

Sherwood Primary School

**Policy for
Design and
Technology**

JULY 2015

Purpose

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 aim of design and technology at Sherwood School is to enable children to

- **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.**

Design and technology education at Sherwood School, therefore, involves children;

- investigating, using, and understanding the technological products, systems, and environments that have been developed in our society;
- developing knowledge of the principles and processes of technology;
- identifying and exploring needs and opportunities which may be met through technological activity;
- creating and evaluating ideas to improve or modify technology in relation to identified needs and opportunities;
- choosing and using materials, tools and equipment skillfully and safely;
- designing their own technological solutions;
- working to agreed specifications and quality standards;
- recognizing the inter-relationship between design and technology- now, in the past and in the future;
- feeling empowered to contribute to a technological society.

NATIONAL CURRICULUM

The subject consists of Programmes of Study, one attainment target, and 6 level descriptions. The level descriptions set out the standard of performance expected of the majority of children at the end of each level. The Attainment Target is divided into a number of strands throughout Key Stage 1 and 2 and is organised into levels of increasing challenge.

Foundation Stage

During the foundation stage we encourage the development of skills, knowledge and understanding that help young children make sense of the world. We relate the development of children's knowledge and understanding of the world to the objectives set out in the Early Learning Goals. This learning forms the foundations for later work in Design Technology. These early experiences include asking questions about how things work, investigating and using a variety of construction kits, materials and suitable tools. Children have opportunities to

develop making skills, handling appropriate tools and construction materials safely and with increasing control. In order to boost their confidence the children should be encouraged to develop their own creative ideas and imagination, especially in role-play.

Key Stage 1

During Key Stage 1, pupils learn to think imaginatively and talk about what they like and dislike when designing and making. They build on their early childhood experiences of investigating objects around them. They explore how familiar things work and talk about, draw and model their ideas. They learn how to design and make things safely and start to use ICT as part of their design and making.

Key Stage 2

During Key Stage 2, pupils work on their own and as part of a team on a range of designing and making activities. They think about what products are used for and the needs of the people who use them. They plan what has to be done and identify what works well and what could be improved in their own and other people’s designs. They draw on knowledge and understanding from other areas of the curriculum and use computers using control technology, data bases, spreadsheets and design programs.

The Programmes of Study

The school will follow the National Curriculum Programmes of Study. In Design and Technology, as in each subject, there are two main requirements:

1. **Knowledge, skills and understanding:**
Breadth of study

Pupils should be taught to:

| | Key Stage 1 | Key Stage 2 |
|--|---|---|
| Developing, planning and communicating ideas | Generate ideas by drawing on their own and other people’s experiences Develop ideas by shaping materials and putting together components. Talk about their ideas. Plan by suggesting what to do next as their ideas develop Communicate their ideas by using a variety of methods, including drawing and making models | Generate ideas for products after thinking about who will use them and what they will be used for, using information from a number of sources, including ICT-based sources. Develop ideas and explain them clearly, putting together a list of what they want their design to achieve. Plan what they have to do, suggesting a sequence of actions . |
| Working with tools, equipment, materials and components to make quality products. | Select tools, techniques and materials for making their product from a range suggested by the teacher. Explore sensory qualities of materials. Measure mark out, cut and shape a range of materials. Assemble, join and combine materials and components. Use simple finishing techniques to improve the appearance of their product, using a range of equipment. Follow safe procedures for food safety and hygiene | Select appropriate tools and techniques for making their product. Suggest alternative ways of making their product, if the first attempt fails. Explore the sensory qualities of materials and how to use materials and processes. Measure, mark out, cut and shape a range of materials, and assemble, join and combine components and materials accurately. Use finishing techniques to strengthen and improve the appearance of their product, using a range |

| | | |
|--|---|---|
| | | of equipment, including ICT. Follow safe procedures for food safety and hygiene |
| Evaluating processes and products | Talk about their ideas, saying what they like and dislike. Identify what they could have done differently or how they could improve their work in the future. | Reflect on the progress of their work as they design and make, identifying ways they could improve products. Carry out appropriate tests before making any improvements. Recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose. |
| Knowledge and understanding of materials and components | Pupils should be taught: About the working characteristics of materials. How mechanisms can be used different ways. | Pupils should be taught: how the working characteristics of materials affect the ways they are used How materials can be combined and mixed to create more useful properties. How mechanisms can be used to make things move in different ways, using a range of equipment, including ICT control program. How electrical circuits, including those with simple switches, can be used to achieve results that work |

