# RA Butler Academy Schools
# Design and Technology Curriculum Progression

**By the end of year 6 children at RAB should demonstrate the following essential characteristics of Design and Technology:**

- The ability to describe, in some detail, the purpose of the products they are designing and making.
- To be able to indicate the design features of their products that will appeal to intended user and to explain how particular parts of their products work, becoming increasingly innovative.
- Will have carried out research, using surveys, interviews, questionnaires and web based resources which will have informed their design decisions.
- Will have develop a simple design specification to guide their thinking when designing and making and have evaluated their ideas and products against their design specification.
- Modelled their ideas by using prototypes and pattern pieces and use annotated sketches, cross-sectional drawings and exploded diagrams to help develop and communicate their design ideas.
- Used computer-aided design (CAD) to develop, communicate, model and evaluate their design ideas.
- Have the ability to select suitable tools, equipment, materials and components for the task and can explain their choice of materials and components according to functional properties and aesthetic qualities.
- Work accurately when they are measuring, marking out, cutting, shaping, assembling, joining, combining and applying finishing techniques.
- Will have learnt about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. They know a range of inventors, what they are famous for designing and/or making and what characteristics enabled them to become successful.
- Will be able to think about the related components that make up mechanical and electrical system, and have thought about the input, output and the process.
- Will know how mechanical systems such as pulleys or gears create movement. Children will able to explain why the mechanical components are suitable for the product they are designing and making according to the type of movement they produce. Children will have developed and applied the correct technical vocabulary to describe the movement of mechanical systems.
- Know how to program a computer to monitor changes in the environment and control their products.
- Will have learnt how to use skills and techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
- Children will apply the principles of nutrition and healthy eating, learn how to prepare and cook dishes using a wide range of ingredients, using a heat source where appropriate.

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| | EYFS | KS1 | | KS2 | | | |
|---|---|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Designing | • Communicate their ideas through talking and sometimes drawings.<br><br>• Designing by talking about what they intend to do, are doing and have done.<br><br>• Saying who and what their products are for.<br><br>• Drawing what they have made, with some children drawing their ideas before they make. | • Generate ideas based on simple design criteria and their own experiences, explaining what they could make.<br><br>• Develop, model and communicate their ideas through talking, drawings and mock-ups with card and paper. | • Generate simple design criteria as appropriate through talking, using their own experiences.<br><br>• Design a functional and appealing product for a chosen user and purpose based on simple design criteria communicating their ideas through drawing, templates, mock-ups and information and communication technology. | • Generate their own design criteria collaboratively and through discussion, focusing on the needs of the user and the purpose of the product.<br><br>• Develop realistic and appropriate ideas through the analysis of existing products using annotated sketches and prototypes to model and communicate ideas. | • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.<br><br>• Generate, develop, model and communicate realistic ideas through discussion for an appealing, functional product using, as appropriate, annotated sketches, cross-sectional and exploded diagrams, final product sketches and pattern pieces. | • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires and web based resources.<br><br>• Develop, model and communicate ideas through talking, annotated drawings, exploded drawings, drawings from different views, templates, mock-ups, prototypes and, where appropriate, computer aided design (iron on logo).<br><br>• Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification, that they have developed to guide their thinking. | • Research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.<br><br>• Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.<br><br>• Generate, develop and communicate ideas through discussion, prototypes, annotated sketches and pictorial representations of electrical circuits or circuit diagrams. |

