  Explore and evaluate a range of existing products, fabrics, hair on fabric dolls and fabric dolls/characters. | Select from and use a range of tools and equipment to perform practical tasks.  Follow a simple recipe.  Prepare a tasty salad.  Prepare and make a healthy salad made from root vegetables.  Use the basic principles of a healthy and varied diet to design and prepare dishes. Understand where food comes from in the context of looking at different fruits and vegetables.  Explain where some food grows. Explore and evaluate existing products.  Explain why I need to eat fruit and vegetables.  Name different fruits and vegetables. Handle, taste, talk and learn about different foods  Explore and evaluate a range of existing products in the context of tasting salads made mainly from root vegetables. |
| Lesson Sequence | 1. What are moving images? 2. What is a slider? 3. What is a lever? 4. What is a wheel? 5. Which moving picture will I choose for my design? 6. How will I make my own moving picture? | 1. How do different fabrics look and feel? 2. Which skills can I use to make a hair style? 3. Which joining method is the easiest and hardest? 4. Do I know how to make and use a template? 5. Can I create and follow a design criteria? 6. How can I improve my design? | 1. Where do our fruits and vegetables come from? 2. Why do we need to eat fruit and vegetables? 3. How do we safely handle and prepare food? 4. Can I describe different fruits and design a fruit kebab? 5. Can I make a healthy picnic food? 6. How can I improve my design? |

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| Vocabulary | Card, disc with holes in the centre, split pins, moving part, lever, wheel, axel, slider | Wool, threads, needle, ribbon, fabrics, felt fabric, beads, sequins, buttons, embroidery threads, plastic, large metal darning needles, scissors, small staplers, PVA glue. | Safe knives, forks, spoons, chopping boards, mixing bowls, kitchen scissors, kitchen scales, peelers, graters, food scissors, teaspoons, tablespoons above ground, below ground |
| Health &  Safety | Consider the materials, tools and equipment being used. Scissor safety rules should always be followed. Adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. In addition take care with the storage of sharp objects. | Scissor safety rules should always be followed and extra care and adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. In addition take care with the storage of sharp objects e.g. needles. Felt pads with lines drawn on are useful for storing and checking needles. Ongoing work with needles attached should be stored in resealable bags. It is advisable that children wear aprons when using PVA glue and wash hands after use. | Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation should be done hygienically, surfaces need to be wiped down and hands  washed. |

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| Year 2 | Autumn | | Spring | | Summer | |
| Theme | Dips and Dippers  Food | | Bunting (Textiles/Computing) | | Tudor Houses  (Materials/Construction) | |
| Key Stage 1 End Points | Measure or weigh using electronic scales.  Assemble or cook ingredients.  Make and design products  Explore products that have been created. | | Colour and decorate textiles using a technique  Cut materials safely using tools pro- vided.  Shape textiles using templates. Model designs using software.  Design products that have a clear purpose  Explore objects and designs | | Measure and mark out to the nearest centimetre.  Demonstrate cutting and shaping techniques  Demonstrate a range of cutting and shaping techniques  Design products that have a clear purpose an intended user.  Explore objects and designs to identify likes and dislikes of the designs. | |
| Knowledge | Select and use a range of tools and equipment to perform practical tasks.  Measure or weigh using electronic scales.  Make products following a design or plan.  Design purposeful, functional, appealing products for themselves and other users based on design criteria.  Generate, develop, model and communicate ideas through talking and drawings.  Evaluate their ideas and products against design criteria.  Design an appealing dip and dipper and clearly show ideas.  Explore and evaluate a range of existing products.  Evaluate and compare different dips thinking about healthy ingredients.  Start to think about where different foods come from.  Describe different dippers. | | Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping and finishing) in the context of cutting a template and using it to shape a piece of fabric.  Use a paper template to help cut out a fabric shape.  Generate, develop, model and communicate ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology in the context of using a basic graphics program to design a bunting flag.  Design, make and evaluate a bunting flag.  Explore and evaluate a range of existing products in the context of evaluating bunting designs | | Safely perform practical tasks such as cutting and joining.  Select from and use a range of tools and equipment to perform practical tasks.  Demonstrate a range of cutting and shaping techniques  Design, make and evaluate a musical instrument.  Use materials to make a musical instrument.  Decorate a product to provide an appropriate finish.  Measure and mark out to the nearest centimeter. | |
