



Gedney Church End and Lutton St. Nicholas Federated Primary Schools

Policy for the Teaching of Design and Technology

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Introduction

This document outlines the purpose, nature and management of design and technology teaching within the Federation. It is the responsibility of all staff to implement this policy which has been written and agreed in consultation with both staff and governors.

Design and technology (D&T) prepares pupils to participate in tomorrow's rapidly changing technologies. They learn to think and intervene creatively to improve the quality of life. The subject calls for pupils to become autonomous and creative problem solvers both as individuals and as members of a team. They must look for needs, wants and opportunities, responding to them by developing a range of design ideas for making products and systems. As they do so they reflect on, learn from and evaluate present and past design technology, its uses and effects. Through D&T all pupils can develop innovation and become discriminating and informed users of products.

Expectations in Key Stage 1 (Design Technology)

The majority of pupils will be able to:

- Apply knowledge, understanding and skills to engage in the process of designing and making within a variety of real-life and relevant contexts e.g. the home, school, gardens and playgrounds, the local community, industry and the wider environment

The Design Process

- 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

The Making Process

- Select from and use a range of tools and equipment to perform practical tasks e.g. 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

The Evaluative Process

- Explore and evaluate a range of existing products
- Evaluate their ideas and products against clearly identified design criteria

The Required Technical Knowledge

- Build structures, exploring how they can be made stronger, stiffer and more stable
- Explore and use mechanisms e.g. levers, sliders, wheels and axles, in their products

Expectations in Key Stage 2 (Design Technology)

The majority of pupils will be able to:

- Apply knowledge, understanding and skills to engage in the process of designing and making within a variety of real-life and relevant contexts e.g. the home, school, leisure, culture, enterprise, industry and the wider environment

The Design Process

- 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

The Making Process

- Select from and use a wider range of tools and equipment to perform practical tasks e.g. 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

The Evaluative Process

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own clearly identified 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

The Required Technical Knowledge

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- Understand and use mechanical systems in their products e.g. gears, pulleys, cams, levers and linkages
- Understand and use electrical systems in their products e.g. series circuits incorporating switches, bulbs, buzzers and motors
- Apply their understanding of computing to program and control their products

Expectations in Key Stage 1 (Cooking and Nutrition)

The majority of pupils will be able to:

- Cook and apply the principles of nutrition and healthy eating
- Develop a love of cooking that helps them to further understand one of the great expressions of human creativity
- Recognise that cooking is an essential life-skill that enables them to feed themselves and others affordably and well, both now and in later life
- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from

Expectations in Key Stage 2 (Cooking and Nutrition)

- Cook and apply principles of nutrition and healthy eating
- Develop a love of cooking that helps them to further understand one of the great expression of human creativity
- Recognise that cooking is an essential life-skill that enables them to feed themselves and others affordably and well, both now and in later-life
- 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

Aims

The Federation aims to:

1. provide a relevant, challenging and enjoyable curriculum for D&T for all pupils;
2. develop all pupils' designing and making skills and technical knowledge and understanding, using a range of tools equipment and components safely;
3. enable pupils to work with a range of products and creative problem-solving both as individuals and with others;
4. encourage pupils to become understanding and discriminating consumers.

Teaching and Learning

D&T activities will be taught in a variety of ways across the Federation, sometimes in blocks of taught time, as part of a topic, or in short skills-based activities. Appropriate units of work will be planned and detailed in the Federation's 4 year rolling programme in Key Stage 2 and 3 year rolling programme in Foundation Stage and Key Stage 1. Planned activities will be designed to enable pupils to develop their skills, knowledge and understanding, being taught through:

- investigating and evaluating a range of familiar products, including how they work and how well they work;
- focused practical tasks that develop a range of techniques, skills, processes and knowledge;
- designing and making assignments where the pupils use a range of materials.

Units of work may be amended to meet the needs of pupils. D&T will be taught in a cross-curricular manner where appropriate and will include the use of ICT.

