

**Sutton Benger CEVA Primary School**  
**Policy for Design and Technology**

**1 Aims and Objectives**

- 1.1** *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 in England framework document, July 2014, p.221]

- 1.2** Design and Technology is a practical subject that provides opportunities for all children to design and make good quality products. It encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team. Today's children are living in a highly developed technological society. They are constantly using and controlling a wide range of technology whether it is the use of a light switch, calculator or computer system. This is all part of their experience of life and one which they will use in the classroom. Design and Technology is about practical problem solving and using materials available to them to solve problems in a man-made environment. At the primary level we can instil attitudes towards Design and technology in which the children realise that in technology there is never just one correct solution. The process of identifying a need, designing a solution, building an artefact and testing and evaluating it can be the most satisfying to the child. The aim of this school is to develop designing and making skills, knowledge and understanding to the best of each child's ability, using a range of tools, materials and components safely.
- 1.3** 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 to explore attitudes towards the made world and how we live and work within it;

**2 Teaching and Learning Style**

- 2.1** We use a variety of teaching and learning styles in Design and Technology lessons. The principal aim is to develop children's knowledge, skills and understanding in design and technology, reflecting their differing abilities, through a range of strategies. Sometimes we do this through whole-class teaching, while at other times we engage the pupils in an enquiry-based research activity. We aim to include a high proportion of practical work and we encourage the pupils to ask, as well as answer, questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs. They use technology in Design and Technology lessons where it enhances their learning. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in 'real life' activities, for example, researching a local environmental problem. All lessons have clear learning objectives which are shared and reviewed with the pupils effectively.

- 2.2** We recognise that there are pupils of widely different abilities in all classes, including those with special educational needs and those who are able, gifted or talented learners. We ensure that we provide suitable learning opportunities for all pupils by matching the challenge of the task to the ability of the child and by paying attention to any specific learning plans in place for particular children. We do this in a variety of ways by:
- setting common tasks which are open-ended and can have a variety of responses;
  - setting tasks of increasing difficulty;
  - grouping pupils by ability and setting different tasks for each ability group;
  - using ability and mixed ability pairs so that children can support each other in their learning;
  - providing resources of different complexity, matched to the ability of the child;
  - using teaching assistants to support the work of individual pupils or groups of pupils.

- 2.3** Six, interrelated principles describe the features of a genuine design and technology experience from the pupils' perspective and can be applied to all material areas and aspects of the subject. Each principle should be evident to a greater or lesser degree in each project that pupils undertake. The principles do not represent an exhaustive list, but provide a helpful starting point for clarifying and securing the distinctive nature of design and technology in the classroom. The new National Curriculum requirements are consistent with the six principles:
- User
  - Purpose
  - Functionality
  - Design Decisions
  - Innovation
  - Authenticity

- 2.4** The learning opportunities can be divided into four main areas:

#### Design

In Key Stage 1:

- Children design purposeful, functional, appealing products for themselves and other users, based on design criteria.
- Children generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.

In Key Stage 2:

- Children 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
- Children generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

#### Make

In Key Stage 1:

- Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- Children select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

In Key Stage 2:

- Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- Children 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

Reviewed: January 2019

Next Review Date: January 2021

## Evaluate

### In Key Stage 1:

- Children explore and evaluate a range of existing products
- Children evaluate their ideas and products against design criteria

### In Key Stage 2:

- Children investigate and analyse a range of existing products
- Children evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Children understand how key events and individuals in design and technology have helped shape the world

## Technical Knowledge

### In Key Stage 1:

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

### In Key Stage 2:

- Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- Children understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- Children understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- Children apply their understanding of computing to program, monitor and control their products.

## **3 Principles of teaching and learning and Inclusion**

### **3.1 Planning**

**3.1.1** Design and Technology is a foundation subject in the National Curriculum (2014). At Sutton Benger Primary School we use the National Curriculum as the basis for our curriculum planning in design and technology.

**3.1.2** We carry out the curriculum planning in design and technology in two phases: long-term and medium-term. Our long-term plan maps out the themes covered in each term over a two-year cycle. Across the year, the teaching of art and design and design and technology may be split across the year (three terms each) to enable the children to develop their skills and produce a creative piece of work in a quality amount of time. However, some classes may teach more than this if the skills link with their topic or the skills need developing further before moving on.

**3.1.3** Our medium-term plans, give details of each unit of work for the term. These plans define what we will teach and ensure an appropriate balance and distribution of work across each term. The design and technology subject leader is responsible for reviewing these plans.