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| | EYFS | KS1 | | KS2 | | | |
|---|---|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Making | • Opportunities to make their own choices and to discuss the reasons for these.<br><br>• Developing practical skills and techniques using a range of materials including food, textiles and construction materials.<br><br>• Early experiences of working with paper and card to make simple flaps and hinges.<br><br>• Experience of simple cutting, shaping, joining and finishing skills using scissors, glue, paper fasteners, hole punches and masking tape with construction materials e.g. paper, card, plastic, fabric and wood. | • Plan by suggesting what to do next.<br><br>• Select and use tools, skills and techniques, explaining their choices.<br><br>• Select new and reclaimed materials and construction kits to build their structures.<br><br>• Use simple finishing techniques suitable for the product they are creating | • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting and joining to allow movement and finishing.<br><br>• Select from and use a range of materials and components such as paper, card, plastic and textiles according to their characteristics. | • Order the main stages of making.<br><br>• Select from and use appropriate tools with some accuracy to cut and join materials and components.<br><br>• Select from and use finishing techniques suitable for the product they are creating. | • Plan the main stages of making.<br><br>• Select and use a range of appropriate tools and equipment with some accuracy e.g. cutting, shaping, joining and finishing.<br><br>• Select from and use fabrics, materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. | • Produce detailed lists of tools, equipment, fabrics and materials relevant to their tasks.<br><br>• Formulate step-by-step plans and, if appropriate, allocate tasks within a team.<br><br>• Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. | • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components and resources to be used.<br><br>• Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.<br><br>• Create and modify a computer control program to enable their electrical product to respond to changes in the environment.<br><br>• Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.<br><br>• Use finishing and decorative techniques suitable for the product they are designing and making. |

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| | EYFS | KS1 | | KS2 | | | |
|---|---|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Evaluating | • Explore moving vehicles, fabrics and construction kits.<br><br>• Asking questions about a range of existing products.<br><br>• Exploring the designed and made world through the indoor and outdoor environment, and through roleplay. | • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings and books and everyday products that use simple sliders and levers.<br><br>• Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. | • Explore and evaluate a range of products with wheels and axles and existing textile products relevant to the project being undertaken<br><br>• Evaluate their ideas throughout and their final products against original design criteria. | Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.<br><br>• Investigate and analyse books, video clips and products with pneumatic mechanisms.<br><br>• Test and evaluate their own products against design criteria and the intended user needs and purpose as they design and make. | • Understand how a key event/individual has influenced the development of the chosen product and/or fabric.<br><br>• Investigate a range products relevant to the project e.g. 3-D textiles and battery-powered products.<br><br>• Evaluate and test their ideas and products against their own design criteria and with the intended user and identify the strengths and areas for improvement in their work.<br><br>• Take into account others' views when evaluating their work. | • Investigate famous manufacturing and engineering companies relevant to the project.<br><br>• Investigate and analyse textile products linked to their final product.<br><br>• Compare the final product to the original design specification.<br><br>• Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.<br><br>• Consider the views of others to improve their work. | • Research key events and individuals relevant to frame structures.<br><br>• Investigate and evaluate a range of existing frame structures.<br><br>• Continually evaluate and modify the working features of the product to match the initial design specification.<br><br>• Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests to demonstrate its effectiveness. |

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| Food Technology | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **EYFS** | **KS1** | | **KS2** | | | |
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Designing | • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.<br><br>• Experience of cutting soft fruit and vegetables using appropriate utensils.<br><br>• Introduced to a variety of basic cooking techniques, kneading, mixing, measuring, cutting/shaping. | **FRUIT**<br>• Design appealing products for a particular user based on simple design criteria.<br><br>• Generate initial ideas and design criteria through investigating a variety of fruit.<br><br>• Communicate these ideas through talk and drawings | **VEGETABLES**<br>• Design appealing products for a particular user based on simple design criteria.<br><br>• Generate initial ideas and design criteria through investigating a variety of vegetables.<br><br>• Communicate these ideas through talk and drawings | BREAD SNACK<br>Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.<br><br>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. | PASTY<br>Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.<br><br>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. | SOUP<br>• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.<br><br>• Explore named chefs/manufacturers to link to topic research.<br><br>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.<br><br>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. | BREAD<br>• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.<br><br>• Explore named chefs/manufacturers to link to topic research.<br><br>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.<br><br>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. |
| Making | | • Use simple utensils and equipment to e.g. cut and slice safely.<br><br>• Select from a range of fruit according to their characteristics e.g. colour, texture and taste to create a chosen product. | • Use simple utensils and equipment to e.g. peel, cut, slice and chop safely.<br><br>• Select from a range of vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. | • Plan the main stages of a recipe, listing ingredients, utensils and equipment.<br><br>• Select and use appropriate utensils and equipment to prepare and combine ingredients.<br><br>• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. | • Plan the main stages of a recipe, listing ingredients, utensils and equipment.<br><br>• Select and use appropriate utensils and equipment to prepare and combine ingredients.<br><br>• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. | • Write a step-by-step recipe, including a list of ingredients, equipment and utensils<br><br>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.<br><br>• Make, decorate and present the food product appropriately for the intended user and purpose | • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose |
| Evaluating | | • Taste and evaluate a range of fruit to determine the intended user's preferences.<br><br>• Evaluate ideas and finished products against | • Taste and evaluate a range of vegetables to determine the intended user's preferences.<br><br>• Evaluate ideas and finished | • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. | • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.<br><br>• Evaluate the ongoing work and the final product | • Understand how key chefs have influenced eating habits to promote varied and healthy diets.<br><br>• Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. | • Understand how key chefs have influenced eating habits to promote varied and healthy diets.<br><br>• Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. |