Key Skills

Key Skills in Design and Technology are broken down into three distinct areas, as follows:

1. Developing, planning and communicating ideas
2. Evaluating
3. Materials and Components (Knowledge and Understanding)

In Key Stage 1, teachers will plan purposeful learning opportunities for the children to develop the following Key Skills:

Developing, Planning and Communicating Ideas	
<ul style="list-style-type: none"> ▪ Follow verbal instructions ▪ Explain what they are making and which materials they are using ▪ Name the tools they are using ▪ Describe what they need to do next ▪ Select materials from a limited range that will meet the design criteria ▪ Select and name the tools needed to work the materials ▪ Select the appropriate technique explaining, first, next and last ▪ Explore ideas by rearranging materials ▪ Model ideas with kits and reclaimed materials ▪ Select pictures to help develop ideas ▪ Use pictures and words to convey what they want to design and make ▪ Describe their models and drawings in terms of ideas and intentions ▪ Use drawings and diagrams to record ideas they have developed ▪ Discuss their work as it progresses ▪ Add notes to drawings and diagrams to help explanations 	
Evaluating	
<ul style="list-style-type: none"> ▪ Say what they like and do not like about items they have made and attempt to say why they like, or not ▪ Talk about their designs as they develop and identify parts that work and parts that do not ▪ Talk about the changes they have made during the making process ▪ Discuss how closely their finished product meets the initial design brief 	
Materials and Components (Knowledge and Understanding)	
Materials	Construction
<ul style="list-style-type: none"> ▪ Fold, tear and cut paper and card ▪ Roll paper to create tubes ▪ Cut along lines both straight and curved ▪ Curl paper ▪ Use a hole punch ▪ Insert paper fasteners for card linkages ▪ Create hinges 	<ul style="list-style-type: none"> ▪ Make vehicles with construction kits which contain free-running wheels ▪ Use a range of materials to create models with wheels or axles made from tubes, dowel, cotton reels etc ▪ Attach wheels to a chassis using an axle ▪ Join appropriately for different

<ul style="list-style-type: none"> ▪ Use simple pop-ups ▪ Investigate how to strengthen materials ▪ Investigate how to join materials 	<p>materials and situations</p> <ul style="list-style-type: none"> ▪ Mark out materials to be cut using a template ▪ Cut wood/dowel using a clam and hacksaw ▪ Use glue gun (with adult supervision)
Textiles	Food
<ul style="list-style-type: none"> ▪ Colour fabrics using a range of different techniques e.g. fabric paints, printing, painting etc ▪ Cut out shapes which have been created by drawing around a template onto the piece of fabric ▪ Join fabrics with stitching, glue, staples, over-sewing, tape etc ▪ Decorate fabrics with buttons, beads, sequins, braids, ribbons etc 	<ul style="list-style-type: none"> ▪ Develop a food vocabulary using taste, smell, texture and feel ▪ Group familiar food products e.g. fruit, vegetables etc ▪ Cut, peel, grate and chop a range of ingredients ▪ Work safely and hygienically ▪ Understand the need for a variety of foods in a balanced diet ▪ Measure and weigh food items

In Lower Key Stage 2, teachers will plan purposeful learning opportunities for the children to develop the following Key Skills:

Developing, Planning and Communicating Ideas	
<ul style="list-style-type: none"> ▪ Investigate similar products to the one they have been asked to make to give starting points and initial ideas for a functional design ▪ Draw/sketch products to help analyse and understand how they have been made ▪ Think ahead about the order of their work and identify which tools and materials will be required ▪ Plan a sequence of actions to make a product ▪ Produce a functional diagram/design plan using pictures and words (labels) ▪ Develop more than one design or adaptation of an initial design ▪ Propose sensible and realistic suggestions as to how they can achieve their design ideas ▪ Add further notes to drawings/diagrams to help with the clarity of an explanation 	
Evaluating	
<ul style="list-style-type: none"> ▪ Identify the strengths and weaknesses of their initial designs ▪ Decide which design idea to develop ▪ Consider and explain how the finished product could be improved ▪ Discuss how well the finished product meets the design criteria and how well it meets the needs of the user 	
Materials and Components (Knowledge and Understanding)	
Materials	Construction
<ul style="list-style-type: none"> ▪ Cut slots ▪ Cut internal shapes ▪ Use lollipop sticks/card to make levers and linkages ▪ Use linkages to make movement larger or more varied 	<ul style="list-style-type: none"> ▪ Incorporate a circuit with a bulb or buzzer into a model ▪ Safely use a hand-drill ▪ Create shell or frame structures or strengthen frames with diagonal struts

