Mordiford Primary School

Design and Technology Policy

At Mordiford we value the importance of the Design and Technology and recognise its significance in our children's wider learning and development.

'Design and 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.' (The National Curriculum 2014)

March 2021.

Intent;

Design and Technology helps to prepare children to take part in the development of tomorrow's rapidly changing world. Creative thinking encourages children to make positive changes to their quality of life. Our Design and Technology units of work encourage children to become autonomous and creative problem-solvers, both as individuals and as part of a team. Children are taught to identify needs and opportunities and to respond by developing ideas and eventually making products and systems. Through the study of Design and Technology they combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design and technology, its uses and its impacts. Design and Technology helps all children to become discriminating and informed consumers and potential innovators.

Our intent is to instil in children an understanding of how to design and make things that work for a purpose. This will include looking at how everyday products have been designed, developed and manufactured to perform a given task or developed for a specific audience. Children are encouraged to develop their own confidence, independence and ability to work through the processes of designing and making products.

Our aims of Design and Technology are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work, and to draw and model their ideas;
- To teach skills and to encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the 'made' world and how we live and work within it;
- To develop an understanding of technological processes, products, and their manufacture, and their contribution to our society;
- To foster enjoyment, satisfaction and purpose in designing and making

The National Curriculum for Design & Technology 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.

Implementation;

Design and Technology in EYFS;

During the Early Years Foundation Stage, the essential building blocks of children's design and technology capability are established. We encourage the development of skills, knowledge and understanding that help children make sense of their world. These early experiences include asking questions about how things work, investigating and using a variety of construction kits, materials, tools and products, developing making skills and handling appropriate tools and construction material safely and with increasing control. We provide a range of experiences that encourage exploration, observation, problem solving, critical thinking and discussion. These activities, indoors and outdoors, attract the children's interest and curiosity. Opportunities are provided for carrying out Design and Technology-related activities in all areas of learning in the EYFS. 'Creating with Materials' is also identified as a strand in its own right within the 'Expressive Arts and Design' Early Learning Goal. By the end of the EYFS, most children should be able to:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function
- Share their creations, explaining the process they have used
- 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.

Design and Technology-related activities in the EYFS are appropriate to the developmental stage of the children. Activities often look quite different from those carried out in KS1. Provision includes carefully planned adult led activities, teaching of practical skills as well as a wealth of open ended resources provided in free-flow provision to capture interest and excitement in Design and Technology. In the EYFS;

•Designing can mean using hand gestures, arranging and re-arranging materials and components, talking and listening
•Designing is usually intuitive
•The designing and making process is fluid
•Children have frequent opportunities to develop practical skills with a range of materials e.g. using screwdrivers to dismantle old electrical appliances such as computers
•Children have frequent opportunities to explore construction kits as well as a range of found or abstract objects such as sticks and other natural materials which children are free to explore and build with as they wish
•Children have frequent opportunities to explore existing products
•Activities are appropriate to children's prior experience

Design and Technology in Key Stage 1:

The fundamental skills, knowledge and concepts of Design and Technology are set out in The National Curriculum in the programmes of study areas; design, make, evaluate and technical knowledge: Through a variety of creative and practical activities, pupils are taught to design and

make working in a range of relevant contexts [for example, the home and school, Forest School, the local community, industry and the wider environment].

When designing and making, pupils are 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, information and communication technology
- 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
- 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 and Technology in Key Stage 2:

Pupils build on the skills taught in Key Stage 1 and;

- 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
- 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
- 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
- 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 are taught how to cook and apply the principles of nutrition and healthy eating, instilling children with a love of cooking. 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.

In Key Stage 1 pupils;

- use the basic principles of a healthy and varied diet to prepare dishes
- learn where food comes from.

In Key Stage 2 pupils;

- 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.

Teaching;

We use a variety of teaching approaches, reflecting our children's diverse learning styles, to develop children's knowledge, skills and understanding in design and technology. Teachers ensure that the children apply their knowledge and understanding when developing ideas, planning and making products, and then evaluating them. We do this through a mixture of whole-class teaching and individual or group activities. Children are given opportunities to work on their own and to collaborate with others, listening to other children's ideas and treating these 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 computing. Staff ensure that learning opportunities are accessible by matching appropriate challenge to the ability of each child.

We achieve this through;

- setting common tasks that are open-ended and can have a variety of results;
- setting tasks of increasing difficulty where not all children complete all tasks;
- grouping children by ability, and setting different tasks for each group;
- providing a range of challenges through the provision of different resources;
- using additional adults to support the work of individual children or small groups.

Planning;

We plan the activities in Design and Technology so that they build on prior learning. We give children of all abilities the opportunity to develop their skills, knowledge and understanding. Teachers are given flexibility to choose how they deliver the Design and Technology aspect of their curriculum teaching appropriate skills sequentially. This can be through class topic based learning or in the form of stand-alone tasks. It is expected that children should participate in Design and Technology based activities for a time allocation which approximates to 1 hour a week. This total may be spread across the term, or taken in blocks, to suit the activity. This flexibility in planning and timetabling supports teachers in delivering a dynamic and integrated curriculum tailored to the needs of each class.

