Design Technology at Thornton Primary School

Design Technology Intent

The teaching of Design Technology at Thornton Primary School will help pupils to develop the skills and practical expertise needed to participate in an ever increasing technological world.

Thornton Primary School's Design technology schemes of work will provide opportunities to:

- Design and make products that solve both real and relevant problems within a variety of contexts. These contexts could be imaginary or story based or contexts based on local community, industry and the wider environment.
- Design and make products for themselves or other users to design criteria. Pupils will be given the opportunity to communicate their ideas through talking and drawing.
- Be able to clearly state the purpose of their products.
- Draw on their own experiences and also their use of existing products which they have explored and evaluated. Pupils will be encouraged to develop their use of effective questioning to extend their thinking.
- Explore materials, components and construction kits. Pupils will have the opportunity to design and make prototypes based on their own research through a variety of design and make assignments (DMAs). They will have the opportunity to test and evaluate their own work and the work of others and modify their end products.
- Select from a range of materials and equipment and be able to explain their choices. As children's knowledge of these aspects progress, they will be encouraged to do this with more independence. They will also experience a variety of different ways to assemble, join and combine materials using a range of different techniques and also investigate how to make structures stronger, stiffer and more stable.
- Be able to clearly state how their products work using their developing technical language and drawing on their knowledge and understanding of other subjects that link such as Science, Mathematics and Computing.

- Be introduced to a range of mechanisms that provide different types of movement such as axels and wheels, sliders, levers and linkages, winding mechanisms and pulleys, to developing more sophisticated methods, such as cams and electronics.
- Be able to name and sort foods into the main five groups from 'The Eatwell Plate' and know that everyone should eat five portions of fruit or vegetables a day.
- Learn skills and techniques such as cutting, peeling and grating safely and have the opportunity to cook a range of dishes.
- Explore the use of Information and Communication Technology.
- Be inspired by inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products.

Implementation

Children are introduced to a range of carefully selected exploration tasks to build up skills and knowledge and design and make tasks as they progress through KS1 and KS2. These link to other curriculum areas such as Topic, Science and English. Design Technology lessons are usually blocked into theme days but can form a short series of weekly lessons where this is deemed more appropriate. Careful selection of tasks ensures progression in terms of knowledge, skills, techniques and technical vocabulary development. The children have opportunities to apply these to design and make tasks as they further progress up the school. There are many opportunities for recapping of knowledge and skills as links to previously learning are incorporated into teaching.

Children work from a variety of starting points to put their work into context. In Key Stage 1, this takes the form of stories children may have been studying during English lessons, progressing to design and make challenges relating to topic and other subject study further up the school. Local, industrial and wider environment contexts are also linked such as in geographical and historical contexts. For instance, in Year 1 Geography, children learn about the immediate area around school and visit the local playground. This leads onto investigating structures and making their own play equipment structures. Investigating mining in the local area in Year 4 leads onto making structures with winding mechanisms and the study Ancient Greece in Year 5 links to researching early automata and developing the use of winders and cams.

Children are encouraged to think about who the products they design and make are for. In KS1 this will be mainly for themselves but as children progress up into KS2, the users will become less familiar for example, designing for people they meet in the local community or visitors into school. They will also be provided with the opportunity to clearly state the purpose of their products. In KS2, this will go beyond the simple statements they make in KS1 as children will be prompted by a range of questions. Deeper thinking in KS2 is encouraged by asking children to think further about how their products will appeal to their intended users and consider meeting the user's needs, wants and preferences. Gathering of information about the needs and wants of individuals will start to form part of the design process in early KS2, this research becoming more extensive as children progress further up the

school. Children will be asked in Key Stage 1 to explain how their product works progressing to more detailed explanations in KS2. They will be encouraged to use their knowledge and understanding of Science where relevant.

In KS1, children are limited to a number of simple design criteria to help them to develop their ideas. In KS2 children will progress onto generating their own design criteria after initial modelling by the teacher and/or whole class discussions. Towards the end of KS2, they will be confident in doing this independently.

Drawing on their own experiences to generate ideas will form an important part of the design aspect in Design Technology. As children progress through the school, they will be encouraged to draw on products they see at home, in school and in the environment and also utilise their experiences of Design Technology to generate ideas for their own designs. In KS2, they will be introduced to the work of designers, inventors, engineers, chefs and manufacturers to inspire them. Children will progress from making templates and mock-ups in KS1 to model their ideas using prototypes and pattern pieces. Use of making prototypes in KS2 is also developed in order to provide an opportunity to test and evaluate prior to going on to creating the final product.

