



Design and Technology Policy

Definition

"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." National Curriculum 2014

Statement of Intent

At At Tonacliffe Primary School, we aim to provide all pupils with an ambitious, inclusive and inspiring Design and Technology education that equips them with the knowledge, skills and understanding needed to thrive in an increasingly technological world. We believe Design and Technology develops creativity, innovation, resilience and problem-solving skills, enabling children to become confident designers, makers and evaluators.

Our curriculum is informed by the Design and Technology Association's principles of high-quality D&T education and provides opportunities for pupils to engage in an iterative design process, where ideas are developed, tested, evaluated and refined. Sustainability is a key driver within our curriculum and pupils are encouraged to consider the environmental impact of design decisions, materials and manufacturing processes.

We encourage children to think critically about the products they use every day and to understand the role design plays in improving lives. Pupils learn to identify needs, generate ideas and create innovative solutions to real-world problems, considering the needs, wants and values of different users.

Sustainability is a key driver within our Design and Technology curriculum. Pupils are encouraged to consider the environmental, social and economic impact of products throughout the design process. They learn to make informed decisions about materials, manufacturing processes, waste reduction, recycling, reuse and responsible consumption. Through meaningful projects, children develop an understanding of how design can contribute positively to local and global communities and create a more sustainable future.

We intend for all children to:

- Become creative, imaginative and innovative thinkers.
- Develop practical skills through the safe use of tools, materials and equipment.
- Understand and apply an iterative design process.
- Apply knowledge from Mathematics, Science, Computing, Art and other curriculum areas.
- Understand how products are designed, manufactured and improved.
- Develop resilience by testing, adapting and refining ideas.
- Understand the importance of sustainability and environmental responsibility.
- Learn about significant designers, inventors, engineers, chefs and craftspeople.
- Develop the knowledge and skills needed for future learning and employment.
- To develop an understanding of sustainability and the role designers play in creating a more environmentally responsible future.
- To encourage children to consider the impact of products on users, communities and the environment

Implementation through Teaching and Learning

At Tonacliffe Primary School, Design and Technology is planned using guidance from the Design and Technology Association alongside the National Curriculum. Children engage in an iterative design process which includes investigating and researching existing products, designing, making, evaluating and refining outcomes. Technical knowledge is taught progressively and applied purposefully through meaningful design contexts. Our curriculum is carefully sequenced to ensure knowledge and skills build over time. Progression is mapped across EYFS, Key Stage 1 and Key Stage 2, ensuring substantive and disciplinary knowledge develops systematically from the beginning of school through to Year 6.

Children develop skills within the following areas:

- Mechanisms
- Structures
- Textiles
- Cooking and Nutrition
- Electrical Systems (Key Stage 2)

Progression is mapped to ensure substantive and disciplinary knowledge builds systematically from EYFS to Year 6. Previous learning is revisited and applied within increasingly complex contexts so that pupils can retain and transfer their learning effectively. Throughout the curriculum, pupils are encouraged to think critically about the products they design and make. Across all projects, pupils are encouraged to think critically about the products they design and make. Sustainability discussions are embedded within units where appropriate, encouraging pupils to consider:

- The materials they select and where they originate.
- Whether materials can be reused, repaired, recycled or repurposed.
- The durability and lifespan of products.
- The environmental impact of manufacturing and transportation.
- Ways to minimise waste.
- How products can positively contribute to society and the environment.

Projects provide opportunities for children to:

- Investigate existing products.
- Develop practical skills.
- Generate and communicate ideas.
- Create prototypes and models.
- Design and make purposeful products.
- Evaluate products against criteria.
- Refine and improve outcomes.
- Consider environmental impact and sustainability.

Teachers use a range of teaching approaches, including practical investigations, collaborative learning, independent tasks, discussion and problem-solving activities. Assessment opportunities are embedded throughout lessons so that misconceptions can be identified and addressed promptly.

The Subject Leader supports staff through:

- Membership of the Design and Technology Association.
- Access to high-quality curriculum resources.
- Professional development opportunities.
- Curriculum monitoring and evaluation.
- Sharing effective practice across the school.

Foundation Stage

The Foundation Stage plan their Design and Technology opportunities as part of their themes and topics and in line with the guidance provided by the Development Matters framework. There will be at least one planned, teacher guided/supported, 'Design and Technology' activity per term, however, children's regular access to continuous provision and supporting adults will enable them to practise and build on their skills independently.

Design and Technology is relevant across the whole of the Early Years curriculum, however, Personal, Social and Emotional Development, Physical Development and Expressive Arts and Design are specifically noteworthy to the Design and Technology curriculum:

- **Physical Development:** Children will develop gross and fine motor skills that will enable them to use tools and materials effectively (such as pencils, hammers, jugs for pouring, scissors and so forth).
- **Personal, Social and Emotional Development:** Children will learn how to manage themselves and keep themselves safe and healthy (such as preparing food hygienically, washing hands and eating a range of healthy foods).
- **Expressive Arts and Design:** Children will learn to build using different resources, join materials together (using a range of resources, glue sticks, liquid glue, sellotape and dispensers, treasury tags etc), explore texture, colours and so forth. Children will also use available resources to make props for their play and create representations of people and/or places, using their current topic/theme, own knowledge and experiences and their imagination to work creatively.

All pupils will:

- Complete at least three focused Design and Technology projects each year.
- Explore and discuss existing products.
- Plan simple products.
- Make products using a variety of materials.
- Evaluate finished outcomes.
- Begin to understand why products are made and who they are for.
- Discuss responsible and sustainable use of materials at an age-appropriate level.

