Bitterne C of E Primary School

Policy for Design and Technology

Headteacher

Mr Andy Peterson

Last review – October 2019

Next review – October 2021

Signed by Chairs of Governors

Purpose of the policy

This policy has been written to:

- establish an agreed approach to the teaching of Design and Technology (DT) within the school;
- ensure continuity and progression across and between Key Stages;
- inform staff, parents, governors and inspectors of current practice;
- describe the purposes, nature and management of the Technology taught and learnt in the school;
- ensure that the Technology taught at least matches the requirements of the National Curriculum.

The Nature of Design and Technology at Primary School.

'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 Primary National Curriculum 2014

Aims of the National Curriculum

The national curriculum for design and 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.

NC 2014 aims

The Design and Technology Curriculum

The National Curriculum 2014 sets out the programmes of study for each key stage.

The Programmes of Study

The programmes of study for design technology are broken down into separate categories which look at the different aspects of learning within the subject. These are design, making, evaluate, technical knowledge, and cooking and nutrition, the latter being a separate aspect which will link in with the others but will only be used for cooking and nutrition.

As well as these aspects there are key units within design technology such as woodwork, sewing, construction and structures, mechanisms and moving parts, electrical control and food technology (cooking and nutrition).

Please see the separate policies for health and safety and food technology within DT.

Early Years

Exploring and Using Media and Materials (ELG16): They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Being imaginative (ELG17): Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.

Key Stage 1

When designing and making pupils should be 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

*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

When designing and making pupils should be taught to:

*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.

Planning for Design and Technology

The planning for Design and Technology should follow the agreed overview for each year group, outlining the 'Learning Journey' over each unit with a clear expected outcome. The learning will be progressive and will follow the agreed progression of skills and progression of knowledge across the school, which relates to the national curriculum. Following the agreed progressions of skills and knowledge ensure the children are taught the skills, knowledge and understanding needed so

that by the end of the unit good progress is evident. Each unit of work will involve each part of the design process focusing on particular type of design technology for example: woodwork, food technology and sewing. Within this the key techniques, skills and materials will also be identified. Links to other curriculum topics will be evident in outcomes. Where possible children should be given the opportunity to look at real-life products and their designers, inventors or creators to develop a wider understanding of the purposes for design technology.

The planning should not be over detailed or bureaucratic and should follow the Learning Journey principles and format. The teacher must keep in mind that the planning is a working document that will change as the unit progresses as a result of assessment for learning. By the end of a unit, the planning will have annotations on it where barriers for individuals, groups or the whole class have been identified and addressed.
SLT and the Design and Technology Leader will monitor that the planning follows the agreed format but will not expect to the audience for the planning to be anyone other than the teacher themselves. SLT and the Design and Technology Leader will however be looking at the **impact of planning on the learning** in a lesson or over time in the books. It may be that in lesson observations, the planning is not studied in detail as it is the learning in the class at the time as a result of the planning that will be judged.

Over a unit of work there should be a variety of learning activities to interest and engage students which look at different types of design and technology.

A clear focus on developing Design and Technology skills should be evident in the planning and children should talk enthusiastically about their progression in DT.

Children should have planned opportunities to **say and/or write explanations or share their** DT work with their peers and adults**.**
In their Art sketch books there should be examples of where children have

- explored and analysed existing products,
- designed their own products with a purpose in mind,
- explored the materials being chosen,
- explained their choices and final design,
- drawn or taken a photo of their final product,
- an evaluation of their product and changes they might make in a future product.

Not every one of these points may be relevant for every unit. Sketch books will be started in year 3 and follow the children through to year 6. In KS1, DT work should be recorded in topic books and will show their experimentation and exploration before their final design, and/or final product as well as the evaluation.

Learning Intentions and success criteria are an important tool, when used effectively, to ensure the thread of learning is clear to the children. To help them understand and remember steps in their Design and Technology it is sometimes useful to have **process success criteria** (Steps to success) as well as **outcome success criteria**. It is motivating for children to create their own process success criteria after the process has been modelled to them. A visualiser recording the process and playing back will support this. On occasions, it may be that the teacher will

deliberately not reveal the learning intentions at the start of a lesson and the pupils will be challenged to articulate what they have learnt later in the lesson.

Resources

Some Design and Technology equipment and materials should be stored centrally, however year groups use their own budgets to buy consumable resources for their year groups. Each department will be responsible for requesting materials to resource their Medium Term DT Plans for the coming year. After conducting an audit the Co-ordinator will replenish basic resources with any budget surplus and these resources will be stored centrally in the DT cupboard located in year 3.

