Design and Technology Policy

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Farndon Primary School

EQUALITY SCHEME EQUALITY IMPACT ASSESSMENT FOR Design and Technology POLICY	
Staff / Committee involved in development:	Teaching and Learning Committee; Headteacher
For use by:	Staff, Governors and Parent/Carers
This policy relates to statutory guidance:	
Key related Farndon Policies:	Computing Policy Science Policy Teaching, Learning and Assessment Policy

Equality Impact Assessment: Does this document impact on any of the following groups? If YES, state positive or negative impact, and complete an Equality Impact Assessment Form or action plan, and attach.

Groups:	Yes/ No	Positive/Negative impact
Disability	No	
Race	No	
Gender	No	
Age	No	
Sexual Orientation	No	
Religious and Belief	No	
Gender Reassignment	No	
Marriage & Civil Partnership	No	
Pregnancy & Maternity	No	
Other	No	

Reviewed by	Teaching and Learning Governing Body
Next Review date:	February 2026
Reviewed by:	Jenny Hartwell Jones (Design and Technology Leader)

Design and Technology Intent Statement

Design and Technology is part of our STEM team. The subject aims to support children to take part in the development of tomorrow's rapidly changing world. To allow teachers the flexibility to deliver high quality lessons we teach through a theme, this allows teachers to make links with other areas in the curriculum. There is to be more of a focus on preparing children for their "future life". We aim to ensure children are supported with the changing world and hope to be able to prepare them for their futures on aspects of food designing and the different technologies.

Aims

The aims of Design and Technology are:

- To master skills in food, materials, textiles, electrical and construction equipment.
- To take part in projects where they design a product to a specified brief, make it, evaluate it against the specification and carry out improvements.
- To take inspiration from designs in history and create innovative designs that improve existing products.

Implementation

Through a variety of creative and practical activities, we teach the knowledge understanding and skills needed to engage in an iterative process of designing and making. The children design and create products that consider function and purpose and which are relevant to a range of sectors (for example, the home, school, leisure, culture, enterprise, industry and the wider environment).

Substantive and disciplinary knowledge in design and technology

Substantive knowledge in design and technology is based on the knowledge of four key elements of the process of design (design, make, evaluate and technical knowledge). All of these elements will be taught from Reception to Year 6 and vocabulary is taught explicitly and will be deliberately practised and applied through the 4 key elements. These are:

Design: Know how to design a product that is purposeful, functional and appealing to a specific group.

Make: Know how to cut, join and finish a range of increasingly complex materials, ranging from paper to wood.

Evaluate: Know how to investigate, evaluate and analyse a range of existing products and their own designs based on a specific design criteria. In addition to this, children will know key individuals have helped to shape the world in which we live in.
Technical Knowledge: Know how to apply their knowledge of specific materials to meet the criteria listed above in the design, make and evaluate stages.

Disciplinary knowledge

In design and technology, this is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. Knowledge in design and technology will equip the children with the opportunity to explain how and why products have changed over time and how they might be further improved in the future. They can use their knowledge and understanding to suggest how existing products may be improved with the advances in modern technology. Children will demonstrate that they have the cultural capital to become global citizens, following global themes and fundamental British Values, in an ever changing and technologically advancing world.

When designing and making, the children are 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 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, as well as chopping and slicing) accurately.
- Select from and use a wider range of materials, ingredients and components, including construction materials, textiles and ingredients, according to their functional properties, aesthetic qualities and, where appropriate, taste.

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.
- Understand and use electrical systems in their products.
- Apply their understanding of computing to program, monitor and control their products
- Understand some of the ways that food can be processed and the effect of different cooking practices (including baking and grilling).

Key knowledge for design and technology have been mapped across the school from EYFS to Year 6 to ensure progression between year groups and Key Stages. The context for the children's work in design and technology is also well considered and

children learn about real life structures and the purpose of specific examples, as well as developing their knowledge throughout the programme of study. Design and technology lessons are also taught as a block so that children's learning is focused throughout each unit of work.
Pupils record their work in a project booklet (there is one for KS1 and one for KS2). These start with the knowledge organiser and then follow the design and make process.