Children will be supported to:

- Express ideas creatively.
- Develop fine and gross motor skills.
- Select suitable resources.
- Use simple tools safely and effectively.
- Prepare food hygienically and safely

Key Stage One

Key Stage One utilises the first term of the academic year to specifically teach, practise and perfect the practical skills and techniques required to make the two products they will later design and make independently. The first term does not require children to design or innovate, but rather learn the vital practical skills which they will later rely on, allowing greater independence at a later stage. The following two terms will see children working in a range of relevant contexts (for example, the home and school, gardens and playgrounds, the local community) to design, make and evaluate a product.

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

- Evaluate their ideas and products against design criteria.
- Suggest how they could improve upon their design.

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 axles], in their products.
- Prepare ingredients such as cutting, peeling, grating and measuring and weighing using non-statutory measures.
- Create textile products by joining materials using glue, staples and over sewing and decorate their product by using ribbon, buttons, sequins and colouring techniques.

All units include:

- Skills lessons.
- Planning activities.
- Making opportunities.
- Evaluation.
- Six key vocabulary words.
- A pre-learning quiz.
- Sustainability discussions where appropriate.

Key Stage Two

Through a variety of creative and practical activities, pupils are taught the knowledge, understanding and skills needed to engage in the designing, making and evaluating process of design and technology. They work in a range of relevant contexts, whilst also exploring the cultural, financial, sustainability and fair trade implications of existing products and their own designs.

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.
- Draw on research to highlight the impact of time, resources, cost and the sustainability of their ideas.

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.
- Record step-by-step, producing material and tool lists and explaining their choices in terms of their suitability for the task.
- Measure, mark, cut, shape, join, assemble and combine materials with good accuracy so that a quality product can be made.

Evaluate

- 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.
- Use a range of tools, including, but not restricted to a bradawl, hand drill, junior hacksaw, screwdrivers, file and so forth.

All units include:

- Investigation of an existing product.
- Study of a significant designer, engineer, inventor or craftsperson.
- Skills lessons.
- Planning.

- Making.
- Evaluation.
- Six key vocabulary words.
- A pre-learning quiz.
- Explicit discussion of sustainability.
- At least one peer evaluation opportunity.

Children consider:

- Why they are making a product.
- The intended user.
- Future environmental and social impact.
- Opportunities to improve products through iteration.

Implementation through Assessment, Recording, Reporting and Monitoring

The principles for assessment for learning will underpin the assessment of Design and Technology. We intend to use a variety of methods to assess pupils including teacher observations, summative and formative assessments that fully inform future planning. Assessments take the whole design and technology process (designing, making and evaluating) into consideration, not just the final product.

Children are actively encouraged to evaluate their own, and others' work, throughout the design and technology process, this will be evident through their work.

Evidence is collected through project booklets, where the whole 'design, make and evaluate' process is recorded. These booklets will take on various forms, depending on the project.

Booklets may also be combined within other subject books when cross-curriculum projects are happening.

Finished products will be displayed around school, when possible.

Formative assessments will be recorded on the Lancashire Pupil Tracker and this is updated three times a year, in line with the end of each project. The Design and Technology lead will analyse this data and report to senior leaders and governors termly.

A range of monitoring strategies are in place to ensure high quality design and technology is being taught. The design and technology lead will conduct pupil interviews, observe lessons, monitor planning and booklets, conduct discussions with children and staff.

Implementation through Resources

Design and Technology resources are stored in the Design and Technology room, in topic draws. These are clearly organised and labelled for easy access and deployment during a project. Annual resource audits are completed by the design and technology lead to ensure the school is equipped to meet the requirements of upcoming projects and the demands of the subject.

Design and Technology materials are ordered in bulk during the summer term for the following year and further resources are ordered as required throughout the year. Class teachers will put in order requests to the design and technology coordinator during the summer term.

Implementation through Health and Safety

All health and safety requirements are met in the school and are appropriate to each class.

One key component to the design and technology curriculum, is teaching children how to use a range of tools and resources safely and hygienically. As such, children are explicitly taught how

to use a range of tools in an appropriate manner. Children are taught how to manage potential risk and keep themselves, and others, safe.

Equipment is checked before each project to ensure resources are safe and fit for purpose. Risk assessments have been conducted for all tools and activities to ensure their safety and ensure necessary precautions are in place before exposing children to tools or materials which could cause harm. Staff have been taught how to use, store and transport tools safely. All staff are responsible for ensuring children use, store and transport tools correctly and safely. Children are responsible for keeping themselves and others safe, by using tools appropriately.

Implementation through inclusion

In line with our SEN policies throughout the school, we ensure that Design and Technology is available to all children, regardless of their gender, ability, ethnicity, social background or special education needs. Children's individual needs are met through careful planning, differentiation, availability of resources or staffing. Please refer to our SEN policy for further details.

Impact

The Design and Technology curriculum develops creative, resilient, reflective and environmentally responsible learners.

Children leave Tonacliffe Primary School with the knowledge, skills and confidence to participate successfully in an increasingly technological world. They understand how Design and Technology shapes everyday life and can apply creativity, technical knowledge and problem-solving skills to real-life situations.

Pupils become thoughtful designers who recognise that successful products often require testing, adaptation and refinement. They understand the importance of designing for a purpose and for a user and can evaluate products critically and constructively. ,

Children develop a strong understanding of sustainability and responsible design. They recognise the importance of conserving resources, reducing waste and making informed choices about materials and manufacturing processes. They understand that designers have a responsibility to consider environmental impact whilst meeting the needs of users and communities. Through this understanding, pupils are equipped to become innovative, responsible and environmentally conscious citizens of the future.

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