Buckminster Primary School – **DT Knowledge and Skills Progression**

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At Buckminster School design and technology is taught through a variety of creative and practical activities. Children will gain knowledge and understand the skills needed to engage in an iterative process of designing and making. Our children will work with a range of relevant contexts linked to topics, current affairs and global issues

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|  | **Reception** | **Year 1 and 2** | **Year 3 and 4** | **Year 5 and 6** | | |
| **Designing – Understanding contexts, users and purposes** |  | ***National Curriculum***  *Pupils should be taught:*   * *Design purposeful, functional, appealing products for themselves and other users based on design criteria* * *Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, IT.* | ***National Curriculum***  *Pupils should be taught:*   * *Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups* | | | |
| * Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment * State what products they are making * Say whether their products are for themselves or other users * Describe what their products are for * Say how their products will work * Say how they will make their products suitable for their intended users * Use simple design criteria to help develop their ideas   **Key Vocabulary:**  **Useful, usefulness, purpose, resources, construct, attach, attachment, detach, remake, improvement, decoration** | * Work confidently within a range of contexts, such as the home, school, * Gardens, enterprise and community. * Describe the purpose of their products * Indicate the design features of their products that will appeal to intended users * Explain how particular parts of their products work * Gather information about needs and wants of particular individuals and groups * Develop their own design criteria and use these to inform their ideas   **Key Vocabulary:**  **‘fit for purpose’, market research, user experience, end user, market research, focus group, aesthetics, ergonomics, functionality, requirements, design brief, bevel/bevelled, embedded, laminated, flexibility, rigidity, toughness, permeability** | * Work confidently within a range of contexts, such as the home, school, gardens, enterprise and community. * Describe the purpose of their products * Indicate the design features of their products that will appeal to intended users * Explain how particular parts of their products work * Gather information about needs and wants of particular individuals and Groups * Develop their own design criteria and use these to inform their ideas * Develop a simple design specification to guide their thinking   **Key Vocabulary:**  **‘fit for purpose’, market research, user experience, end user, market research, focus group, aesthetics, ergonomics, functionality, requirements, design brief, bevel/bevelled, embedded, laminated, flexibility, rigidity, toughness, permeability** | | |
| **Designing - Generating, developing, modelling and communicating ideas** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Design purposeful, functional, appealing products for themselves and other users based on design criteria* * *Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, IT.* | ***National Curriculum***  *Pupils should be taught to:*   * *Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.* | | | |
| * generate ideas by drawing on their own experiences * use knowledge of existing products to help come up with ideas * develop and communicate ideas by talking and drawing * model ideas by exploring materials, components and construction kits and by making templates and mock-ups * use ICT, where appropriate, to develop and communicate their ideas   **Key Vocabulary:**  **Improvement** | * Share and clarify ideas through discussion * Model their ideas using prototypes and pattern pieces * Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas * Use computer-aided design to develop and communicate their ideas * Generate realistic ideas, focusing on the needs of the user * Make design decisions that take account of the availability of resources | * Share and clarify ideas through discussion * Model their ideas using prototypes and pattern pieces * Use annotated sketches, cross-sectional drawings and exploded * diagrams to develop and communicate their ideas * Use computer-aided design to develop and communicate their ideas * Generate realistic ideas, focusing on the needs of the user * Make design decisions that take account of the availability of resources | | |
| **Making - Planning** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Select from and use a range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing.* * *Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.* | ***National Curriculum***  *Pupils should be taught to:*   * *Select from and use a range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing accurately.* * *Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics and aesthetic qualities.* | | | |
| * Plan by suggesting what to do next * Select from a range of tools and equipment, explaining their choices * Select from a range of materials and components according to their characteristics * Work with a partner to problem solve issues with their designs, using co-operation and discussion | * Select tools and equipment suitable for the task * Explain their choice of tools and equipment in relation to the skills and techniques they   will be using   * Select materials and components suitable for the task * Explain their choice of materials and components according to functional properties   and aesthetic qualities   * Order the main stages of making   **Key Vocabulary:**  **Value, usefulness, wastage, packaging, plastics, consumer, practical, practicality, realism, expectations, adhesive, permanent, quality, roughen, sandpaper, tack, stitch, seam (allowance), fabric, suitability, stiffen, calico, dye** | * Select tools and equipment suitable for the task * Explain their choice of tools and equipment in relation to the skills and techniques they   will be using   * Select materials and components suitable for the task * Explain their choice of materials and components according to functional properties   and aesthetic qualities   * Produce appropriate lists of tools, equipment and materials that they need * Formulate step-by-step plans as a guide to making   **Key Vocabulary:**  **fit for purpose’, market research, user experience, end user, market research, focus group, aesthetics, ergonomics, functionality, requirements, design brief, bevel/bevelled, embedded, laminated, flexibility, rigidity, toughness, permeability** | | |