| Lesson Sequence | 1. **What different dips are there?** 2. **What could be used as a dipper?** 3. **Which food groups do our ingredients belong too?** 4. **Which food hygiene and preparation techniques do I need to use?** 5. **Can I design a new dip for a party?** 6. **What does my new dip taste like?** | | 1. **What is bunting?** 2. **What ideas do I have for my bunting?** 3. **Can I make a paper template to help cut fabric?** 4. **What is a running stitch?** 5. **Which joining methods will I use to make my bunting flag?** 6. **How can I improve my design?** | | 1. **What were Tudor houses like?** 2. **Can I make a paper model of a Tudor house?** 3. **How can I plan my Tudor house design?** 4. **What tools and materials will I use to make my Tudor house?** 5. **How will I decorate my Tudor house?** 6. **How can I improve my design?** | |
| Vocabulary | | Equipment, prepare, chopping boards, bowls, graters, safe knives, food scissors, teaspoons and tablespoons, dips, dippers | | Computers, graphics/paint program, Maths equipment, scissors, chalk, coloured felt, cut, decorate, cut, bunting | | Wattle, daub, timber, windows, cutting, joining, decorate, materials, measure, centimetre, jetty, roof, chimney, thatched, slate tiles, casement, plaster | |
| Health &  Safety | | Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation should be done hygienically, surfaces need to be wiped down and hands washed. | | Consider the materials, tools and equipment being used. Scissor safety rules should always be followed and extra care and adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. | | Consider the materials, tools and equipment being used. Scissor safety rules should always be followed and extra care and adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. | |

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| Year 3 | Autumn | Spring | Summer |
| Theme | Let’s Go Fly a Kite (Materials/Construction) | Juggling Balls (Textiles/Materials) | Edible Garden (Food) |
| Key Stage 2 End Points | Cut materials accurately. Measure to the nearest millimetre.  Choose suitable techniques to con struct products to repair items.  Strengthen materials using suitable techniques.  Design products  Make products  Identify designers  Improve upon existing designs | Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material  Understand the need for a seam allowance.  Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles  Refine work and techniques as work progresses, continually evaluating the product design.  Explore and evaluate a range of existing products. | Prepare ingredients hygienically using appropriate utensils.  Measure ingredients to the nearest gram accurately.  Design products with purpose  Make products by working efficiently.  Improve upon existing designs, giving reasons for choices. |
| Knowledge | Measure and cut the body of the kite  Join the kite to a structure.  Strengthen a frame structure to support the kite.  Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.  Develop a design criteria for a kite  Generate, develop, model and communicate ideas through annotated sketches.  Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.  How have kites helped shape the world?  Explore and evaluate a range of existing products  Identify key events and individuals in design and technology. | Perform skills of cutting, shaping and hemming a juggling ball.  Cut around a template and use a running stitch to create a hem.  Use a functional technique to carefully decorate my fabric.  Perform tie-dye as a technique for decorating my fabric.  Use graphs to analyse existing juggling balls.  Design, using annotations, a circus themed juggling ball. Follow design criteria to create a product.  Evaluate a product and use other people’s views to help evaluate and improve a product.  Research and trial different fillings for a juggling ball and decide upon the most functional one.  To investigate and evaluate existing juggling balls. | Select from and use a wider range of tools and equipment to perform practical tasks accurately  Measure ingredients to the nearest gram accurately.  Design, make and evaluate a product. Prepare and create a strawberry smoothie.  Prepare and cook a healthy and tasty meal using tomatoes as my main ingredient (tomato ciabatta)  Explore and evaluate a range of existing products  Understand and apply the principles of a healthy and varied diet in your product.  Understand seasonality and know where and how a variety of ingredients are grown such as strawberries and tomatoes. |
| Lesson Sequence | 1. What parts have kites played in history? 2. What are the parts of a kite? 3. What is the impact of the shape and material of a kite? 4. Which design will I choose for my kite? 5. How will I effectively make a kite? 6. How can I improve my design? | 1. What makes a successful juggling ball? 2. What design ideas do I have? 3. Which filling would be the best for my juggling ball? 4. Can I decorate my fabric using a technique? 5. Why is a hemming stitch the best for joining my fabric? 6. How can I improve my design? | 1. What are the names of some different herbs? 2. Why is Basil Tomato Pasta a healthy meal? 3. How are strawberries grown? 4. Can I design a meal and a drink that uses homegrown fruit and vegetables? 5. Can I successfully follow a pasta recipe and how can it be improved? 6. Can I successfully follow a drink receipe and how can it be improved? |

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| Vocabulary | Measure, wooden skewer, kite, Junior hacksaws, bench hooks, sandpaper, scissors, string, elastic bands, masking tape, plastic tubing, dowels | Needles, threads. Fillings, dye, Paper funnels, fabric, decorate | Magnifying glasses, strawberry plants, safe knives, grow bags or pots, trowels, gardening gloves, kitchen tools, potato masher, small glass, safe knife, chop- ping board, bowl, whisk, ripe, varieties of tomatoes, compost, tomato seeds, bruschetta |