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Impact

We ensure the children:

- 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 and 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. Children will design and make a range of products. A good quality finish will be expected in all design and activities made appropriate to the age and ability of the child

Children 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.

Curriculum

The children undertake a broad and balanced programme that takes account of abilities, aptitudes and physical, emotional and intellectual development. Through Design and Technology the children learn a range of skills, concepts, attitudes and methods of working.

Teaching and Learning

Design and Technology will engage the children in a broad range of designing and making activities which involve a variety of methods of communication; speaking, designing, drawing, assembling, making, writing and using computer technology. Projects are taught in blocks which allows for more effective learning in which teachers can focus on teaching and developing DT skills, allowing children to develop their ideas and techniques.

Units of work have been selected and planned to ensure a balance of materials, skills, knowledge and understanding throughout each Key Stage. Units of work are planned to include designing and making assignments (DMAs) supported by focused practical tasks or skills teaching (FPTs) and work involving reviewing existing products

(IDEAs). All children should have a breadth and balance of experience. The curriculum is designed to enable progression in Design and Technology processes, including specific aspects of designing and evaluating.

It also ensures that children develop their knowledge and skills systematically; choosing and using an increasing range of tools and techniques to suit a range of different purposes and developing their knowledge and understanding of mechanisms and structures to enable the incorporation of mechanical and electronic systems into their products. Pupils will also develop their skills of handling textiles and handling food. Opportunities will be sought by the school to provide the children with access to places of design and technological significance and learning outside the classroom within units of work. The school will also seek to provide access to people with specialist design and technology skills from the local and wider community to enrich the Design and Technology curriculum.

Early Years

The staff team will plan for children to experience creative opportunities and develop key skills and techniques within the EYFS curriculum. There will be a focus on developing fine motor skills and learning how to plan, design and produce the finished project. The knowledge and skills acquired and developed in the EYFS will provide the foundation or those identified in subsequent years. Nursery and Reception classes will be, where appropriate, included in whole school projects, workshops, events and competitions associated with Design and Technology.

Key Stage 1 and 2

Teachers will plan for lessons so that children will learn to design purposeful, functional, appealing products for themselves and others based on design criteria and to communicate their ideas through talking and drawing. They learn to select from and use a range of tools and equipment to perform practical tasks and to choose from a wide range of materials and components. Each aspect of the school's Design and Technology programme of study, will link explicitly to the five National Curriculum strands. The provision will support each child's achievement of the 'end-points', as stated on the school's Design and Technology Knowledge and Skills Progression Mapping documents, which are directly informed by the National Curriculum 2014.

Spiritual, moral, social and cultural development

Spiritual development:
Spiritual development is of a very high importance in design & technology. The process of creative thinking and innovation inspires students to bring out undiscovered talents, which in turn breeds a self-confidence and belief in their abilities. It also challenges and appeals to the creative instincts that have driven humanity to discover, adapt and overcome. Within our schemes of work we seek to develop these.

Moral development:
In design & technology we seek to develop a sense of 'moral conscience' in our students, through focusing upon the moral dilemmas raised in designing and making new products. We teach students to understand the wider impacts on the environment

when designing and making new products and expect them to consider carefully the materials & components they will use when designing and making. We encourage sustainable thinking through the active application of the '6 R's' and to highlight the impact on environmentally sensitive areas of the world. The 6 Rs include: reinvent/rethink, refuse, reduce, reuse/repair, recycle, replace/rebuy.

Social development:
Social development is a key feature of all design & technology lessons. We teach the concept of self-regulation to ensure that students accept responsibility for their behaviour and the safety of others. We encourage students to give each other reminders when standards fall short of the collective expectation. This establishes and maintains a safe, secure, learning environment. We place an emphasis on developing the ability to work with other and to accept each other's unique personality. We encourage effective conversations about the work we do through self & peer evaluation, and to give and accept constructive criticism as a vehicle to improve students learning outcomes.

