# Burlington Junior School Design Technology Progression - 2021-2022

## Overview

| | KS1<br>Burlington Infants | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|
| **Textiles** | **N/A** | **Textiles – Embroidery Bookmarks**<br>*(Reading links) – practising different stitches when creating a bookmark, which will be used throughout the school, creating personal design brief, making and evaluating.* | **Weaving**<br>*(History links) – research, design, make and evaluate a piece of fabric with multiple colours using weaving techniques.* | **Appliqué Wall Hanging**<br>*Children research a variety of wall hangings, looking at different fastenings and review plain seams. Children will then design a historically themed wall-hanging, developing dewing skills from Years Three and Four to appliqué fabric with developing neatness. Children then evaluate the overall effectiveness of their design.* | **WWII Evacuee Teddy**<br>*(History links) – research, design, make and evaluate a teddy to be given to an WWII evacuee child.* |
| **Disciplinary Vocabulary** | | *Design criteria, purpose, evaluate, function, user* | *Design criteria, purpose, evaluate, function, user, annotate, design brief, material,* | *Design criteria, purpose, evaluate, function, user, annotate, design brief, material, research, aesthetic,* | *Design criteria, purpose, evaluate, function, user/consumer, annotate, design brief, material, research, aesthetic, manufacture* |
| **Substantive Vocabulary** | | *Mark-out, running stitch, back stitch, stem stitch, needle, fabric, material, felt, braid, thread,* | *Fabric, wool, weave, material, thread,* | *Applique, running stitch, back stitch, stem stitch, chain stitch, feather stitch, template, needle, fabric, material, felt, thread,* | *Applique, running stitch, back stitch, stem stitch, chain stitch, feather stitch, template, seam allowance, embellishment, decorative stitches, durability, stuffing, manufacturing,* |
| **Mechanisms/ Construction** | *Designing, making and evaluating a moving picture*<br><br>*Making 'pop-up' pictures linked to story of Peter Rabbit. Designing and making an African instrument, decorated with kente patterns.* | **Stone Age Pneumatic Monsters**<br>*Children research different methods of applying pneumatics, understanding how the application of air can move object, then, after designing a moving monster, use junk modelling to create a pneumatic monster.* | **Construction - Bridges**<br>*(Geography links) -*<br>*Children will apply their understanding of how to strengthen, stiffen and reinforce more complex structures.* | **CAMS Toy**<br>*Children researching a variety of CAMs mechanisms and different CAMS toys before using G-clamps and saws to create their own toy, based around the Cog-Heart book series. Children then evaluate their toy on its overall effectiveness and commenting on changes that could be made to improve their product.* | **RNLI Lifeboats**<br>*(Geography Links) – research, design, make and evaluate a model lifeboat, using live circuits.* |

