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*
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| * 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
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| **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
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| **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
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| **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*
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| * 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*
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| * 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 |  |  |  |  |  |  |