Cultural development:
We develop wider cultural awareness in design technology through projects that have a connection with our past heritage and how our industrial routes have shaped our nation. We seek to expand student's knowledge of other cultures influences on design and manufacture including an increasing awareness of the influences digital manufacturing developments from other countries is having on the designing and making of products that we use.

Progression and Continuity

The school uses a variety of teaching and learning styles in Design and Technology lessons. Our principal aim is to develop the children's knowledge, vocabulary, skills and understanding in the subject. We use a variety of teaching and learning styles in our lessons. We believe in whole-class teaching methods and combine these with enquiry-based research activities. We encourage children to handle products and to ask as well as answer questions such as what is its design purpose, what is it used for, who is it aimed at. We offer them the opportunity to take apart and dis-assemble products and engage in focus practical tasks which teach the pupils a specific technological skill. Pupils will take part in design and make projects either as individuals or as part of a small group.

Children take part in role-play and discussions, and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the children in 'real' geographical activities, e.g. research of a local environmental problem, visiting relevant sites and carrying out fieldwork. We recognise the fact that we have children of differing ability in all our classes, and so we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies which are differentiated by task, expected outcome and/or support from peers or adults.

Design and Technology curriculum planning

At Farndon Primary School Design and Technology is taught through a topic approach alongside Literacy and other Foundation subjects. This means that links are

exploited, giving whatever product is designed and made a purpose. However, it is worth noting that the subject is taught discretely and the pupils are aware that they are participating in a Design and Technology lesson.
Our Curriculum is carefully planned over a two year cycle to engage and excite all our learners.
Our long-term and medium-term plans map out the themes covered each term for each Milestone. Across each Milestone, pupils will cover the following areas:

- Structures
- Control
- Textiles
- Mechanisms
- Food technology

These plans are called Knowledge Milestone mats and they define what we will teach and ensure an appropriate balance and distribution of work across each term. They also make clear the "sticky facts" which we want the children to retain in their long-term memory. We also include key geographical language that the children need to know and learn.

Progress and Achievement

Children are monitored on a regular basis to check progress throughout a teaching unit. We encourage all pupils to take responsibility for their own and their peers learning. A range of Assessment for Learning strategies are used, for example peer marking – the children regularly peer mark and are encouraged to comment on each other's work using vocabulary related to the skill taught. We also use fluent in five questioning that relates to the key vocab and sticky facts. Through these, both children and adults are able to recognise the progress being made.

Assessment and Recording

At Farndon School assessment is an integral part of the teaching process. Assessment is used to inform planning and to facilitate differentiation. The assessment of children's work is on-going to ensure that understanding is being achieved and that progress is being made. Feedback is given to the children as soon as possible, and marking work will be guided by the school's Marking Policy.

In each session, fluent in five checks are carried out orally by the teacher. This takes the form of 5 quick questions that reviews prior learning, key vocabulary, sticky facts and knowledge. The teacher also reminds the pupils of the sticky facts, vocab and knowledge throughout each session. Teachers assess against the knowledge and skills on a summative tracking sheet which for each pupils which informs an overall grade. Pupils are graded as either working below, working towards, expected or working at higher standard.

Monitoring

Monitoring takes place regularly through sampling children's work, and teacher planning, through a book scrutiny, lesson observations and pupil voice.

Inclusion

All children will be supported through differentiation, adaptation or adult support, to enable equal access to learning in Design and Technology.

Roles and Responsibilities

The subject is led by Jenny Hartwell Jones. Each year time is set aside to review standards and monitor curriculum provision and ensure training and resources are up to date.

Health and Safety

Design and Technology has its own risk assessment for the subject and is updated each year before the Health and Safety audit in May. It is included as an embedded document below in this policy.

Resources

We have a wide range of resources that help teachers deliver the Technology curriculum. This includes the hardware and tools needed including drills, hammers, hacksaws, nails and glue guns. Electrical components, pulley wheels, cams, cogs, wood and textiles are also available. Staff are encouraged to order specific resources they may need for their projects at the start of the term. People with an interest, or expertise, in a particular topic or area of technology could be invited into school to work with the children. These might be parents, grandparents, other family members, neighbours or representatives of the local community.