| | | | | | |
|---|---|---|---|---|---|
| **Disciplinary Vocabulary** | | *Design criteria, purpose, evaluate, function, user* | *Design criteria, purpose, evaluate, function, user, annotate, design brief, material,* | *Design criteria, purpose, evaluate, function, user, annotate, design brief, material, research, aesthetic,* | *Design criteria, purpose, evaluate, function, user/consumer, annotate, design brief, material, research, aesthetic, manufacture, risk assessment* |
| **Substantive Vocabulary** | | *Pressure, joint, pneumatic, air, hinge, form, function, appearance, movement,* | *Adhesive, scoring, shaping, battery, circuit, component, electronics, bulb, switch, fold, insert, notch, wedge, wrap, tie, slot, flange, slot, tabs, stability, structure,* | *Dowel, properties, CAMS, pivot, slot, guide, product, stability, structure, annotated sketch, movement, synchronisation,* | *Ergonomics, innovate, mass-production, one-off production, annotated sketch, series circuit, parallel circuit, battery, component, electronics, bulb, switch, adhesive, permanent, weight, support* |
| **Nutrition** | *To make a healthy salad and think about the parts of a plant we can eat. Vegetable soup, linked to Harvest* | **Fruit Salad** *Children research different types of fruit salads, taste testing a variety of fruits. They work to a design brief, designing their fruit salad with aesthetic appeal in mind. They will then create their fruit salad, developing preparation skills before evaluating their product, collecting peer feedback in the progress.* | **Pizzas** *(History & Geography links) – research, design, make and evaluate a healthy pizza, looking at current Italian recipes.* | **Bread Making** *Children refine their knowledge of the process of design, researching different types of bread and think about how to use this knowledge to create their own. Children practise shaping to create something appealing and carefully constructed, before evaluating their product.* | **Designing a Healthy Menu** *Children apply scientific knowledge to create a healthy menu to a design brief, reviewing key food groups and researching the nutritional value of food. Children apply preparation skills to construct different aspects of their healthy menu, collecting peer feedback within their evaluation.* |
| **Disciplinary Vocabulary** | | *Design criteria, purpose, evaluate, function, user, hygienic* | *Design criteria, purpose, evaluate, function, user, hygienic, annotate, design brief, material,* | *Design criteria, purpose, evaluate, function, user, hygienic, annotate, design brief, material, research, aesthetic,* | *Design criteria, purpose, evaluate, function, user/consumer, hygienic, annotate, design brief, material, research, aesthetic, manufacture, risk assessment* |
| **Substantive Vocabulary** | | *Grown, processed, diet, carbohydrate, fibre, flavour, fruit, healthy, juice, ingredient, knife, nutrition, protein, recipe, refrigerator, vegetable,* | *Grown, reared, processed, diet, carbohydrate, fibre, flavour, fruit, healthy, oven, ingredient, modify, nutrition, protein, recipe, refrigerator, safety, vegetable,* | *Grown, reared, processed, diet, proofing, savoury, sweet, yeast, dough, wholemeal, baking, carbohydrate, fibre, flavour, fruit, healthy, oven, ingredient, modify, nutrition, protein, recipe, refrigerator, safety,* | *Grown, reared, processed, diet, carbohydrate, fibre, flavour, fruit, healthy, oven, ingredient, modify, nutrition, protein, recipe, refrigerator, safety, vegetable, allergy, dairy, gluten, intolerance, fat, seasonality, design specification, names of equipment, names of products* |
| **Designers** | | **Textiles** *Janine Heschl – Uses machine embroidery to create incredibly realistic animal portraits. Her current work focuses on endangered animals and wildlife protection.* **Mechanics & Construction** *Charles Brady King – Inventor of the pneumatic hammer* **Nutrition** *Matilda Ramsay – Appears on "Big Chef Little Chef"on ITV 'This Morning' to inspire children to get into cooking.* | **Textiles** *Rosemary Levy - Rosemary now weaves mainly scarves and wall hangings.* **Mechanics & Construction** *Ralphy Freeman – Civil engineer who designed the Humber Suspension Bridge (local links)* **Nutrition** *Raffaele Esposito – an Italian chef considered the father of modern day pizza.* | **Textiles** *Christian Francis Roth – Fashion designer who uses applique in his designs.* **Mechanics & Construction** *Michael Screen – Former school teacher turned toy-maker. A member of the British Toymakers Guild.* **Nutrition** *Hannah Swift – Victorian bread baker whose descendants still run her local bakery.* | **Textiles** *Florence Attwood – a deaf teddy bear designer who worked with Merrythought (teddy-bear company)* **Mechanics & Construction** *Henry Greathead – inventor of the lifeboat, a pioneering rescue lifeboat builder from South Shields* **Nutrition** *Teresa Cutter – Known as The Healthy Chef, recognised as a pioneer in the field of wellness and healthy cooking.* |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Design**<br>**Developing, planning, and communicating ideas** | | | | | |
| **KS1**<br>Burlington Infants | **Year 3** | **Year 4** | **Year 5** | **Year 6** | |
| • Think of own ideas and plan what to do next.<br>• Describe designs using pictures, diagrams, models, mock-ups, words and ICT.<br>• Design a product for myself and others, following design criteria.<br>• Work confidently in a range of contexts (imaginary, home, school, wider community, story-based etc). | • Create a design that meets a range of requirements.<br>• Consider the equipment and tools needed when planning.<br>• Describe a design using an accurately labelled diagram, and in words. | • Generate more than one idea for how to create a product.<br>• Gather information to help design a successful product (i.e. by asking others' views).<br>• Produce a detailed plan with labelled diagrams, a written explanation and step-by-step guide.<br>• Suggest improvements to develop and refine a planned idea. | • Generate a range of ideas after collating relevant information (i.e. users' views).<br>• Produce a detailed plan, with step-by-step instructions, cross sectional diagrams and prototypes.<br>• Suggest alternative plans, considering the positive aspects and drawbacks of each. | • Use a range of information to inform a design (i.e. market research using surveys, interviews, questionnaires or web based resources).<br>• Produce a detailed plan, with cross-sectional diagrams and computer generated designs).<br>• Work within constraints, refining and justifying plans as necessary. | |
| • Generate ideas by drawing on their own and other people's experiences<br>• Develop their design ideas through discussion, observation, drawing and modelling<br>• Identify a purpose for what they intend to design and make<br>• Identify simple design criteria<br>• Make simple drawings and label parts | • Generate ideas for an item, considering its purpose and the user/s<br>• Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting<br>• Explore, develop and communicate design proposals by modelling ideas<br>• Make drawings with labels when designing | • Generate ideas, considering the purposes for which they are designing<br>• Make labelled drawings, showing specific features<br>• Develop a clear idea of what has to be done, planning how to use materials, equipment and processes.<br>• Evaluate products and identify criteria that can be used for their own designs | • Generate ideas from brainstorming and identify a purpose for their product<br>• Draw up a specification for their design.<br>• Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. | • Communicate their ideas through detailed labelled drawings.<br>• Develop a design specification.<br>• Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways.<br>• Plan the order of their work, choosing appropriate materials, tools and techniques<br>• Use results of investigations, information sources, including ICT when developing design ideas | |
| **Make**<br>**Working with tools, equipment, materials and components to make quality products (inc. food)** | | | | | |
| **KS1**<br>Burlington Infants | **Year 3** | **Year 4** | **Year 5** | **Year 6** | |
| • Explain what is being made and why the audience will like it. Choose appropriate tools and equipment, describing and explaining why they are being used. | • Begin to use a range of tools and equipment with developing accuracy.<br>• Measure, mark out, assemble and join materials and components with some accuracy. | • Continue to use a range of tools and equipment with developing accuracy, improving from previous year.<br>• Accurately measure, mark out, join and assemble materials and components with accuracy. | • Use a range of tools and equipment with further development of accuracy, developing precision.<br>• Consider the aesthetic qualities and functionality of their work when making. | • Use a range of tools and equipment precisely drawing on previous experience to inform decisions.<br>• Consider the aesthetic qualities and functionality of my product as making it, refining details as necessary | |