Breadth of Study

During each Key Stage, pupils should be taught the knowledge, skills and understanding through:

1. Investigating and evaluating a range of familiar products, including in KS2 thinking about how they work, how they are used and the views of people who use them.
2. Focused practical tasks that develop a range of techniques, skills, processes and knowledge.
3. Design and make assignments using a range of materials, including food, items that can be put together to make products, and textiles (also in KS2, use electrical and mechanical components, moldable materials, stiff and flexible sheet materials).

Curriculum and School Organisation

At Sherwood Primary School teachers are responsible for their own class organisation and teaching style in relation to Design Technology, while at the same time ensuring that these complement the overall aims and philosophy of the school. Within any one class, children are given the opportunity to work as a class, as part of a group or individuals. The choice of classroom organisation will be determined by the learning task or activity and the resources being used. Design and Technology lessons may consist of a weekly session or blocks of afternoon sessions to allow for quality and depth therefore enabling all children to reach their true potential.

There are opportunities for single subject study and integration into other subjects. Design and Technology is a subject that offers many opportunities to develop cross-curricular links. Through learning Technology and Design the children will be provided with a range of skills, concepts and

attitudes and will learn a range of techniques and methods of working. We are concerned with the process of design activities as well as the finished product.

Children in the Foundation Stage are taught Design Technology as an integral part of the topic work covered during the year. Planning is informed by the criteria for physical development, knowledge and understanding and some aspects of the mathematics and Language and Literacy Early Learning Goals.

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 interactive 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 axels) 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 interactive 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

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.**

Time Allocation

The organisation of Design and Technology may differ between each year group, as well as each Key Stage. Consequently, the amount of time allocated to Design and Technology in any one week or term, may vary for one particular class. Sometimes Design and Technology work is intensive within a project until completion, achieving a balance with other curriculum areas over the longer term.

However, class teachers and the Design and Technology subject leader endeavors to ensure the subject is adequately represented in terms of the overall timetable in each class, through the monitoring of long term plans.

Planning

*See Policy in whole school planning

Health & Safety

When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:

- About hazards, risks and risk control
- To recognise hazards, assess consequent risks and take steps to control the risks to themselves and others
- To use information to assess the immediate and cumulative risks
- To manage their environment to ensure the health & safety of themselves and others
- To explain the steps they take to control risks.

When teaching Design and Technology, Health & Safety issues must be taken into consideration.

- The children must be fully supervised, especially when using tools.
- All equipment will be stored safely and returned to the correct place at the end of each lesson.
- The children and staff should wear protective clothing when working with paint, glue, modelling clay or any other 'messy' activities.
- If using newspapers or magazines to protect tables care must be taken that in-appropriate articles, or photographs cannot be seen by the children.
- Wood and other materials for design and technology should be bought from an educational supplier. Some woods have been treated and can be harmful to children
- The correct procedures and techniques must be shown to children before using any tools e.g. scissors, craft knives, glue guns

* See Health and Safety policy for more information

Assessment and Record Keeping

In deciding on a pupils' level of attainment at the end of a key stage, teachers should judge which description best fits the pupil's performance.

It is important in the assessment of design and technology that consideration is given to the processes undertaken, the end product and whether the child has achieved the set objective. Each class teacher is responsible for recording their pupil's progress against the objectives for each unit of work and National Curriculum level descriptions. Whether a pupil is below, in line or above expectations will be recorded at the end of each academic year and passed on to the next class teacher. Assessment record sheets for each class are available on the network.

Information about a child's progress in Design and Technology will be communicated to parents in their annual report.

*See the whole school policy on assessment for further details.