| **Making – Practical skills and techniques** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Build structures, exploring how they can be made stronger, stiffer and more stable* * *Explore and use mechanisms such as levers, sliders, wheels and axles, in their products* | ***National Curriculum***  *Pupils should be taught to:*   * *Apply their understanding of how to strengthen, stiffen and reinforce more complex structures* * *Understand and use mechanical systems in their products such as gears, pulleys, cams, levers and linkages* * *Understand and use electrical systems in their products* * *Apply their understanding of computing to programme, monitor and control their products* | | | |
| * Follow procedures for safety and hygiene * Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components * Measure, mark out, cut and shape materials and components * Assemble, join and combine materials and components * Use finishing techniques, including those from art and design * About the simple working characteristics of materials and components * About the movement of simple mechanisms such as levers, sliders, wheels and axles * How freestanding structures can be made stronger, stiffer and more stable * That a 3-D textiles product can be assembled from two identical fabric shape * That food ingredients should be combined according to their sensory characteristics * The correct technical vocabulary for the projects they are undertaking   Key Vocabulary:  **Safety, hygiene, assemble, join, combine, levers, slides, wheels, axels,**  . | * Follow procedures for safety and hygiene * Use a wider range of materials and components than KS1, including construction   materials and kits, textiles, food ingredients, mechanical components and electrical components   * Measure, mark out, cut and shape materials and components with some accuracy * Assemble, join and combine materials and components with some accuracy * Apply a range of finishing techniques, including those from art and design, with some accuracy * How to use learning from science and maths to help design and make products that work * That materials have both functional properties and aesthetic qualities * That materials can be combined and mixed to create more useful characteristics * That mechanical and electrical systems have an input, process and output * Use the correct technical vocabulary for the projects they are undertaking * How mechanical systems such as levers and linkages or pneumatic systems create movement * How simple electrical circuits and components can be used to create functional products * How to program a computer to control their products * How to make strong, stiff shell structures * That a single fabric shape can be used to make a 3D textiles product * How well products work to achieve their purposes   **Key Vocabulary:**  **Value, usefulness, wastage, packaging, plastics, consumer, practical, practicality, realism, expectations, adhesive, permanent, quality, roughen, sandpaper, tack, stitch, seam (allowance), fabric, suitability, stiffen, calico, dye** | | * Follow procedures for safety and hygiene * Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components * Measure, mark out, cut and shape materials and components with some accuracy * Assemble, join and combine materials and components with some accuracy * Apply a range of finishing techniques, including those from art and design, with some accuracy * Use techniques that involve a number of steps * Demonstrate resourcefulness when tackling practical problems * How to use learning from science and maths to help design and make products that work * That materials have both functional properties and aesthetic qualities * That materials can be combined and mixed to create more useful characteristics * That mechanical and electrical systems have an input, process and output * Use the correct technical vocabulary for the projects they are undertaking * How mechanical systems such as cams or pulleys or gears create movement * How more complex electrical circuits and components can be used to create functional products * How to program a computer to monitor changes in the environment and control * their products * How to reinforce and strengthen a 3D framework   **Key Vocabulary:**  **‘fit for purpose’, market research, user experience, end user, market research, focus group, aesthetics, ergonomics, functionality, requirements, design brief, bevel/bevelled, embedded, laminated, flexibility, rigidity, toughness, permeability** | |
| **Evaluating – Own ideas and products** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Evaluate their ideas and products against design criteria* | ***National Curriculum***  *Pupils should be taught to:*   * *Evaluate their ideas and products against design criteria and consider the views of others to improve their work* | | | |