| | | | | |
|---|---|---|---|---|
| • Begin to select tools and materials; use vocab' to name and describe them<br>• Measure, cut and score with some accuracy<br>• Use hand tools safely and appropriately<br>• Assemble, join and combine materials in order to make a product<br>• Cut, shape and join fabric to make a simple garment.<br>• Use basic sewing techniques<br>• Follow safe procedures for food safety and hygiene<br>• Choose and use appropriate finishing techniques | • Select tools and techniques for making their product<br>• Measure, mark out, cut, score and assemble components with some accuracy<br>• Work safely and accurately with a range of simple tools<br>• Think about their ideas as they make progress and be willing to change things if this helps them improve their work<br>• Measure, tape or pin, cut and join fabric with some accuracy<br>• Demonstrate hygienic food preparation and storage<br>• Use finishing techniques strengthen and improve the appearance of their product. | • Select appropriate tools and techniques for making their product<br>• Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques with developing accuracy.<br>• Join and combine materials and components accurately in temporary and permanent ways<br>• Sew using a range of different stitches, weave and knit<br>• Measure, tape or pin, cut and join fabric with increasing accuracy. | • Select appropriate materials, tools and techniques<br>• Measure and mark out with increasing accuracy.<br>• Use skills in using different tools and equipment safely and accurately<br>• Weigh and measure accurately (time, dry ingredients, liquids)<br>• Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens<br>• Cut and join with accuracy to ensure a good-quality finish to the product | • Select appropriate materials, components and techniques<br>• Assemble components make working models<br>• Use tools safely and with progressively developing accurately<br>• Construct products using permanent joining techniques<br>• Make modifications as they go along<br>• Pin, sew and stitch materials together, using increasingly precise templates to create a product<br>• Achieve a good-quality product |
| **Evaluation**<br>**Evaluating processes and products** | | | | |
| **KS1**<br>Burlington Infants | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| • Describe how their own and pre-existing products work, evaluating what went well and what could be done differently.<br>• Suggest what went well and what would be done differently when evaluating their own product. | • Evaluate own and pre-existing products.<br>• Suggest what could be changed to improve a design, beginning to link this to the design brief.<br>• Develop awareness of how key events and individuals in design and technology have helped shape the world.<br>• Evaluate their product against original design criteria e.g. how well it meets its intended purpose | • Evaluate the appearance and usability of own and pre-existing products.<br>• Explain how the original design could be improved, considering the appearance and usability and linking this to the design brief.<br>• Develop an increasing awareness of how key events and individuals in design and technology have helped shape the world.<br>• Evaluate their work both during and at the end of the assignment, considering their design criteria.<br>• Evaluate their products carrying out appropriate test | • Evaluate the appearance and function of a product (own and pre-existing) against the original criteria, saying whether it is fit for purpose.<br>• Suggest improvements that could be made, considering materials and methods that have been used. Know of how key events and individuals in design and technology have helped shape the world.<br>• Evaluate a product against the original design specification<br>• Evaluate it personally and seek evaluation from others | • Evaluate the appearance and test the function of a product (own and pre-existing) against the original criteria, saying whether it is fit for purpose.<br>• Suggest improvements that could be made, considering materials, methods, sustainability of the product and how much a product costs to make.<br>• Know of how key events and individuals in design and technology have helped shape the world.<br>• Evaluate their products identifying strengths and areas for development, and carrying out appropriate tests.<br>• Record their evaluations using drawings with labels<br>• Evaluate against their original criteria and suggest ways that their product could be improved |

