



Frimley Church of England School

Design and Technology - Skills and Knowledge Progression



Intent

At Frimley we believe that creativity plays an important part in the curriculum by motivating and engaging the children, enabling them to become more independent and confident as learners. Our Creative Curriculum is taught through different topics in engaging and exciting ways. We aim to develop a more child led Creative Curriculum which is driven by the children's interests and involves them more within their learning experiences, whilst meeting the needs of the national curriculum objectives for History, Geography, Art and Design and Technology. In order to further develop key skills within each of these areas, lessons are delivered in an active, engaging and inclusive way supported by a variety of hands-on resources.

Implementation

- Engaging and relevant topics will be chosen, in consultation with the children.
- Lessons are delivered in innovative, exciting and imaginative ways, in line with the National Curriculum objectives.
- A variety of hands-on resources will support learning, including the use of the latest technological programmes and applications.
- Teaching staff will receive regular training to ensure they are confident in the development and delivery of the creative curriculum subjects, knowledge and skills.
 - A broad range of learning experiences will be used to deliver the curriculum to suit every child's needs, including trips, outdoor learning, visitors and Values Days to bring learning alive.

Impact

Through a child-led Creative Curriculum, the children are more motivated to explore their interests and talents further. Creativity fosters a sense of curiosity, flexibility, enthusiasm and individuality within the children, whilst enabling them to become more independent and confident as learners. The development and application of these key skills and knowledge helps the children to make more connections within their learning and the World around them.

National curriculum expectations:

By the end of Key Stage 2 pupils should extend their knowledge and understanding beyond the local area to include the United Kingdom and Europe, North and South By the end of Key Stage 2 pupils and through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts (for example, the home, school, leisure, culture, enterprise, industry and the wider environment)

Pupils should be taught to:

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| Design | <ul style="list-style-type: none"> • 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, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. |
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| Make | <ul style="list-style-type: none"> select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately. 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 |
| Evaluate | <ul style="list-style-type: none"> investigate and analyse a range of existing products. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. understand how key events and individuals in design and technology have helped shape the world. |
| Technical language | <ul style="list-style-type: none"> apply their understanding of how to strengthen, stiffen and reinforce more complex structures. understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages). understand and use electrical systems in their products (for example, series circuits, switches, bulbs, buzzers and motors). apply their understanding of computing to program, monitor and control their products |

What Frimley offers to its pupils:

| | Year 3 | Year 4 | Year 5 | Year 6 |
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| Knowledge | Develop knowledge of: <ul style="list-style-type: none"> Simple pneumatic system to create movement (In class - Dragons) Textiles (In class -Superhero Capes) 3D Models (In class - Bird box) Food Technology (Enrichment) | Develop knowledge of: <ul style="list-style-type: none"> Levers and linkages to create movement 3D Models (In class - Greek comedy and Tragedy masks) Food Technology (In class – Romans and Enrichment) | Develop knowledge of: <ul style="list-style-type: none"> Pulleys and gears to create movement (In class – Kites, Moving vehicles) Incorporating electrical circuits within products (In class – moving vehicle) Computing to program products Food Technology (Enrichment) | Develop knowledge of: <ul style="list-style-type: none"> Cams to create movement Incorporating electrical circuits within products (In class – electric chairs) Computing to program monitor and control products Food Technology (Enrichment) (In class – bread making and Enrichment) |
| Skills | <u>Design</u> <ul style="list-style-type: none"> Begin to research design ideas with support. Develop simple design criteria to inform the design of functional products that are fit for purpose. Share ideas through discussion. | <u>Design</u> <ul style="list-style-type: none"> Carry out research gathering information about the needs and wants of particular individuals and groups. Develop design criteria to inform the design of innovative | <u>Design</u> <ul style="list-style-type: none"> Carry out research, using surveys and interviews. Identify the needs, wants and preferences of particular individuals and groups. Develop a design specification to inform the design of | <u>Design</u> <ul style="list-style-type: none"> Carry out research, using surveys, interviews, questionnaires and web-based resources. Identify the needs, wants, preferences and values of |

