Design Technology Curriculum Statement

'Following Jesus, together we care, inspire and achieve.'

"All problems are solved by design."

Stephen Gardiner

Introduction

Design Technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art.

Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world.

High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Rationale

We recognise the importance of design technology for pupils of all abilities as a subject which helps prepare them for the rigours and demands of adult life. In design technology (DT) children are taught to develop their capability through designing and making a range of products and systems for specific purposes. Pupils solve problems creatively as individuals and as members of a team. In doing, so they reflect on and evaluate present and past design and technology, its uses and effects.

Our curriculum for Design Technology aims to ensure that all our 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.

We believe that Design Technology is an essential component of the curriculum because it aims to develop:

Basic knowledge and identity of:

- Materials (natural and man-made);
- Forms and sources of energy;
- Sensing and control systems;
- Food and Nutrition.

Competence in:

- Investigative skills where children disassemble and critically evaluate existing products to inform their own design. (IDEA);
- Focused Practical Task (FPT) where children are given an opportunity to learn and practise new skills and techniques. Use of instruments, equipment, tools and systems;

- Design and Make Assignment (DMA) this is where children are allowed to be creative using what they have learnt through FPT;
- Evaluation Skills in the above area.

Awareness of:

- Real-life situations and issues;
- Impact of technology (past, present and future);
- Conflicts of interests (personal, economic and environmental);
- Aesthetic and social implications.

Attitudes should encourage:

- Independent Enquiry;
- Creative Thinking;
- Reflective Learning;
- Confidence, Resilience and self-awareness;
- Cooperation and Society;
- Listening and attention;
- Health and self-care.

TEACHING AND LEARNING

The principal aim is to develop children's knowledge, skills and understanding of the subject. Teachers ensure that children apply their knowledge and understanding when developing ideas, during the planning and making of products and when evaluating them. This is done through a mixture of whole-class teaching and individual or group activities.

Within lessons, children are given the opportunity both to work on their own and to collaborate with others, listening to other children's ideas and treating them with respect. Children critically evaluate existing products, their own work and that of others. They have the opportunity to use a wide range of materials and resources, including ICT.

We believe that good teaching in Design Technology features teachers who:

- Use existing products to inspire pupils and to support their investigations, testing and analysis;
- Use focused tasks and demonstrations effectively to show pupils different methods of manufacture;
- Use their own work to model ideas, and to explain the methods they use to identify the problem or to tackle a task;
- Uses resources effectively and adapts them well to overcome barriers to participation in practical work for pupils who are disabled or have special educational needs;
- Use questioning to encourage classes to contribute to the development of success criteria for design briefs, to prompt pupils to think through the problems they might encounter and to share strategies to solve them;
- Model and use technical language and subject-specific terms accurately;
- Structure learning effectively to encourage the pooling of ideas and findings to support pupils in critically evaluating and extending or improving the ideas;
- Ensure Design Technology is relevant by linking activity to pupils' interests, establishing real contexts for their work, and building upon their knowledge and skills in other subjects;
- Manage discussions effectively to include all pupils' views and challenge pupils' thinking, particularly about the function of products and the needs of users;

- Ensure that learning intentions are clear in plans, make good use of available time, offer suitable challenges to all groups of pupils – including the more able – and develop their learning.

A skills progression for DT is in place from reception to Year 6.

DESIGN TECHNOLOGY CURRICULUM PLANNING

Design and Technology is a foundation subject in the National Curriculum and our planning is cross-curricular and linked to the specific curriculum of our school. We may use the local environment or a current theme or topic as the basis for the required skills which are taught as part of the flexible curriculum.

Activities in Design and Technology are planned so that they build on prior learning. Children of all abilities are given the opportunity to develop their skills, knowledge and understanding, and we also build planned progression into the themes so that the children are increasingly challenged as they move through the school.

Design and Technology generally take place during afternoon sessions, occasionally a block of days/ afternoons at the teachers' discretion.

DESIGN AND TECHNOLOGY IN THE FOUNDATION STAGE

Throughout the Foundation Stage, activities and opportunities are planned where children can learn through talk, play and their own life experiences.

Children in the Foundation Stage will experience a variety of activities including:

- Choosing and exploring a variety of materials such as fabric, cards, paper, wood, boxes etc;
- Learning how to use scissors safely and correctly;
- Exploring a variety of joining techniques such as PVA glue, Pritt stick, masking tape, elastic bands, Sellotape, treasury tags, split pins, paper clips and string to join materials together;
- Taking part in both cooking and non-cook food activities, learning about the importance of food hygiene;
- Having opportunities to explore creating models using a wide range of construction kits that fit together in a variety of different ways;
- Having opportunities to talk about and explain how they will/have made their model and to discuss what they like/dislike about it;
- Folding and shaping paper in order to create a range of structures.

DESIGN TECHNOLOGY IN KEY STAGE 1

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 and school, gardens and

playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:

Design

- 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, information and communication technology.

Make

- Select from and use a range of tools and equipment to perform practical tasks [for example, 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.

Evaluate

- Explore and evaluate a range of existing products;
- Evaluate their ideas and products against design criteria.

Technical knowledge

- Build structures, exploring how they can be made stronger, stiffer and more stable;
- Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

DESIGN TECHNOLOGY IN KEY STAGE 2

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]. When designing and making, pupils should be taught to:

Design

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, and aimed at 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.

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 [for example, gears, pulleys, cams, levers and linkages];
- Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors];
- Apply their understanding of computing to program, monitor and control their products.

COOKING AND NUTRITION

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

Key Stage 1

- Use the basic principles of a healthy and varied diet to prepare dishes;
- Understand where food comes from.

Key Stage 2

- Understand and apply the principles of a healthy and varied diet;
- Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques;
- Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

Good achievement and challenges are evident when pupils:

- Demonstrate a secure understanding of who they are designing and making for, the purpose of the product and how it would work, and the specific criteria their products must meet to be successful;
- Communicate their innovative ideas and plans clearly and modify their designs and prototypes in light of their testing and evaluation;
- Develop technical competence, applying measurement and using tools and components with increasing accuracy to safely make well-finished products;
- Draw effectively upon their scientific understanding and their knowledge of mechanisms, structures, forces or the effect of heat to create and explain how their products work;
- Use an increasingly technical vocabulary when talking or writing about what they might change as their work develops.

HEALTH AND SAFETY

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All children are made aware of Health and Safety issues when undertaking work in DT. When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:

- About hazards, risks and risk control;
- To recognise hazards, assess consequent risks and take steps to control the risks to themselves and others;
- To use the information to assess the immediate and cumulative risks;
- To manage their environment to ensure the health & safety of themselves and others;
- To explain the steps they take to control risks.

In this subject, the general teaching requirement for health and safety applies.