## Technical knowledge (over-arching throughout KS2)

• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
• Understand and use mechanical systems in their products, (for example as gears, pulleys, CAMS, levers and linkages)
Understand and use electrical systems in their products (for example series circuits incorporating switches, bulbs, buzzers and motors)
Apply their understanding of computing to programme, monitor and control their products.

## Breadth of Study
## Food and Nutrition

| KS1<br>Burlington Infants | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|
| • Know how to peel, cut, grate, mix and mould foods (with supervision). | • Know how to peel, cut and mix a selection of foods (using cooking equipment with supervision).<br>• Understand seasonality and know where and how a variety of ingredients are grown and processed.<br>• Understand and apply the principles of a healthy and varied diet | • Know how to peel, cut, grate, mix, and begin to cook foods (using cooking equipment with supervision).<br>• Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.<br>• Continue to understand and apply the principles of a healthy and varied diet. | • Cut, mix, mould and begin to use hobs to heat food with appropriate supervision.<br>• Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed relevant to their product.<br>• Further develop understanding and application of the principles of a healthy and varied diet | • Cut, mix, mould and use hobs to heat food, developing independence with this as appropriate.<br>• Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.<br>• Understand and apply the principles of a healthy and varied diet, drawing on previous knowledge to further develop understanding. |

## Construction

| KS1<br>Burlington Infants | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|
| • Use sheet materials and construction tools with appropriate supervision. | • Use sheet materials and construction tools with appropriate supervision. | • Use sheet and construction materials appropriately. | • Use sheet and construction materials appropriately. | • Use sheet and construction materials appropriately. |

## Textiles

| KS1<br>Burlington Infants | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|
| • Cut, then join textiles using a running stitch, over sewing or glue.<br>• Decorate using a range of items (buttons, sequins, beads, ribbons etc) | • To develop understanding of a minimum of three different stitches; running stitch, back stitch and stem stitch.<br>• Decorate using a range of items (buttons, sequins, beads, ribbons, braiding, etc) | • To develop an understanding of how fabric is created through weaving.<br>• To use a selection of different wools and threads to create a piece of fabric, accounting for changes in wool/threads used. | • Cut, then join textiles using a running stitch, over sewing, back stitch.<br>• Understand seam allowances, create simple patterns and appropriate decoration techniques<br>• (e.g. applique) | • Pin and tack fabrics use patterns, templates, fastenings and accounting for seam allowances to join fabrics and make quality products.<br>• Explain how their product could be sold. |

| Mechanisms and Electrical | | | | |
|---|---|---|---|---|
| **KS1**<br>Burlington Infants | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| • Know about movement of simple mechanisms such as levers, sliders, wheels and axels. | • Know about movement of simple mechanisms such as levers and linkages.<br>• Create a simple circuit. | • Know about movement of simple mechanisms such as levers and linkages.<br>• Create circuits and alter their product. | • Understand how mechanical systems such as cams, pulleys or gears create movement.<br>• Create circuit, incorporate a switch, pneumatics and hydraulics. | • Understand how mechanical systems such as cams, pulleys or gears create movement.<br>• Create circuit, incorporate a switch, pneumatics and hydraulics.<br>• Add a new circuit to improve product, alter already stated circuit. |