

Design and Technology

Curriculum Statement

PURPOSE OF STUDY

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.

AIMS

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.

SUBJECT CONTENT

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.

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, 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 & 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.

TEACHING & LEARNING

Within The Warriner Multi Academy Trust we aim to make Design & Technology an enjoyable learning experience. Children undertake a Design & Technology project at least three times a year. Teachers use a variety of strategies to support the development of children's knowledge, skills and understanding in this area. 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/group activities. Within lessons, we give children the opportunity both 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 ICT. The learning opportunities can be divided into three main areas.

Investigative, Disassembly and Evaluative Activities (IDEAs)

These activities provide opportunities for the children to explore existing products and to gain skills, knowledge and understanding which can be applied in a design and make assignment.

Focused Practical Tasks (FPTs)

Focused practical tasks provide opportunities to learn and practice particular skills and knowledge.

Make Assignments (DMAs)

A design and make assignment provides an opportunity for the children to combine their skills, knowledge and understanding to develop products that meet a perceived need, for example a shield for a warrior. (In general DMAs in Key Stage One will tend to be shorter in duration and, as children move towards the end of Key Stage Two, their designing and making will become more complex and therefore more time consuming.)

CURRICULUM PLANNING

Within the WMAT we have developed a knowledge rich curriculum underpinned by a strong set of values about what matters. It is informed by research and deliberately designed to enable all of our children to have equal access to knowledge, to value the pursuit of that knowledge and to be able to use that knowledge for good.

Our curriculum is ambitious for all children. It uses the National Curriculum in England 2014 Framework for Design and Technology as the basis for its' planning. Our curriculum is a framework for setting out the aims of our programme of education, including:

- The knowledge and understanding to be gained at each stage (intent)
- Translating that framework over time into a structure, narrative and with subject specific pedagogy (implementation)
- Evaluating what knowledge and understanding pupils have gained against expectations (impact)

Long-term planning clearly identifies the procedural and declarative knowledge to be taught and how this builds on prior learning and where it will be further developed in the future. The planned progression built into the Design and technology curriculum means that the children are increasingly challenged as they move through the school. Links are made to termly themes and other curriculum subjects where appropriate and these are identified on the termly units of work. Long-term plans identify individual Design and technology units taught across the year group phases and follow a two-year cycle. Design and technology is taught by individual class teachers who take responsibility for planning, resourcing and delivering this area of the curriculum.

EARLY YEARS FOUNDATION STAGE

In Nursery and Reception classes Design and technology is an integral part of the topic work covered during the year. Long-term planning indicates the appropriate descriptors from the Birth to 5 document that relate to the unit of work and area of learning and also identifies how this understanding will support learning as the child moves through EYFS and KS1. 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.

SPECIAL EDUCATIONAL NEEDS

We have high expectations for all of our children and work to ensure that barriers are able to be overcome. To that end we expect our staff to plan and deliver lessons where pupils with SEND are able to access their learning in an appropriately supported manner

SPIRITUAL, MORAL, SOCIAL & CULTURAL DEVELOPMENT

The teaching of Design & Technology offers opportunities to support the social development of our children through the way we expect them to work with each other in lessons. Our groupings allow children to work together, and give them the chance to discuss their ideas and feelings about their own work and the work of others. Through their collaborative and co-operative work across a range 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 groups.

HEALTH & SAFETY

The general teaching requirement for health and safety applies in this subject. We teach children how to follow proper procedures for food safety and hygiene. Hot melt glue guns, Stanley knives and staple guns should not be used by the children. Cool melt glue guns should be used with care. Risk Assessments should be completed for any activities involving potential hazards.

ASSESSMENT & RECORDING

Teachers assess children's work in Design and technology by making informal judgements as they observe them during lessons and by providing written and or verbal feedback throughout a unit of work. At the end of the year, the teacher makes a summary judgement about the work of each pupil in relation to the skills they have developed in-line with the National Curriculum in England 2014 and these are reported to parents as part of the child's annual school report. We use this as the basis for assessing the progress of the child and we pass this information on to the next teacher at the end of the year.

MONITORING & REVIEW

Class teachers are responsible for the standard of children's work and for the quality of their teaching in Design and technology lessons. Subject leaders work with their school teams to develop subject pedagogy across the school and to monitor the Design and technology teaching and learning taking place through book looks, pupil interviews and learning walks. Where strengths and examples of good practice are noted, they are shared and where areas requiring additional support are highlighted, the necessary CPD is provided.