<ul style="list-style-type: none"> ▪ Use and explore more complex pop-ups ▪ Create nets 	<ul style="list-style-type: none"> ▪ Make structures more stable by giving them a wide base ▪ Cut wood or dowel with an accuracy to within one centimetre ▪ Use a glue gun within a working group
Textiles	Food
<ul style="list-style-type: none"> ▪ Understand seam allowance ▪ Join fabrics using running stitch, over-sewing and back-stitch ▪ Explore fastenings and recreate the same e.g. sew on buttons and make loops ▪ Use appropriate decoration techniques ▪ Create a simple pattern ▪ Understand the need for patterns 	<ul style="list-style-type: none"> ▪ Develop sensory vocabulary and/or knowledge using smell, taste, texture and feel ▪ Analyse the taste, texture, smell and appearance of a range of foods ▪ Follow instructions ▪ Make healthy eating choices from an understanding of a balanced diet ▪ Join and combine a range of ingredients e.g. snack foods etc ▪ Work safely and hygienically ▪ Measure and weigh ingredients appropriately and with increasing accuracy

In Upper Key Stage 2, teachers will plan purposeful learning opportunities for the children to develop the following Key Skills:

Developing, Planning and Communicating Ideas	
<ul style="list-style-type: none"> ▪ Investigate products/images to help with initial ideas ▪ Sketch and model alternative ideas ▪ Develop one idea in depth ▪ Combine modelling and drawing to refine initial ideas ▪ Plan the sequence of work using a storyboard or similar organisational device ▪ Record ideas using annotated diagrams ▪ Use models, kits and drawings to help formulate design ideas ▪ Make prototypes ▪ Use research to inform decisions ▪ Use a computer to help develop ideas ▪ Create plans that can be easily read or followed by someone else ▪ Give a report or evaluation that uses the correct technical vocabulary 	
Evaluating	
<ul style="list-style-type: none"> ▪ Use design criteria to inform their decisions about the best ways to proceed ▪ Justify their decisions about materials and methods of construction ▪ Reflect on their work using the initial design criteria stating how well the design fits the needs of the user ▪ Identify what does and does not work with regards to the completed product ▪ Make suggestions as to how their design could be improved 	
Materials and Components (Knowledge and Understanding)	
Materials	Construction
<ul style="list-style-type: none"> ▪ Cut accurate slots 	<ul style="list-style-type: none"> ▪ Use an awl to mark hole positions

<ul style="list-style-type: none"> ▪ Cut with increasing accuracy and safely along a marked line ▪ Join and combine materials with temporary, fixed or moving joints ▪ Use a craft knife, cutting mat and metal ruler with limited adult supervision ▪ Choose an appropriate material for the intended purpose 	<ul style="list-style-type: none"> ▪ Use a hand-drill to drill tight and loose fit holes ▪ Cut strip-wood/dowel accurately to within one millimetre ▪ Join materials using appropriate methods ▪ Incorporate a motor and a switch into a model ▪ Control a model using an ICT control program ▪ Use a cam to make a simple up and down mechanism ▪ Build frameworks using a range of materials e.g. wood, card, corrugated plastic or natural materials to support mechanisms ▪ Independently use a glue gun
Textiles	Food
<ul style="list-style-type: none"> ▪ Create 3D products using pattern pieces and seam allowance ▪ Understand pattern layout ▪ Decorate textiles appropriately often before joining components ▪ Pin and tack fabric pieces together ▪ Join fabrics using over-sewing, back-stitch, blanket-stitch or machine stitching (under supervision) ▪ Combine fabrics to make more useful properties ▪ Make a range of quality products 	<ul style="list-style-type: none"> ▪ Prepare food products taking into account the properties of ingredients and sensory characteristics ▪ Select and prepare foods for a particular purpose ▪ Taste a range of ingredients and food items to develop a sensory food vocabulary for use when planning and designing ▪ Weigh and measure using scales ▪ Cut and shape ingredients using appropriate tools and equipment e.g. grating, chopping etc ▪ Join and combine food ingredients appropriately e.g. beating, rubbing in etc ▪ Decorate appropriately ▪ Work safely and hygienically ▪ Show awareness of a healthy diet from an understanding of a balanced diet

Assessment and Recording

Assessment will be based on a combination of teacher assessment and pupil self-assessment. Children will be assessed annually and this will be included in the annual report to parents. In all aspects of assessment, pupils' attainment will be compared to age-related expectations with three possible outcomes, as follows:

- **Emerging** towards age-related expectations
- **Expected** attainment within age-related expectations

- **Exceeding** age-related expectations

Continuity and Progression

The scheme of work will ensure that tasks provide both continuity and progression. Consolidation of the skills, knowledge and understanding in D&T will be carried out by its use to support learning in other subjects, such as literacy, numeracy, science and art.