Subject Leader's Role

*See the whole school policy on the subject leader's role

Resources and Accommodation

Design and Technology resources are stored in a specific area with clearly labeled containers. Resources are stored in the resource room opposite the Head's office. Design Technology tools (hacksaws, Stanley knives, cutting mats, bench hooks etc.) are kept in the Design and Technology trolley which is situated in the Caretakers/Mains electric room as well. Resources which are depleted or used are to be recorded in the resource area for subject leader to re-stock when able. Each unit in the Scheme of Work has a section that identifies the resources required. Resources which are not used solely for the purpose of design and technology are stored at class teachers and key stage teachers' discretion (fabric; level specific construction kits, card etc.) The purchase of resources is planned and monitored by the Design and Technology subject leader based on the need and availability within the budget.

Equal Opportunities

All teaching and non-teaching staff at Sherwood Primary School are responsible for ensuring that all pupils, irrespective of gender, ability, ethnic origin and social circumstances have access to the whole curriculum, and the opportunity to make the greatest progress possible in all areas of the curriculum, while in our school.

Special Educational Needs

Two main areas where special needs pupils may encounter difficulty are communications and making things. Design and Technology offers the opportunity for children to achieve in a practical subject, as they are encouraged to communicate in a different way (not writing), for example use of tape recorder or camera. Children who are physically disabled in muscular control and coordination may have difficulty in using some tools. Other tools are provided where possible in consultation with support staff or an occupational therapist, or tasks are adapted so that the child can succeed. Sensitive grouping encourages shared expertise and this minimizes difficulties in specific areas.

*See whole school policy on special educational needs for more detail.

Links with other areas of the curriculum

Throughout Design and Technology education, students will be drawing on knowledge and skills developed in other areas of the curriculum, and from other sources. In turn, technological activities contribute to the development of learning in other essential areas by providing practical and authentic contexts in which the knowledge and skills can be used.

Literacy

Children are engaged using oral, written, and visual language by communicating their ideas and responding to the ideas of others

- Interviewing, listening and responding to ideas of others, and when expressing their own ideas concisely and accurately;
- Developing and demonstrating technological ideas, interpreting models, and presenting ideas graphically;
- When preparing briefs, interpreting specifications, and presenting proposals and evaluations.

Numeracy

Children undertake investigations, organize and use resources, and plan strategies by;

- Surveying, graphing, and describing trends;
- Collating and interpreting statistical information;
- Estimating, measuring, and calculating quantities, time, and costs.

Science

There are opportunities for children to use and develop their scientific knowledge and understanding when working with a range of materials for example when working on electrical circuits and with food products.

ICT

The use of ICT can help children's learning in design and technology by providing additional equipment and tools to help them produce and manipulate images and play with ideas and possibilities for the creative use of materials and processes. Children have access to a range of activities including those where they:

- Use draw and paint programs to model ideas;
- Use databases and other information sources for research;
- Develop understanding of sequencing and control systems;
- Use CD-Roms to find out about other times and cultures;
- Develop awareness of how ICT is used in the wider world.

Art and design

There are close links between these two subjects. Opportunities exist for children to use their creative skills, knowledge and understanding through the use of pattern, texture and colour. The opportunities to plan and design are important in both subjects alongside the development of skills for working with tools, equipment, materials and components.

Spiritual Development

Where possible Design and Technology activities are used to encourage pupils to recognize the value of their own and other people's creativity and understand the tensions between material and non material needs that occur when designing.

Personal, Social and Health Education

Design and Technology activities help pupils to reflect on how technology affects the environment and how design decisions are influenced by value systems. They are encouraged to recognize the need to consider the views of others when discussing design ideas. Pupils are encouraged to manage their environment to ensure the health and safety of themselves and others, to develop their sense of responsibility in following safe procedures and understanding both the importance of personal hygiene and how to work hygienically. Through Design and Technology children also have opportunities to learn the importance of keeping healthy and healthy eating.