| Health &  Safety | Consider flying safety rules an implications when flying kites. Consider the materials, tools and equipment being used. Scissor safety rules should always be followed. Adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. | Adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. Felt pads with lines drawn on are useful for storing and checking needles. Ongoing work with needles attached should be stored in resealable bags. Parental permission should be sought before using dyes or rubber gloves in order to identify any allergies for consideration. It is advisable that children wear aprons and plastic gloves when using dyes and wash  hands after use. | Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation should be done hygienically, surfaces need to be wiped down and hands  washed. |

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| Year 4 | Autumn | Spring | Summer |
| Theme | Making Mini Greenhouses  Mechanism/Structure | American Food  (Food) | Battery Operated Lights  (Electricity) |
| Key Stage 2 End Points | Cut materials accurately and safely by selecting appropriate tools.  Measure and mark out to the nearest millimetre.  Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product.  Design with purpose by identifying opportunities to design.  Make products by working efficiently  Disassemble products to understand how they work.  Identify some of the great designers in all of the areas of study  Improve upon existing designs, giving reasons for choices. | Follow a recipe.  Assemble or cook ingredients controlling the temperature of the oven or hob, if cooking  Refine work and techniques as work progresses.  Use software to design and represent product designs.  Improve upon existing designs, giving reasons for choices. | Create series circuits  Create series and parallel circuits  Refine work as work progresses  Use software to design product design  Explore and evaluate a range of existing products. |
| Knowledge | Select tools and equipment to perform practical tasks.  Understand what stability is and how to create a stable structure.  Identify suitable materials for a mini greenhouse.  Discuss ways of joining these materials.  Use research and develop design criteria.  Develop design criteria and design ideas for a mini greenhouse.  Use sketches to develop and communicate ideas.  Evaluate ideas and products against their own design criteria.  Consider the views of others to improve their work.  Understand the importance of evaluating a product.  Identify what has been successful with their design.  Children identify improvements based on existing structures. | Select from and use a wider range of tools and equipment to perform practical tasks accurately  Measure ingredients to the nearest gram accurately.  Design products with purpose.  Make products by working efficiently.  Design, make and evaluate a product.  Prepare and cook meals from different American heritages including American Indian, Mexican and typical American fast food.  Explore and evaluate a range of existing products.  Learn about the history of American food based on American Indian food including how they hunted, gathered and cultivated.  Learn about the history of slavery and the differences between a ‘wealthy’ American’s diet and a ‘poor’ or slave’s diet.  Understand how the colonization of the Americas and how Mexican food influenced American cuisine. | Use electrical systems in a product such as, series, circuits, incorporating switches, and bulbs.  Make and use switches.  I can develop design criteria and a design.  Develop annotated designs and sketches for a light.  Select materials and components to make my light.  I can create a well finished product.  Evaluate a product and use other people’s views to help evaluate and improve a product.  Understand how key events and individuals in design and technology have helped shape the world by looking at technological developments in the way we light our homes.  Understand how a series and parallel circuit can be used to light a bulb. |
| Lesson Sequence | 1. **What is a greenhouse?** 2. **How can we make a structure stable?** 3. **Which materials would be suitable for making a mini greenhouse?** 4. **Can I design a mini greenhouse to meet a criteria?** 5. **Which equipment and tools will I need to make my greenhouse?** 6. **How can my design be improved?** | 1. **What foods did Indigenous Americans eat?** 2. **Why is cornbread a staple food?** 3. **How has Mexican food influenced American cuisine?** 4. **Why are certain foods unhealthy if eaten regularly?** 5. **Can I make a typical American fast-food dish?** 6. **How can my design be improved?** | 1. What developments have there been in lighting throughout history? 2. What electrical circuits are there? 3. What is a switch and how do they control a circuit? 4. Can I design a light product that meets a design criteria? 5. Can I make my product light up? 6. How can my design be improved? |
| Vocabulary | Stability, improvement, prototype, analyse, sketch, materials, design, dowelling, straws, cellotape, glue, clingfilm, plastic, equipment, evaluation, criteria, joining. | Diverse climate, grow, pastry, indigenous American, modify, recipe, cutting, mix, pour, changes when heated, Mexican food, hob, heat, describe, unhealthy, evaluate | Bulbs, bulb holders, thin insulated wire, crocodile clips, short springs or stiff bare wire for making springs, foil, clear film, tools, wire, cutters, strippers, small screwdrivers, |