The DT cupboard located in year 3 contains a base stock of resources including felt, wool, dowelling, wheels, hand saw, sawing blocks, cooking utensils,

- **Year groups will retain:**
  Packs of resources specific to each unit, including pictures, posters, photo packs etc.

- **ICT resources include:**
  Smart board pictures are saved in each year groups section of the server.
  Web based art and design programmes.

Use of ICT

ICT will be used where appropriate and will include:

- recognising its use in the world around them and consider its effects;
- using control technology e.g. Robolab;
- using graphical modelling software;
- using the Internet to research products;
- using word processing packages to communicate ideas and share information

Design and Technology across the curriculum

Expectation- 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].
Cooking and Nutrition Expectation - 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.

Maths

A sound knowledge of measure is vital in most making stages of technology as well as an understanding of shape and nets.

Literacy

The Speaking and Listening Programme of Study for English provides opportunities to discuss the technology products of the children and that of other inventors, creators and manufactures.

Products can be used as stimulus for writing and responses to literature could be sketched or drawn.

Science

Many products will require and develop practical knowledge of electricity, movement, friction, forces and sorting materials. Children will be applying this knowledge in their choices of design and increasing their investigation skills as they problem solve during the making process.

Art and Design

Drawing and designing go hand in hand and the children will be developing the skills of perspective and 3D drawing as they design the practical aspects of each project. Children will also need to consider their target market for their product and the aesthetics that would make their product most attractive. Knowledge of colour and the practicalities of different mediums will be applied in the finishing off of products.

History

Investigating different inventions from periods in history and how they have been developed to produce more modern products.

Links to reading

Please refer to the Policy for Reading. Children should experience a wide range of reading and this includes in their study of technology products.

Links to writing

The vocabulary in Design and Technology should be modelled precisely by all staff and children should be expected to accurately use the vocabulary when speaking and in their written work. There should be examples of written work in DT where the children are explaining their decisions and evaluating their finished pieces. The writing should follow the non-negotiables for writing and should be of the same standard as the writing in English books.

Links to speaking and Listening and spoken language.

'The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. '
Page 89 National Primary Curriculum 2014

All adults model and develop children's speaking and listening by talking to children, asking questions, modelling new vocabulary and helping children to express their ideas orally.
There should be planned opportunities to develop skills in speaking and listening.
All adults in school should be good role models for the correct use of the Design and Technology terms in the taught unit.

Assessment of Design and Technology –

Pre and Post Assessments

A short demonstration of skills will need to be tested before each DT Unit to assess the children's current skill level to ensure differentiation. It may also be appropriate to assess their knowledge of the products and mechanics involved. This will then need to be assessed again at the end of the unit in order to evaluate and measure progress. Children will also have the chance to judge their own progress through evaluation at this stage.

Report Statements

Summative assessments will be made to report to parents during the summer term. Two areas of Design and Technology will be assessed for each child per year. These will be judged against levelled statements agreed upon by the Design and Technology Subject Leader.

Marking and feedback

Any work should always be marked in accordance with the 'Marking and Feedback Policy'. There should be a tick, tip and time given for talkback activities to respond to the marking. The tip should be a question to make the child think about their creativity. There should NOT be any form of suggestion as to what the child could improve on as this hinders the creative element of Design and Technology, where pupils should be identifying their own areas for improvement from their practical discoveries.

Pupil views in Design and Technology

The pupils will be asked regularly - what makes their learning in DT so successful? This can be done orally or through a written survey. The Design and Technology Leader will analyse and report to staff and governors on the children's perception of their learning in DT. This information will support the RAP.

Inclusion and DT

Every child is entitled to Design and Technology education regardless of race, gender and ethnic background. This is achieved through the teaching of the school's Design and Technology plans, which are in line with the National Curriculum. The time allocation of approximately 21 hours is distributed throughout the term and year, within the medium term plans and through our theme weeks.

Leadership of Design and Technology

The role of the Design and Technology Leader (See Design and Technology leadership overview)

- Should have a clearly communicated and ambitious vision for Design and Technology, securely based on accurate evaluation of the school's strengths and areas to develop.
- Should be relentless in ensuring that the Design and Technology in the school follows this policy, which will result in greater consistency in the teaching and learning for DT.
- Undertake regular monitoring activities for DT (observe lessons, pupil conference, data analysis, work sample etc)
- Provide self-evaluation for Design and Technology each term and support termly RAP.
- Liaison within cluster
- To make links with DT across the curriculum.

This policy will be reviewed every 2 years or sooner as appropriate.