Role of Design and Technology Leader:

- To be enthusiastic about Design and Technology and demonstrate good practices.
- To work alongside colleagues in planning where needed (progress and activities).
- To work alongside teachers in the classroom (this will depend on release time and other available help).
- To coordinate and arrange staff in-service training as required.
- To audit resources, identify needs and order equipment in school after consultation with colleagues.
- To “sample” the work of children across the age range (curriculum monitoring).
- To review and evaluate the effectiveness of teaching and learning of Design and Technology: work sampling, pupil voice, planning and teaching.
- To provide guidance on the implementation of the Design and Technology policy.
- To suggest appropriate assessment activities where needed.
- To provide support to those colleagues who request/require it, including help with planning and organization.
- To monitor the planning and delivery of lessons.

Role of the Head Teacher:

- To lead, manage and monitor the implementation of the scheme of learning.
- With the Design and Technology leader, keep the governing body informed about the progress of the subject and the scheme of work.
- Ensure that Design and Technology remains a high profile subject in the school's development work.

Last Updated: February 2024

Review date: February 2026

Signed: 

Appendix 1: Intent Curriculum Overview

Milestone 1 Design and Technology		
Superheroes	**It Began in Africa**	**Ahoy there**
Control Moving vehicles for a superhero	**Food** Fruit Smoothies using fruit from Hand's Surprise	**Textiles** Punch and Judy puppets for Victorian sea-side show
Pole to Pole	**Fire Fire**	**Once Upon a Time…**
Mechanism Moving habitat pictures of hot and cold environments	**Mechanism** Winding mechanism to pull up water to put out a fire	**Structure** Traditional Victorian toy such as a Jack-in-the-box
Milestone 2 Design and Technology		
All Started in a Cave	**Survival**	**They Came, They Saw they conquered!**
Textiles Make cave man felt trousers for Ug	**Control** Make a burglar alarm to protect the Lombardy Iron Crown	**Structure** Roman Bridges
Dungeons and Dragons	**Streetwise**	**It's All Greek to Me**
Mechanism Make a pop-up book for castles and dragons page	**Food** Use Farndon heritage of strawberry fields to make tarts	**Mechanism** Use pneumatic system to create moving monsters
Milestone 3 Design and Technology		
Walk Like an Egyptian	**Out of this World**	**Traders and Raider**
Structure Make an Egyptian pyramid from wood	**Control** Design and Make a moon buggy which can move.	**Food** Design and Make some Viking bread
Endangered	**Child of Our Time**	**The Ship of Dreams**
Textile Make a stuffed animal toy to raise money for rainforests	**Mechanism** Design and Make a fairground ride.	**Structure** Design and Make a lifeboat to carry as many passengers as possible.

Milestone 1 Knowledge Mat	Design and Technology Curricul
Milestone 2 Knowledge Mat	Design and Technology Curricul
Milestone 3 Knowledge Mat	Design and Technology Curriculur
Risk Assessment for the subject	Risk Assessment - DT May 2018.docx