| * Talk about their design ideas and what they are making * Make simple judgements about their products and ideas against design criteria * Suggest how their products could be improved | * Identify the strengths and areas for development in their ideas and products about inventors, designers, engineers, chefs and manufacturers * Consider the views of others, including intended users, to improve their work * Refer to their design criteria as they design and make * Use their design criteria to evaluate their completed products | | | * Identify the strengths and areas for development in their ideas and   products   * Consider the views of others, including intended users, to improve their work * Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make * Evaluate their ideas and products against their original design specification |
| **Evaluating – Existing products** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Explore and evaluate a range of existing products* | ***National Curriculum***  *Pupils should be taught to:*   * Investigate and analyse a range of existing products * Understand how key events and individuals in design and technology have helped shape the world | | | |
| * Explore what products are and who or what they are for. * Explore how products work and how or where they might be used. * Explore what materials products are made from * Explore what they like and dislike about products   **Key Vocabulary:**  **Purpose, materials, usefulness,**  **like, dislike, improvement** | Pupils will be taught to investigate and analyse:   * How well products have been designed and made * Why materials have been chosen * What methods of construction have been used * Developed ground-breaking products * How well products work to achieve their purposes * How well products meet user needs and wants * Who designed and made the products * Where and when products were designed and made * Whether products can be recycled or reused   **Key Vocabulary:**  **Value, usefulness, wastage, packaging, plastics, consumer, practical, practicality, realism, expectations** | | | Pupils will be taught to investigate and analyse:   * How well products have been designed and made * Why materials have been chosen * What methods of construction have been used * How well products work to achieve their purposes * How innovative products are * How well products meet user needs and wants * Who designed and made the products * Where and when products were designed and made * What impact products have beyond their intended purpose   **Evaluating – Key events and individuals**   * About inventors, designers, engineers, chefs and manufacturers who have developed ground breaking product |
| **Cooking and nutrition – Where food comes from** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Understand where food comes from* | ***National Curriculum***  *Pupils should be taught to:*   * *Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed* | | | |
| * That all food comes from plants or animals * That food has to be farmed, grown elsewhere (e.g. home) or caught   **Key Vocabulary:**  **Diet, healthy, balanced diet, preparation, recipe, bake, harvested , fridge, freezer, freeze, taste, tasty** | * That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs,   chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world  **Key Vocabulary:**  **Boiled, simmer, grill/grilled, toast/toasted, barbecue/barbecued, oven, raw, garnish, dairy, allergy, balanced diet, refrigerate, calorific** | | | * That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world * That seasons may affect the food available   **Key Vocabulary:**  **Sustainability, reusability, genetic modification, sustainable crops, food miles, seasonality, ‘junk food’, ‘traffic lights’, nutritional value, additives, raising agents, allergens/allergic, pathogens, preservation, compostable** |
| **Cooking and nutrition – Food preparation, cooking and nutrition** |  | ***National Curriculum***  *Pupils should be taught to:*   * *Use the basic principles of a healthy and varied diet to prepare dishes* | ***National Curriculum***  *Pupils should be taught to:*   * *Understand and apply the principle of a healthy and varied diet* * *Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques* | | | |
| * How to name and sort foods into the five groups in The Eatwell Plate * That everyone should eat at least five portions of fruit and vegetables every day * How to prepare simple dishes safely and hygienically, without using a heat source * How to use techniques such as cutting, peeling and grating   **Key Vocabulary:**  **Diet, healthy, balanced diet, preparation, recipe, bake, harvested , fridge, freezer, freeze, taste, tasty, cut, peel, grate** | * How to prepare and cook a variety of predominantly savoury dishes safely and   hygienically including, where appropriate, the use of a heat source   * How to use a range of techniques such as peeling, chopping, slicing, grating, mixing,   spreading, kneading and baking   * That a healthy diet is made up from a variety and balance of different food and drink,   as depicted in The Eatwell Plate   * That to be active and healthy, food and drink are needed to provide energy for the body   **Key Vocabulary:**  **Farmed, boiled, simmer, grill/grilled, toast/toasted, barbecue/barbecued, oven, raw, garnish, dairy, allergy, balanced diet, refrigerate, calorific** | | | * How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source * How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking * That recipes can be adapted to change the appearance, taste, texture and aroma   That different food and drink contain different substances – nutrients, water and fibre – that are needed for health  **Key Vocabulary:**  **Sustainability, reusability, genetic modification, sustainable crops, food miles, seasonality, ‘junk food’, ‘traffic lights’, nutritional value, additives, raising agents, allergens/allergic, pathogens, preservation, compostable** |

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| **DT AREA OF STUDY** | | | | | | |
|  | Autumn Cycle A | Autumn Cycle B | Spring Cycle A | Spring Cycle B | Summer Cycle A | Summer Cycle B |
| Reception |  |  |  |  |  |  |
| Year 1 and 2 |  |  |  |  |  |  |
| Year 3 and 4 |  |  |  |  |  |  |
| Year 5 and 6 |  |  |  |  |  |  |