Teaching Design Technology at Dove Bank

Subject Statement

"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."

(National Curriculum2014; Design Technology)

At Dove Bank, we believe that Design Technology stimulates and offers children the chance to use their creative and critical thinking skills. This is through the use of effective planning and designing a purposeful and tangible outcome for all children, including children with specific needs. At Dove Bank, we use creative and practical activities, that are relevant to the child and the curriculum, pupils are taught the knowledge, understanding and skills needed to engage in a process of designing, making and evaluating.

Through the study of Design Technology, we want our pupils to acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. This way, we aim for our children to learn how to take risks, become resourceful, innovative and be enterprising and capable citizens.

Aims

In our teaching of design technology, we aim to provide and deliver:

- To allow access to all children to variety of high-quality design technology resources.
- To allow children to draw on their own experience to generate ideas.
- To observe and evaluate existing products and extract ideas from a variety of sources.
- To produce their own designs to a given task. (Planning)
- To make their product using a range of tools and materials.
- To evaluate products sensibly.
- To use evaluation to modify future versions and processes.
- To work co-operatively and share ideas.
- To develop appropriate vocabulary and communication skills.
- To develop our pupils knowledge and understanding of mechanisms, structure, products and applications, materials and components.
- To encourage appreciation of quality and health and safety.
- To cultivate children's aesthetic awareness and enable them to make informed judgements about design technology and become actively involved in shaping environments and their world.
- To teach and allow children to become confident and resilient when faced by a challenge which is by promoting children to freely discuss their own ideas, feelings, thoughts and experiences.
- To enhance children's ability to value the contribution made by artists, craft workers and designers and respond critically and imaginatively to ideas, images and objects.

Subject Leader & Expert Teachers

Within school we have a wealth of experience in the teaching of Design Technology. Details of staff are detailed below:

- Dilan Guney is our Design Technology leader.
- Vicky Harley – has experience of leading Design Technology and has experience of teaching, delivering and leading DT before.
- Steve Macha – experienced teacher and the leader for Mathematics - who is passionate about the delivery of Design Technology.
- Jo Woodward – experienced teacher and the leader for Science- works passionately to involve science with Design Technology
- All teachers are creative teachers, whom enjoy delivering a creative curriculum.

Curriculum Organisation

"Tell me and I forget- show me and I may remember- let me do it, and I learn." Learning through making works!

(Prue Leith, Leith's School of Food and Wine As quoted in National Curriculum Document 2001, page 14)

Early Years Foundation Stage

Children in Early Years are the youngest designers in our school. At Dove Bank Primary school, we provide them opportunities to explore and express their creativity freely but also build on their previous experiences, knowledge and skills. We relate the children's creative development to the objectives set out in the Early Years Development Matters statements, which underpins the curriculum planning for children aged two to five.

During the Early Years, children listen carefully to instructions and work safely by following them accurately while using tools and practising techniques. They are questioned throughout their learning, while they are designing and making projects to give the children the opportunity to become critical thinkers and also to build on vocabulary and reasoning for their own products.

Design technology activities significantly help with fine and gross motor experiences in children within the early years setting at Dove Bank Primary. We ensure that children have a range of tools to develop their core muscles, encouraging the use of and building on fine and gross motor skills. This is done through providing different tools within the provision that is easily accessible to the children that they can twist, cut, join, stick, wrap, push and pull. Opportunities for sensory explorations and co-ordination can be achieved through a number of tasks and play.

Key Stage 1

Through the use of creative and practical activities, pupils are taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They are encouraged to work in a range of relevant contexts that is either cross-curricula or relevant to the theme of focus that term, making design technology interesting to the children's' learning and purposeful. While designing and making, children are 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.

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:

EYFS

- Know the importance for good health of physical exercise and a healthy diet

Key stage 1

- Use the basic principles of a healthy and varied diet to prepare dishes

- Understand where food comes from.

Key Stage 1 children have access to one unit per term for design technology but they are encouraged to use the knowledge and skills gained to be applied in all areas of their learning. They have opportunities to develop their own ideas and generate designs independently. Progression of Design and Technology skills will be monitored by staff formally and informally with references to expectations from the National Curriculum. Planning will follow Medium term planning linked to National Curriculum guidelines.

Key stage 2

Through a variety of creative and practical activities, children are 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, 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

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

Pupils should be taught to:

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.

The curriculum planning of Design technology has been planned rigorously with the teachers and subject leader to ensure that the delivery of design technology is progressive through the use of skills, knowledge, resources, outcomes and vocabulary. Children are provided units that are relevant to their

current learning, making them cross-curricula, which allows children to make strong links between subjects and their learning. We plan lessons following the National Curriculum objectives and follow the scheme of Kapow, ensuring that all objectives are covered and that planning is made accordingly to the needs of the cohort and children's abilities.