**3.1.4** We plan the activities in design and technology so that they build upon the prior learning of the children. Whilst we give children of all abilities opportunity to develop their skills, knowledge and understanding, we also build planned progression into the scheme of work, so that there is an increasing challenge for the children as they move up through the school.

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### **3.2 Teaching design and technology to pupils with special educational needs**

Design and Technology forms part of the school curriculum policy to provide a broad and balanced education for all pupils. We provide learning opportunities that are matched to the needs of pupils with learning difficulties. Work in design and technology takes into account the targets set for individual children.

### **3.3 Teaching design and technology to pupils who are able, gifted and talented**

Pupils who demonstrate a high level of ability are challenged by the use of questioning which promotes their design and Technology knowledge and skills. Design and Technology investigations are particularly useful for challenging more able children because they provide many opportunities to use higher-order thinking skills.

### **3.4 Early Years Foundation Stage**

We encourage the development of skills, knowledge and understanding that help children in the foundation stage to make sense of their world as an integral part of the school's work. As the foundation class is part of the Early Years Foundation Stage of the National Curriculum, we relate the development of the children's understanding of the world and expressive arts and design to the objectives set out in the Early Learning Goals. This learning forms the foundations for later work in design and technology. 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 materials 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.

## **4 Resources**

**4.1** Our school has a wide range of resources to support the teaching of design and technology across the school. Classrooms have a range of basic resources, with the more specialised equipment being stored in resource boxes in the 'long hall cupboard'. These are accessible only to adults. In addition, we are able to borrow a wide range of resources from the Wiltshire and Swindon Learning Resource centre.

## **5 Contribution of design and technology to teaching in other curriculum areas**

### **5.1 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. Discussion, drama and role-play are important ways that we now employ for the children to develop an understanding that people have different views about design and technology. The evaluation of products requires children to articulate 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.

### **5.2 Maths**

In design and technology, children learn to measure and use equipment correctly, generate nets of shapes in order to create packaging and weigh and measure accurately. They will also learn about size and shape and make 'real' use of their mathematical knowledge in order to be creative and practical in their designs and modelling.

### **5.3 Computing**

We use technology skills to support Design and Technology teaching when appropriate. Children use software to enhance their skills in designing and making, and use draw-and-paint programs to model ideas and make repeating patterns. They use databases to provide a range of information sources and the internet to gain access to images of people and environments. The children also use technology to collect information and to present their designs through draw-and-paint programs.

### **5.4 Science**

Science helps in design and technology, looking at and drawing electrical circuits. It also helps children to think about using materials to create structures which can withstand a force.

### **5.5 Personal, social and health education (PSHE)**

Design and Technology contributes to the teaching of personal, social and health education. 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. As part of their work with food, pupils are taught how to cook and to apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils also opens 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 well, now and in later life.

### **5.6 Spiritual, moral, social and cultural development**

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. 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.

## **6 Health and Safety**

**6.1** 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. Just because there are dangers involved in certain media and tools, this should not prohibit their use with children. But the children do need to be fully informed about these dangers, what to do in the case of an emergency and, most importantly, how to safely work with them. This includes respect for materials and equipment. When necessary, the class teacher, in conjunction with the design and technology subject leader or headteacher, will write a risk assessment that will analyse the suitability of the materials/tools and whether the task will go ahead.

## **7 Assessment and Recording**

**7.1** The children's work in design and technology is assessed whilst observing them working during lessons as well as evaluating the finished outcomes. Teachers record the progress made by children against the learning objectives for their lessons – on their planning document. Over time, this enables teachers to check that children are on track to meet expectations at the end of the key stage. At the end of each academic year, teachers report to parents on children's effort and attainment in design and technology.

**7.2** The design and technology subject leader keeps evidence of the children's work in a portfolio, including photographs of models made. This portfolio can then be used to demonstrate the expected level of achievement in design and technology across the school.

## **8** **Monitoring and Review**

**8.1** The monitoring of the standards of children's work and of the quality of teaching in design and technology is the responsibility of the Design and Technology subject leader.

**8.2** The work of the subject leader also involves supporting colleagues in the teaching of design and technology, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. The subject leader liaises with the link governor every two years to review the work and progress in design and technology across the school. A link visit report is produced as a result of this review; it highlights the outcomes of any monitoring activities undertaken during the visit, as well as providing an overview of the strengths in the subject and areas for further improvements.