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

Design and Technology prepares children for the real, and rapidly changing, world we live in. At Tonacliffe Primary School, it is our intent to equip children with important life skills that they can apply in the real world. We hope to teach children to look at existing products *critically*, *apply* their academic knowledge, *think* creatively and imaginatively to *generate* original ideas and then *apply* their skills to create quality and aesthetically pleasing goods. Design and Technology is a practical, purposeful and pertinent subject that aims to prepare our children for their own future. The intent of Design and Technology is:

- To develop critical thinkers; children who are able to look at an existing product and questions its function, its purpose, its strengths and weaknesses.
- To provide enjoyable and practical learning experiences.
- To enable children to express their ideas through talking, drawings and modelling.
- To develop creative and imaginative thinkers and designers.
- To develop 'hands on' skills with a range of tools, resources and techniques.
- To develop design, making and modifying skills.
- To use and apply knowledge and skills from a range of curriculum areas (including, but not restricted, to English, Mathematics, Science and Art).
- To develop an understanding of technological processes, products and their manufacture.
- To teach children about the importance of health and safety and how to work in such a way.
- To teach children about cultural differences.
- To educate children about environmental factors such as fair trade and sustainability.

Implementation through Teaching and Learning

At Tonacliffe Primary School, we work on a two-year cycle for coverage (please reference the skills distribution documents for yearly overviews). Children will cover **two** of the four areas of Design and Technology per year, with a clear focus on the skills and skill progression. By focusing on only 2 areas per year, children can develop robust skills in those areas and concentrate on generating quality ideas and a high-quality final product.

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:

o *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).
o *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).
o *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.

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.

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.

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 twice 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 trolleys. 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 & equality

We believe in giving all children the opportunity to access a quality Design and Technology curriculum, one which prepares them for the rapidly changing world we live in. In line with our school's SEN policy, accessibility policy and the equality and community cohesion policy, we ensure that Design and Technology is available to all children, irrespective of their gender, gender identity, sexual orientation, academic ability, ethnicity, race, religion, socioeconomic background, special education needs or disability.

We are committed to achieving maximum participation for all children and recognise the need for equity to meet their individual needs. This is achieved through careful planning, differentiation, availability of quality resources and staff, positive relationships with adults and peers, and a safe, supportive and challenging environment in which children receive a hands-on learning experience.

In some cases it may not be practical to provide sufficient activities within the school for a child with severe disabilities and the SENCO or D.T coordinator should contact appropriate agencies to make additional arrangements for these pupils.

Please refer to the individual policies for further details.

Impact

The Design and Technology curriculum will teach children to be problem solvers, proactive thinkers and team players. It will help children to understand the importance of thinking about the wider population/community by considering a 'user', 'purpose' and 'function' of an invention, as opposed to thinking of a single, aesthetically pleasing product. Children will be given opportunities to select from a range of materials and the implications of such choices, therefore engaging meaningfully with the 'Reduce, Reuse and Recycle' agenda.

Through learning the principles of Design and Technology in conjunction with other areas of the curriculum (including science, computing, maths etc.) pupils will develop their own capacity for individual excellence. Through individual and team opportunities, they will learn the value of research, planning, exploring, trial and error, self and peer evaluation and flexibility. At Tonacliffe Primary School, we aim to create hard working, creative and critical thinking adults, equip to excel in their own future.

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(N. Rice; Design and Technology Lead)