Subject Specific information

To achieve our aims at Dove Bank, we ensure that the planned activities for children undertake are challenging, motivating, relevant and enjoyable. We give children confidence in their work by providing continual support and encouragement. The children are extended in their work in a way which develops their expertise across the whole curriculum and in their links to other subjects.

The teaching of design and technology offers opportunities to support the social development of our children through the way we expect them to work with each other in lessons. Grouping of children allows them to work together, and give them the chance to discuss their ideas and feelings about their own work and the work of others.

Through collaborative and co-operative work of activities and experiences in design and technology, the children develop respect for the abilities of other children and a better understanding of themselves. They also develop a respect for the environment, for their own health and safety and for that of others. They develop their cultural awareness and understanding, and they learn to appreciate the value of differences and similarities. A variety of experiences teaches them to appreciate that all people are equally important, and that the needs of individuals are not the same as the needs of the group. This supports our whole school approach to 'Learning Behaviours' at Dove Bank.

Design and technology contributes to the teaching of personal, social, health and relationship education (PSHRE). 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. They are encouraged to always be responsible of their personal hygiene, how to prevent disease from spreading when working with food.

Assessment

At Dove Bank Primary School, we ensure that formative assessment is established during the teaching of each National Curriculum Objectives, children's subject knowledge and creative ability will be assessed using formative evaluation by the teacher on a lesson-by-lesson basis. Teachers consider the objectives covered during each session and the end-goal that is to be achieved; in doing so, they will then make judgements that are subsequently used to inform future teaching based on the children's creative competencies relating to the piece of work produced or explored.

Summative Assessment is taken at the end of each project. Teachers make a summative judgement relating to the children's knowledge and understanding of design technology's context and composition in line with the objectives set out in the National Curriculum. Children will have knowledge organisers that is filled at the beginning of a unit and is completed towards the end of the unit, which class teachers use to assess the vocabulary learnt, along with end of unit quiz that the pupils then complete. The subject leader monitors sketchbooks, knowledge organisers and end of unit products to assess the skills learnt and to assess if the final piece of work is demonstrating the expected level of achievement in Design Technology objectives.

Recording
It is essential that the type of recording be matched to the type of Design Technology activity as well as to the needs and abilities of the child. A variety of recording methods are therefore used. These include pictures, structured worksheets, sketches, diagrams, flow charts, model making, written explanations, photographs, school displays and the occasional video recording. Pupils in KS1 and KS2 keep evidence of their learning in their personalised sketchbooks.

Equal opportunities and inclusion
At Dove Bank, we believe that it is important for all children to experience the range of design technology activities. We will use opportunities within design technology to challenge stereotypes. All children will be encouraged and supported to develop design technological capability through a range of materials. We recognise the importance of identifying the specific difficulties that individual children might experience, and targets will be set within their IEP to reflect appropriate teaching and organisational strategies to meet their needs.

Health and Safety

Safety is of paramount importance in Design and Technology.

It is the teacher's responsibility to be aware of safety issues in all Design and Technology activities by:
- Providing a safe working area (furniture, materials storage, tool maintenance)
- Teaching and implementing safety rules and good practice, including hygiene
- Ensuring the safe and correct usage of tools and materials
- Ensuring working areas are kept clean and tidy
- Considering storage of partially completed work
- Ensuring the correct disposal of waste

The teacher is responsible for ensuring that children are adequately supervised when using tools and that other adults working in the classroom understand safety rules and maintain rigorous safety standards.

Safety rules and safety issues should be taught to all children within each design technology unit of work.

Design Technology across the Curriculum

English

Design technology contributes to the teaching of English in our school by encouraging children to ask and answer questions about the starting points for their work. They have the opportunity to write their views on the specific research done. English is also used while self and peer evaluations of next steps and improvements needed.

Mathematics

Mathematics and design technology are related in variety of ways. Design technology contributes to children's mathematical understanding by giving opportunities to develop technical drawings, including details in design drawings which show the exact details of two and three dimensional diagrams and shapes.

PSHE

Design technology contributes to the teaching of personal, social, health and relationship education (PSHE). We encourage the children to develop a sense of responsibility in following safe procedures when making things. They also learn about health, making sure they are aware of personal hygiene and healthy diets.

ICT

Information and Communication Technology enhances our teaching of design technology, wherever appropriate, in all key stages. Children use software's and technical resources to explore, design and create.

Science

Both science and technology have a fundamental relationship with design technology. Science within Design technology curriculum inspires and makes learning within Science real and to context while using it within Design technology.

Art and Design

Art and design go hand in hand with Design technology as it encourages to use similar techniques and skills needed for Art and for Design technology.