| Health & Safety | Consider the materials, tools and equipment being used. Scissor safety rules should always be followed. Adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. | Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation should be done hygienically, surfaces need to be wiped down and hands washed. | Consider the materials, tools and equipment being used. Explain to children that they should not experiment with mains electricity.  Rechargeable batteries shouldn’t be used for home-made circuits. In the event of a short circuit they could get very hot and may cause injury. Care should be taken when using wire strippers and cutters as they have sharp edges. |

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| Year 5 | Autumn | Spring | | Summer |
| Theme | Felt Phone Cases  (Textiles) | Marble Runs  (Materials) | | Bread  (Food Technology) |
| Key Stage 2 End Points | Show an understanding of the qualities of materials to choose appropriate tools to cut and shape  Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles  Use innovative combinations of computing in product designs.  Ensure products have a highquality finish, using art skills where appropriate.  Use prototypes and cross-sectional diagrams to represent designs.  Evaluate the design of products so as to suggest improvements to the user experience. | Cut and join materials with precision and refine the finish with appropriate tools  Design with the user in mind.  Combine elements of design from of inspirational designers throughout his tory  Create innovative designs | | Understand the importance of correct storage and handling of ingredients using knowledge of micro-organisms  Measure accurately  Create and refine recipes, including ingredients, methods, cooking times and temperatures.  Design with the user in mind, motivated by the service a product will offer.  Make products through stages of prototypes  Combine elements of design from a range of inspirational designers throughout history.  Create innovative designs that improve upon existing products. |
| Knowledge | Select appropriate decorative techniques and fastenings for a product.  Practices using different types of stitches and choose the best one to use on a final product.  Write design criteria for a mobile phone case.  Evaluate a product against their own design criteria.  Create a step by step plan to communicate the making process.  Make a paper template  Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams  Generate a range of design ideas and clearly communicate my final design.  Use existing designs and research to develop design criteria for a product | Apply an understanding of structures, by strengthening, reinforcing and stabilising a cardboard tube.  Select from and use materials and components to make a marble run Develop practical skills to help make bends in marble runs.  Accurately join cardboard tubes together.  Create a design criteria.  Evaluate their own marble run product against the design criteria and using other people’s opinions.  Evaluate and improve my design and technology work.  Investigate existing commercially bought marble runs.  Investigate and analyse existing free-standing structures. | | Use a wider range of tools and equipment to perform practical tasks such as shaping dough accurately.  Prepare and cook a new bread product. Use a wide range of equipment to perform practical tasks accurately.  Follow a bread making recipe.  Use kneading and baking techniques.  Use research to develop design criteria for a new type of bread.  Create a product intended for a purpose and user.  Show initial design ideas of a new bread, through discussion and annotated sketches.  Develop designs based on design criteria and clearly communicate one final design. Evaluate ideas and products against own design criteria.  Understand how key events and individuals in design and technology have helped shape the world. |
| Lesson Sequence | 1. **How does a phone case meet its design criteria?** 2. **Which design will I choose for my felt phone case?** 3. **What are the different types of stitch?** 4. **Which steps will I follow to make my felt phone case?** 5. **Which decorations and fastenings will I use when making my design?** 6. **How can I improve my design?** | 1. **What are existing marble run structures like?** 2. **How is a bridge joined in a structure?** 3. **Which design will my group choose to make?** 4. **Can I create bends in my marble run?** 5. **Which practical skills will I apply when making my group’s marble run?** 6. **How can I improve my design?** | | 1. What different types of bread are there? 2. How can bread be eaten as part of a balanced diet? 3. What are the main ingredients used in making bread? 4. Can I design a new bread product? 5. What cooking techniques are involved in baking bread? 6. How can I improve my design? |
| Vocabulary | Hygiene, safety storage, seasonal, equipment, ingredients, design, colour coded, knead, salt, dough, weighing scales, measure, cooling rack, annotate, design | | Cardboard tubes, marbles, stopwatches, joining materials, scissors, craft knives, cutting boards | Felt, mobile phone case, velcro, thread, needle, press studs, fastening |