Inclusion and Equal Opportunities

All pupils in the federation, regardless of ability, should have equal access to the Design and Technology curriculum in-line with our Equal Opportunities Policy. All staff recognise the multicultural and multi-faith global community in which we all live therefore they will experience Design and Technology from many different cultures. We also recognise the contribution that Design and Technology make to the unique British Values that all subjects will seek to promote (see below).

The Contribution of Design and Technology to the Development of Unique British Values

In our federation, we recognise the duty placed on all schools to promote what are now known as Unique British Values. All subjects within the National Curriculum have the capacity to make a direct contribution to developing our pupils' understanding of what it means to be British in the 21st Century.

The Department for Education defines Unique British Values as follows:

1. Democracy: respect for democracy and support for participation in the democratic process
2. The Rule of Law: respect for the basis on which the law is made and applies in England
3. Individual Liberty: support and respect for the liberties of all within the law
4. Mutual Respect and Tolerance: support for equality of opportunity for all and respect and tolerance of different faiths, religious and other beliefs

The subjects of Design and Technology can contribute to the development of these values in the following ways:

- Focusing on the key geographical features of the United Kingdom and relevant aspects of history that have led to their prominence
- Promoting tolerance and understanding of different cultures as their physical and human characteristics are considered
- The exploration of sensitive issues whilst maintaining tolerance and respect for the views and beliefs of others
- Visits to the local community, a contrasting locality and places further afield that will help pupils to develop a better understanding of the community and country that they live in
- Working co-operatively with others, sharing ideas and resources, peer assessment and encouraging support for each other

- Exploring controversial issues such as environmentalism, the green agenda, urbanisation, rural isolation, countries in the developing world, globalisation, poverty, war and famine
- How technology has promoted a sense of belonging and shared identity
- A close focus on community, what holds a community together and the rights and obligations of those that belong
- By looking at the human features of different communities, both global and local, pupils will understand how people from many different backgrounds and cultures can live together in harmony
- Understanding that all communities share common features and also aspects that differ

The Learning Environment

Stimulating learning environments will be created with children's work being celebrated through display where appropriate. Given the fact that Design and Technology is ostensible a process, photographic records of development will be both encouraged and displayed.

Safe Practice

The Federation's policy takes account of health and safety requirements. Health and Safety awareness forms an integral part of the pupils' learning. When working with tools, equipment and materials, pupils will be taught the appropriate health and safety procedures and understand the steps they should take to control risks. Particular care will be taken with sharp cutting tools, electrical appliances and in processes where hot materials and tools are used. Pupils will be taught to recognise hazards and take appropriate action. In these instances, teaching staff will ensure that appropriate Risk Assessments have been developed and incorporated within their short and medium term planning. These will be subject to monitoring and scrutiny by a variety of agencies including in-house monitoring, governor scrutiny, the Education Advisor, OfSTED and any other appropriate body.

Leadership and Management

Due to the size of the schools within our federation, it is not possible to have a named subject leader for Design and Technology. To ensure appropriate and effective leadership and management, all of the staff will make a direct contribution through a rolling 2 year programme that will specifically focus on the following generic aspects of leadership and management:

1. **Staff Meeting 1:** Planning, continuity, progression and standards
2. **Staff Meeting 2:** Resourcing, cross-curricular links
3. **Staff Meeting 2:** Action Planning for the next 2 years

The Head Teacher will be responsible for leading the staff as foundation subjects within the National Curriculum are effectively managed every 2 years. Paperwork will be delegated across the teaching staff team to ensure that all teachers have an opportunity to develop their knowledge and understanding of effective subject leadership.

Monitoring and Evaluation

The Head Teacher and subject co-ordinator will monitor the implementation and effectiveness of the policy and curriculum planning. It is expected that significant assessment will take place informally during lessons through discussions and observations. Teaching staff will be asked to use their assessments to evaluate standards and the effectiveness of the associated schemes of work.

Signed by Head Teacher:

Ratified by Governors: October 2012

Updated: October 2015