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| | | design criteria, including intended user and purpose. Vocabulary to fruit used e.g. sour, sweet, soft etc. | products against design criteria, including intended user and purpose. Extend vocabulary to vegetables used e.g. crunchy, sweet, soft, hard etc. | • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. | with reference to the design criteria and the views of others. | tables/graphs/charts such as star diagrams.<br><br>• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. | • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. |

## *RAB GD Extender Statements*

| **Greater Depth (S+)** | **Design and Technology GD Extender statements** | | | |
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| | **Design**<br>Children can … | **Make**<br>Children can … | **Evaluate**<br>Children can … | **Technical Knowledge**<br>Children can … |
| **KS1** | • Design purposeful, functional, appealing products for themselves and other users based on design criteria, ensuring products are fit for purpose.<br>• Independently generate, model, develop and communicate realistic and appropriate ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology, focussing on the needs of the user. | • Independently order the stages of making<br>• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] with some accuracy<br>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics and suitable for the product they are creating. | • Investigate and evaluate a range of existing products in detail.<br>• Evaluate their ideas throughout and products against design criteria including intended user and purpose. | • Independently use tier 3 technical vocabulary specific to the unit in the correct context.<br>• Independently recall relevant knowledge from prior learning that will have a positive impact on current project. |
| **Lower KS2** | • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, focussing on the needs of the user.<br>• Independently generate, develop, model and communicate realistic ideas through discussion, annotated | • Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately and suitable to the product they are creating. | • Investigate and analyse a range of existing products in detail.<br>• Evaluate their ideas and test their own and other products against their own design criteria and intended user.<br>• Identify the strengths and areas for improvement in their work, taking into account the views of others. | • Independently use tier 3 technical vocabulary specific to the unit in the correct context.<br>• Independently recall relevant knowledge from prior learning that will have a positive impact on current project.<br>• Understand how key events and individuals in design and |

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| | sketches and prototypes focussing on the needs of the user. | • Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their. functional properties and aesthetic qualities<br>• Independently plan the main stages of making. | | technology have helped shape the world. |
| **Upper KS2** | • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at and focussing on particular individuals or groups and purpose of the product.<br>• Independently generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.<br>• Develop a design specification to guide the development of their ideas and products, taking account of constraints including time, resources, environmental impact and cost. | • Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately and well finished.<br>• Appropriately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.<br>• Formulate detailed lists and step-by-step plans and, if appropriate, allocate tasks within a team.<br>• Work within the constraints of time, resources and cost. | • Investigate and analyse a range of existing products<br>• Continually evaluate and modify their ideas and products against their own design criteria and consider the views of others to improve the quality, manufacture, functionality and fitness for purpose of the design. | • Independently use tier 3 technical vocabulary specific to the unit in the correct context.<br>• Independently recall relevant knowledge from prior learning that will have a positive impact on current project.<br>• Understand how key events and individuals in design and technology have helped shape the world. |