Impact;

Work in Design and Technology may be assessed through judgements of recorded work but a large proportion of assessment is involved with practical application and language development involving discussion, description and explanation skills. Evidence may be seen in books, displays and most commonly through 3-D models and photographs of children's work. Assessments are made against Age Related Expectations across a range of skills from the National Curriculum, as outlined in our Design and Technology Progression documents. An annual assessment of progress for each chid is made and communicated to parents in a written report at the end of each academic year.

Children are encouraged to assess and evaluate both their own work and that of other pupils. This helps the children to appreciate how they can improve their performance. Feedback is given to the children during lessons which allows children the opportunity to develop and progress in future tasks.

The wider impact of the Design and technology Curriculum, the standards of children's work and the quality of teaching is also monitored by the subject co-ordinator through learning walks, work scrutinies and staff and pupil interviews/questionnaires. The subject leader also has responsibility for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for Design and technology in the school. The subject leader evaluates strengths and weaknesses in Design and Technology, and indicates areas for further improvement.

Links to Other Curriculum Areas

English

Design and Technology contributes to the teaching of English in our school by providing valuable opportunities to reinforce what the children have been doing during their English lessons. The evaluation of products requires children to articulate and refine their ideas and to compare and contrast their views with those of other people. Through discussion, children learn to justify their own views and clarify their design ideas.

Mathematics

In Design and Technology there are many opportunities for children to apply their mathematical skills through choosing and using appropriate ways of calculating measurements and distances. They learn how to check the results of calculations for reasonableness, and learn how to use an appropriate degree of accuracy for different contexts. Children learn to measure and use equipment correctly. They apply their knowledge of fractions and percentages to describe quantities and calculate proportions. When carrying out design projects, the children read and interpret scales, collect and present data, and draw their own conclusions. They will learn about size and shape, and make practical use of their mathematical knowledge.

Personal, Social and Health Education (PSHE) and Citizenship

Design and Technology contributes to the teaching of PSHE and Citizenship. We encourage the children to develop a sense of responsibility in following safe procedures when making things. They

also learn about health and healthy diets. Their work encourages them to be responsible and to set targets to meet deadlines, and they also learn, through their understanding of personal hygiene, how to prevent disease from spreading when working with food.

Spiritual, Moral, Social and Cultural Development

Design and Technology offers children opportunities to develop social skills. During the design process, they work together, and give discuss their ideas and feelings about their own work and the work of others. When adopting a collaborative and cooperative approach in Design and Technology, children learn to respect for the abilities of other children, and gain a better understanding of themselves. In addition, they develop a respect for the environment, for their own health and safety and that of others. They learn to appreciate the value of similarities and differences. A variety of experiences teaches them to appreciate that all people are equally important.

Computing

Children may use software to enhance their skills in designing and making, to collect information and to present their designs through a range of design and presentation software. Children use apps on iPads to design e.g. Scratch, and program e.g. Lego WeDo.

Special Needs Provision / Enrichment and Challenge

At Mordiford, we are fully inclusive and recognise the need to tailor our approach to support children with special educational needs as well as those who are identified as benefitting from further enrichment and challenge. At our school we teach Design and Technology to all children, according to their ability and individual needs. Design and Technology provision reflects our curriculum policy delivering a broad and balanced education to all children. Through our Design and Technology teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this.

Health and Safety and Food Hygiene.

All Design and Technology lessons are planned and delivered according to the Schools Health and Safety policy. Staff with an up-to-date food hygiene certificate are always available on site.

Where children are to participate in activities outside the classroom, for example in a museum or on a factory trip, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Teachers teach the safe use of tools and equipment and insist on good practice prior to starting the making part of a task. However, safety issues do arise when teaching this subject. These include:

- The use of electrical equipment such as glue guns
- The handling of food stuffs
- The use of cooking appliances, including ovens and hobs
- Contact with sharp objects including wood, nails, needles, saws etc.
- Awareness of personal safety (jewellery, hair, eye protection)

It is the duty of all staff to:

- Recognise and assess the hazards and risks to themselves and others when working with food and other materials
- Take action to control these risks and hazards Teachers should be aware of the following:
- Children must not use cooking appliances unless under direct supervision from a responsible adult. • Saws and other sharp objects (nails, needles, craft knives, etc.) must be used under direct supervision. The teacher will make a judgement on the undertaking of activities involving sharp and / or potentially dangerous equipment depending on the age / ability of the children in his / her class. Some activities may be undertaken by an adult or in a small group or one to one situation as appropriate
- Perishable foodstuff must be stored appropriately and refrigerated if necessary. Care must be taken to ensure food is not used after the given sell by / use by date
- Teachers and adult support staff must oversee that cupboards, table tops, cooker etc., are clean and in working order
- Children must wash their hands before and after any contact with food and other potentially harmful substances
- Teachers must take into account possible food allergies to food such as nuts and should be aware of the location of any medication for the allergy.

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