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| | <ul style="list-style-type: none"> • Begin to use sketches and diagrams. <p><u>Make</u></p> <ul style="list-style-type: none"> • Begin to select tools and equipment for the task. • Measure, mark out, cut and shape, assemble, join and combine materials, with some accuracy. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Begin to investigate existing products; identifying who made them and when, what they like and dislike about them. • Identify what they like and dislike about their products. • Identify what is the same/different from their original design. • Begin to consider the views of others. <p><u>Technical Knowledge</u></p> <ul style="list-style-type: none"> • Begin to apply their understanding of how to strengthen, stiffen and reinforce simple structures • Begin to understand how simple levers, linkages and pneumatic systems create movement. <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> • Identify foods that are healthy and unhealthy. | <p>and functional products that are fit for purpose.</p> <ul style="list-style-type: none"> • Develop their own design criteria and use these to inform their ideas. • Share and clarify ideas through discussion. • Model their ideas using prototypes and pattern pieces. • Begin to use annotated sketches, cross-sectional drawings and diagrams. <p><u>Make</u></p> <ul style="list-style-type: none"> • Select from a range of tools and equipment suitable for the task. • Measure, mark out, cut and shape, assemble, join and combine materials accurately. Begin to apply modelled finishing techniques. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Investigate existing products; who made them and when, materials used, method of construction, strengths and weaknesses. • Identify strengths and weaknesses of their own products. • Identify whether they achieved their design criteria and give reasons why/why not. • Consider the views of others, including intended users. | <p>innovative, functional and appealing products that are fit for purpose and aimed at particular individuals or groups.</p> <ul style="list-style-type: none"> • Generate innovative ideas. • Make design decisions, taking account of constraints such as time. • Use annotated sketches, drawings and diagrams, cross-sectional exploded diagrams. <p><u>Make</u></p> <ul style="list-style-type: none"> • Produce lists of tools, equipment and materials they need, giving simple reasons for choices. • Measure, mark out, cut and shape to the nearest cm. • Assemble, join and combine materials following a method. • Apply a range of finishing techniques. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Investigate and analyse existing products; who made them, when and where, materials used, method of construction, whether products meet users' needs and wants, can the products be recycled/ reused? • Evaluate the quality of their product in detail and refer to their own design criteria when evaluating, suggesting ways to improve. | <p>particular individuals and groups.</p> <ul style="list-style-type: none"> • Develop a detailed design specification which can be justified with reasons. • Recognise when their products have to fulfil conflicting requirements. • Generate innovative ideas, drawing on research. • Make design decisions, taking account of constraints such as time, resources and cost. • Use annotated sketches, drawings and diagrams, cross-sectional exploded diagrams, prototypes, pattern pieces and computer-aided design. <p><u>Make</u></p> <ul style="list-style-type: none"> • Explain their choice of materials/components according to their functional and aesthetic qualities. • Measure, mark out, cut and shape to the nearest mm. • Assemble, join and combine materials in a sensible order. • Apply a range of finishing techniques, including those from art and design. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Investigate and analyse existing products; who made them, when and where, materials used, method of construction, whether products meet users' |
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| | <ul style="list-style-type: none"> • Prepare and cook using simple cooking techniques modelled by a teacher. • Begin to identify where food comes from. | <p><u>Technical Knowledge</u></p> <ul style="list-style-type: none"> • Develop their understanding of how to strengthen, stiffen and reinforce more complex structures • Understand how levers, linkages and pneumatic systems create movement. <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> • Identify foods that are healthy and unhealthy and begin to understand and name food groups. • Prepare and cook using simple cooking techniques with increasing independence. • Identify where and how a variety of ingredients are grown, reared, caught and processed. | <ul style="list-style-type: none"> • Consider the views of others, including intended users to improve their work. <p><u>Technical Knowledge</u></p> <ul style="list-style-type: none"> • Develop their understanding of how to strengthen, stiffen and reinforce more complex structures • Begin to understand how pulleys and gears create movement. • Begin to understand and use electrical circuits incorporating switches and motors within products. • Apply their knowledge of computing to program their products. <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> • Identify food groups and how these help us maintain a healthy diet. • Prepare and cook using more complex cooking techniques – following a recipe. • Measure accurately using the metric scale. • Understand seasonality – identify when a variety of ingredients are grown. | <p>needs and wants, how much they cost to make, how sustainable are the materials.</p> <ul style="list-style-type: none"> • Evaluate the quality, manufacture and fitness for purpose of the product in detail and refer to own design criteria when evaluating, suggesting ways to improve. • Consider the views of others, including intended users to improve work. <p><u>Technical Knowledge</u></p> <ul style="list-style-type: none"> • Confidently apply their understanding of how to strengthen, stiffen and reinforce complex structures. • Understand how cams create movement. • Understand and use more complex circuits with switches, bulbs buzzers and motors in products. • Apply knowledge of computing to control and monitor products <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> • Adapt and create recipes applying the principles of a healthy diet. • Prepare and cook using more complex cooking techniques – follow recipes independently. • Adapt a recipe using ratio. • Measure accurately using the metric and imperial scale. |
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