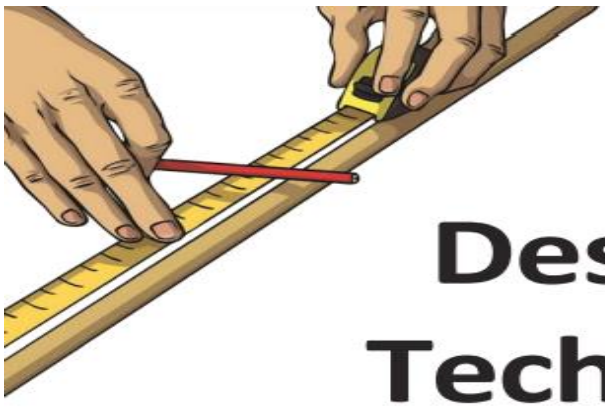
FARNDON'S CORNERSTONES TO LEARNING

Setting the right culture: Habits and Routines

Environment	*Adults*	*Behaviour and Attitude*
• Working walls reflect current with sticky facts and vocab for the Technology project. • Celebrate mistakes visually. • Sticky Facts being learnt that term. • Share with the pupils what a good one looks like (WAGOLL). • Celebrate pupils' work from different areas of the curriculum.	• Welcome at the class door. • Always be the adult and combine assertiveness with warmth. • Model calm, controlled and caring behaviour. • Be consistent with consequences, maintaining certainty over severity. • At the point marking with verbal feedback (record VF). • Feed forward using whole class feedback book.	• Reinforce 3 step processes: re-direct, challenge and correct. • Constantly positively reinforce good behaviour and attitudes. • Respond consistently to reward, set expectation and sanction. • Promote good learning attitudes: **work hard**; **push themselves**; **don't give up**; **concentrate**.

Think *Fluency / Recall*	**1**	Begin each theme retrieving from memory what they already know. At the start of each session, revisit previous substantive knowledge and concepts taught through a quick quiz. Read Knowledge Organiser for pre-learning.
	2	Start each session with a shared **purpose.** What new knowledge will they learn? Give pupils the knowledge needed for the task. New knowledge broken down step by step to avoid cognitive overload.
Learn *Understanding*	**3**	Teacher models. Use principle **I do….We do… You do…..** Show the skills and a **WAGOLL**. Use worked examples. Teacher models "how to think" like an Designer and Engineer by thinking aloud their own thought processes (**meta-cognitive modelling**) and show how to plan, monitor and review thinking. This will help pupils to imagine and aspire to high standards in their own learning. This is primarily done through a **focus practical task**.
	4	Check for pupil understanding. Use techniques to involve all pupils such as **cold calling** and **think; pair; share**. Ask deeper questions using Q matrix and Bloom's matrix for enquiry type questioning. Encourage better responses – **"Say it again but better."** Children questioned whilst **investigating a product**.
	5	Provide **scaffolds** to either support pupils in their learning so that it is accessible, or to help them to effectively plan and organise it. See Project Pack. **Feedback** should be understood, accepted and actionable. Verbal feedback should highlight success and specific areas to improve. Whole class feedback used to feed forward in the next lesson.
Explore	**6**	Before independence, use **guided practice** and check pupils have a certain level of confidence. Gradually remove any scaffolds. Embed knowledge through **independent practice.** Once new knowledge is embedded, look to **apply** in their own Design and Make project.

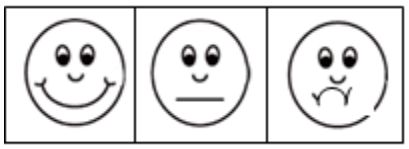
Evaluate ***Recall***	**7**	Pupils encouraged to **review** their work and complete an evaluation. End each session with a review of the knowledge learnt that session using quizzing, elaborate interrogation or peer to peer assessment.



Design & Technology Project Booklet

Winding Mechanism

Name: _____

Learning Targets	Assessment
Use materials to accurately drill, glue and secure materials to make products.	
Cut the card or the box accurately using scissors.	
Make sensible choices on which materials to use to make winding mechanism.	
Cut wooden dowelling safely using tools provided.	
Measure and mark out and cut out to the nearest cm	
Make a product using an axle to make an effective winding mechanism.	
Demonstrate a range of joining techniques to allow the axle to move.	
Evaluate the mechanism and suggest how to improve.	

Sticky Knowledge	
Packing can be used to “fasten” a drum to an axle.	
Where use a bigger “drum” it will wind up faster.	
Can give axle additional support through seals, tubing, or cotton reels.	

Design Research

Draw and label your winding mechanism.
Use the ford from the word mat.

axle	**drum**	**handle**	**string**

My Design Brief	To make a wind up mechanism to pull up a bucket to put out the fire in Pudding Lane.

My Design	I will need:

Words to help

cotton reel	dowelling	handle	bucket	axle	
straw	string	box	Tube	wood	

My Finished Model

Stick in photography of the model here

My Evaluation

Did you like how your final product actually looked?

Did it meet the design brief?		
Was it easy to make?		
Would you make it again?		
Did you enjoy making it?		
Would you change anything?	**YES**	**NO**

What would you change?