Simple design sketches in KS1 are developed into more detailed, annotated sketches in KS2 including cross-sectional drawings and exploded diagrams to help children to develop and communicate their ideas. As children progress further, they will be encouraged to become independent in choosing which type of drawing best suits their product design. Children will be encouraged to consider how realistic their designs are and be encouraged to start to become increasingly innovative by introducing some unusual or new elements to their designs whilst still ensuring their final outcomes are fully functional and fit for purpose.

In KS1, children will be introduced to a range of materials and tools suitable for the task. As children progress, they will select with more independence and make selections that are appropriately matched to the skills and techniques they will be using and be given the opportunity to be able to explain their choices. Children will be taught skills of how to measure, mark out, cut, shape, assemble, join, combine and apply finishing techniques with increasing accuracy.

In early KS2, children will be introduced to using a computer to control products (Year 4 – designing and making an electric night light). Their computing knowledge and skills will focus on physically controlling output devices, in Year 4 this being a bulb whilst in Year 5/6 this progresses onto more complex flowchart programmes involving LEDs and bulbs and motors when they are asked to design a fairground ride.

On occasion, topic headings may occur on a rotation depending of class sizes/organisation of year groups. This is carefully tracked by Subject Leaders to ensure topic content is not repeated, the progression of key knowledge and skills in still maintained and also that content is differentiated for different age groups when necessary.

Topic Map

	Aut 1	Aut 2	Spr 1	Spr 2	Summer 1	Summer 2
Year 1	**Moving Pictures – sliders and levers** (English - traditional tales)	**Drawbridge structure – making card stronger** (Kings, Queens and Castles)	**Food Technology** (The Great Fire of London)	**Textiles (sewing techniques)** (Toys)	**Structures – design and make playground equipment** (Our Local Area)	
Year 2	**Food Technology** (Wonderful World)	**Christmas cards with moving parts (building on the work in Y1 – sliders and levers)**		**Mechanical systems - wheels and axels** (Travel and Transport)	**Design and make a puppet (joining - sewing techniques** (Beside the Seaside)	**Picture frames – structures/joining** (Link to previous Science work – Uses of Everyday Materials)

	Aut 1	Aut 2	Spr 1	Spr 2	Summer 1	Summer 2
Year 3	**Roman catapult – structures, joining, mechanical systems)** (Watch Out! Invaders About! The Ancient Britons and the Romans)	**Moving toys (mechanical systems – levers and linkages)** (Rainforests)	**Food Technology** (Land use - Link to local area)			**Weaving – joining techniques** (Watch out! Invaders About! The Anglo-Saxons, the Scots and the Vikings)

Year 4	**Structures and mechanisms (winders and pulleys)** (Somewhere to Settle – link to early mining)	**Sewing techniques – joining** (Riotous Royalty)		**Design and make an instrument** (Science – Sound)	**Electric night light using IT control** (Science – electricity)	**Food Technology**
Year 5		**Raft Challenge – Sea Cadets STEM activity** (Stone Age to Iron Age Recap on Science – Forces)	**Food Technology** (Eastern Europe)	**Design and make a moving toy Mechanisms – cams/automata** (Ancient Greece)		**Design and make a working traffic light using IT control** (Recap on Science – Electricity)
Year 6	**Bridge Construction Challenge** (Amazing Americas)	**Food Technology** (The Mighty Mayans)		**Fairground model using IT control** Britain since WWII (Leisure and Entertainment) Science – Electricity)	**Sewing – joining techniques** Local History/Geography Study	

<u>Impact</u>

The impact of our curriculum is measured in terms of the extent to which pupils have developed new knowledge, understanding and skills and that they can use and recall this with fluency.

In Design Technology, this will be measured by:

- Regular knowledge check activities and evaluations of design and make assignments
- In school attainment tracking
- Engagement in enrichment activities
- Route to Resilience activities
- Pupil voice – questionnaires, pupil book and learning reviews
- Subject Leader monitoring – Lesson visits, scrutiny of books, assessment, pupil interviews and questionnaires
- Governor monitoring
- Attendance data
- Behaviour Logs

The Design Technology curriculum and resources used are evaluated annually.

More detailed information about the Design Technology curriculum can be requested from the school.