| Health & Safety | Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation should be done hygienically, surfaces need to be wiped down and hands washed. Take care when considering meats or fish. | | Consider the materials, tools and equipment being used. Scissor and craft knife safety rules should always be followed. Craft knives should only be used when closely supervised. Take extra care when using marbles with children as these can be a choking hazard. | Adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. Felt pads with lines drawn on are useful for storing and checking needles. Ongoing work with needles attached should be stored in resealable bags |
| Year 6 | Autumn | | Spring | Summer |
| Theme | Building Bridges (Mechanics) | | Global Food  (Food Technology) | Fairground Ride (Electricity) |
| Key Stage 2 End Points | Use innovative combinations of computing and mechanics in product designs.  Convert rotary motion to linear using cams. Develop a range of practical skills to create products such as cutting, drilling and screwing, nailing, gluing, filing and sanding.  Design with the user in mind, motivated by the service a product will offer rather than simply for profit.  Make products through stages of prototypes, making continual refinements.  Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.  Create innovative designs that improve upon existing products. | | Measure accurately and calculate ratios of ingredients to scale up or down from a rec ipe.  Demonstrate a range of baking and cooking techniques.  Ensure products have a high quality finish, using art skills where appropriate.  Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.  Evaluate the design of products so as to suggest improvements to the user experience. | Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).  Ensure products have a high-quality finish.  Use prototypes to represent designs.  Evaluate the design of products |
| Knowledge | Use a mechanism systems (cam mechanism) in a product.  Select and use tools to perform practical tasks (cutting, shaping, joining and finishing) to make a wood frame.  Develop design criteria fit for purpose  Explain how simple cam mechanisms can be used  Select appropriate materials to create a mechanical system.  Use research and design criteria to inform a design  Evaluate own products based on design criteria and opinions of others.  Research information about existing bridges to inform a design. | | Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques in the context of cooking a German dish, a pretzel.  Demonstrate a range of basic and advanced food skills and cooking techniques to cook a Chinese dish.  Demonstrate a range of food skills and techniques to cook a Mexican dish.  Accurately and mainly independently write up and follow a recipe demonstrating a range of cooking techniques.  Cook rice and explain the nutritional benefits of eating it.  Understand and apply the principles of a healthy and varied diet.  Explain that diets around the world are based on similar food groups. | Apply skills and knowledge of soldering to build a working circuit.  Test and modify a circuit in the purpose of finding fault.  Understand how to read a resistor Understand the characteristics and functions of capacitors  Understand the characteristics and functions of LEDs  Understand the characteristics and functions of transistors  Understand the characteristics and functions of switches  Understand the characteristics and functions of functioning circuits Understand the characteristics and functions of resistors.  Design, make and evaluate a Christmas decoration which includes a LED light.  Evaluate and analyse existing LED Christmas decorations. |
| Lesson Sequence | 1. **How are pillars and beams used to span gaps?** 2. **What are trusses and how do they support bridges?** 3. **How do arches strengthen bridges?** 4. **What is a suspension bridge?** 5. **Can you design and make a bridge for a purpose?** 6. **How can I improve my design?** | | 1. **Can I name different foods and say where they are from?** 2. **Which food groups do world foods belong too?** 3. **Why is rice a good staple food?** 4. **How do I prepare foods to cook a Mexican dish?** 5. **What are the cooking techniques involved in making a Chinese dish?** 6. **Can I follow each step of a recipe to prepare a German dish?** | 1. What movements are involved in fairground rides? 2. How do fairground rides rotate? 3. How can a fairground ride structure be stabilised? 4. Can I design a fairground ride with a rotating part? 5. Will I review and adapt my design when making my fairground ride? 6. How can I improve my design? |
| Vocabulary | Dowel, hacksaws, benching, drill, plastic tubing, wooden cams, | | Equipment, heat, global, traditional, preparation, recipe, ingredients, | LED, resistor, solder, circuit, switches, transistors, capacitors |
| Health & Safety | Adult supervision will be required when using sharp objects. Take care with the storage of sharp objects. Hacksaws, drills and hammers should be used under strict supervision. | | Ensure you have permission for food tasting. Consider food allergies or intolerances. Ensure that there is adequate adult supervision and guidance when children are using kitchen equipment. Food preparation should be done hygienically, surfaces need to be wiped down and hands washed. Extra care should be taken when using a heat source to cook food and children should be made aware of health and safety factors. | Consider the materials, tools and equipment being used. Explain to children that they should not experiment with mains electricity.  Rechargeable batteries shouldn’t be used for home-made circuits. In the event of a short circuit they could get very hot and may cause injury. Care should be taken when using wire strippers and cutters as they have sharp edges. Take care when using a solder, ensure it is done under adult supervision. |