Approval date: July 2015

Review date: July 2018

Signed (Headteacher):

Signed (On behalf of the Governing Body):

Appendix 1 – Long Term Plan

| | Autumn | Spring | Summer |
|--------|---|---|---|
| Year 1 | Mechanisms PRODUCTS WITH MOVING PARTS | Evaluation of Existing products FOOD – FRUIT EATING HEALTHILY | Evaluation of existing products. STRUCTURES. |
| Year 2 | Evaluation of Existing Products VEHICLE PRODUCTION | Evaluation of Existing Products FOOD – EATWELL PLATE | Evaluation of existing products. TEXTILES |
| Year 3 | Evaluation of Existing Products FOOD FOR HEALTH | Evaluation of Existing Products LEVERS AND LINKAGES | Evaluation of existing products. STRUCTURES. PLANTERS |
| Year 4 | Evaluation of Existing Products ELECTICAL SYSTEMS BUZZER GAME | Evaluation of Existing Products TEXTILES | Evaluation of existing products. FOOD TO SUSTAIN LIFE |
| Year 5 | Evaluation of Existing Products FOOD FROM OTHER CULTURES | Evaluation of Existing Products CAMS, PULLEYS AND GEARS | Evaluation of existing products. TEXTILES |
| Year 6 | | Evaluation of Existing Products FOOD – DESIGN A HEALTHY MEAL | Evaluation of existing products. STRUCTURES. |

Appendix 2 – Resources and information

Tools and Equipment - Design & Technology Storeroom

Drill stand with base
Screwdrivers
Junior Hacksaws
Spare saw blades
Bench hooks
Low temp glue guns
Low temp glue sticks
Sandpaper
Table vice
Hand drill
Coping saw
Pin hammer
Round file (small)
Round file (large)
Flat file (small)
½ moon file
Metal ruler
Paper drill
Cutting mat
Scissors (large)
Compass cutter
Wave cutter
Flat shaver
Curved shaver
Snips (yellow)
Snips (orange)
Snips (black)
Snips (red)
Pliers
Lynx jointers
G-clamps

Tools and Equipment (Store cupboard opposite Head teacher's room)

Art straws
Paper plates (large and small)
Matchsticks
Needles (plastic and metal)
Cotton thread
Polycotton
Dipryl
Tape measures
Fabric pens
Lollipop sticks
Wooden pegs
Rubber bands
Pipe cleaners
Cable ties
Cable clips
Panel pins
Curtain wire eyes
Masking tape
Learn & Go activity packs

Lego Mindstorm Robotics Invention system
Lego dacta control centre
Moving monsters construction kit

Card wheels

Cams

Cotton reels

Square section wood (8mm)

Dowel rod

PVC tubing

Syringes

Corriflute

Motors

Wire

Push switches

Battery holders

(see Science store for more electrical circuit equipment)

Battery snaps

Motor clips

Food Technology

Chopping boards

Whisks

Bowls

Plastic spoons

Measuring spoons

Rolling pins

Potato peelers

Potato mashers

Sieves

Pastry cutters

Further information

Imporant documents, resources and contacts

DfEE/QCA

THE NATIONAL CURRICULUM:

Handbook fro primary teachers in England

DfEE/QCA

A scheme of work for Key Stages 1 and 2: design and technology

DfEE/QCA

Curriculum Guidance for the Foundation Stage

Ref: QCA/00/587

DATA

The national framework for supporting design and technology 1998

DATA

The design and technology Primary co-ordinators file 1996

DATA

Primary design and technology: a guide for teaching assistants 1996

HMSO

Design and technology in the national curriculum 1995

ASE

Be safe! Some aspects of safety in school science and technology for key stages 1 and 2 2nd edition ASE 1990

Teacher Resources

Folens Technology in Action

Unit A

Unit B

Units 1–5

Collins Primary Technology

Key Stage 1 Set 1 and 2

Key Stage 2 Set 1

Teacher's guide Key Stage 1 and Key Stage 2

An Early Start to Technology – R Richards

Teaching Design Technology

Teaching Technology, enabling Techniques – Parkinson

Teaching Technology, challenging Technology – Dowson

Bright Ideas – Inspirations for Technology

How to make Greetings Cards – Folens Brainwaves

You and your Child – paper play – Usborne

Paper Capers

Design and Technology Pack 1 – Structures and Mechanisms

Pack 2 – Energy and Electronics

Pack 3 – Food Technology

Pack 4 – Extension Pack

Lego Dacta – Primary classroom activities

Lego Dacta – Science & Technology & Animals