'Together we grow'

Emmaville Primary School

Design and Technology Policy

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Link Governor: Ellen Liddle

Rationale

Design and Technology at Emmaville Primary School develops children's skills and knowledge in design, structures, mechanisms, electrical control, computing and a range of materials, including food and textiles. Design and Technology is an inspiring, rigorous and practical subject. It encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team. At Emmaville Primary, we encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We aim to, wherever possible, link work to other disciplines such as mathematics, science, history, geography, computing and art. The children are also given opportunities to reflect upon and evaluate past and present design technology, its uses and its effectiveness and are encouraged to become innovators and risk-takers.

Aims and Objectives – Intent

The national curriculum for DT aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook

At Emmaville Primary School, our aim is to enthuse, develop and challenge pupils through an engaging and progressively structured DT curriculum and teaching approaches where pupils:

- Develop lively and enquiring minds through their ability to question and argue rationally and to apply themselves to tasks
- Attain competency and confidence in DT that will enable them to contribute to our local and global communities
- Acquire the knowledge and skills relevant to subsequent stages in their education, adult life and employment

Approaches to learning – Implementation

Key skills and key knowledge for DT have been mapped across the school to ensure progression between year groups. This also ensures that there is a context for the children's work in Design and Technology; that they learn about real life structures and the purpose of specific examples, as well as developing their skills throughout the programme of study.
Design and Technology lessons are taught as block so that children's learning is focussed throughout each unit of work.

Early Years DT Curriculum - Implementation

During the Early Years Foundation Stage, the essential building blocks of children's design and technology capability are established. There are many opportunities for carrying out D&T-related activities in all areas of learning in the EYFS. Specifically, 'Designing and Making' is identified as a strand within Knowledge and Understanding of the World. By the end of the EYFS, most children should be able to:

•Construct with a purpose in mind, using a variety of resources

•Use simple tools and techniques competently and appropriately

•Build and construct with a wide range of objects, selecting appropriate resources and adapting their work when necessary

•Select the tools and techniques they need to shape, assemble and join materials they are using

Key Stage 1 and Key Stage 2 DT Curriculum – Implementation

Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in the process of designing and making. The children work in a range of relevant contexts (for example home, school, leisure, culture and the wider environment).
When designing and making, the children are taught to:

Design

- 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 diagrams, prototypes, pattern pieces and computer-aided design

Make

- 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

- 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 knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products
- understand and use electrical systems in their products
- apply their understanding of computing to program, monitor and control their products

Assessment - Impact

Design and Technology assessment is on-going and formative. It happens in the classroom as part of the normal teaching process. It informs lesson pitch, differentiated intervention and future planning. The key documents to support this process are the national curriculum and our curriculum companion. To help the pupils to meet the attainment goals, we have broken these down into milestones. The milestones describe attainment at the end of a two-year period. The knowledge categories and proof of progress tasks help the pupils to meet these goals and we compare pupil's work over time assessing the impact.

- Milestone 1 – at the end of Key Stage 1
- Milestone 2 – at the end of Lower Key Stage 2
- Milestone 3 – at the end of Upper Key Stage 2

See appendix 1

Topic based oral/activity/classwork are used to inform on DT knowledge and areas of individual/group misconception. Marking should comply with the school policy and should include:

- 'short-term' topic-specific comments to correct misconceptions/errors and to drive progress within that topic. Work should then show short-term improved knowledge and accuracy within that topic.
- 'long-term' skill-specific comments to match work to skill criteria to drive progress between topics.

The Role of the Co-ordinator

The subject leader will monitor the teaching and learning of Design and Technology across the school; ensuring a high quality, broad and stimulating curriculum. They will also maintain a range of good-quality materials and tools, enabling teachers to resource and teach effectively.

The subject leader will also:

- take the lead in curriculum development in consultation with the headteacher, staff and governors
- monitor the teaching of DT in the school, ensuring that there is sufficient coverage and progress in the subject
- lead curriculum meetings
- attend DT network meetings and relevant courses
- support staff by providing information on training

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Appendix 1

Milestones for progress- Design Technology				
		Key Stage 1 Milestone 1	Lower Key Stage 2 Milestone 2	Upper Key Stage 2 Milestone 3
Master practical skills This concept involves developing the skills needed to make high quality products (we have highlighted a range of skills but they may be added to or changed	Food	• Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients.	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).	• Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures.
	Materials	• Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).	• Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques.	• Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). • Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the

		• Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).		nature of fabric may require sharper scissors than would be used to cut paper).
	Textiles	• Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).	• Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles.	• Create objects (such as a cushion) that employ a seam allowance. • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). • Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).
	Electricals and electronics		• Create series and parallel circuits	• Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).
	Computing	• Model designs using software.	• Control and monitor models using software designed for this purpose.	• Write code to control and monitor models or products.
	Construction	• Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.	• Choose suitable techniques to construct products or to repair items.	• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing,

			• Strengthen materials using suitable techniques.	gluing, filing and sanding).
	Mechanics	• Create products using levers, wheels and winding mechanisms.	• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve This concept involves developing the process of design thinking and seeing design as a process.		• Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design.	• Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs.	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high-quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout history This concept involves appreciatin		• Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs.	• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.

g the design process that has influenced the products we use in everyday life.		• Explore how products have been created.	• Improve upon existing designs, giving reasons for choices. • Disassemble products to understand how they work.	• Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.