



Design Technology Vision & Intent

Overall Vision

DT provides pupils with the opportunity to practically engage, creatively design and evaluate. Through DT we are able to embody mechanics, bakers, fashion designers, joiners, construction workers and chefs. DT offers pupils a pathway to their own success and opens the door to future possibilities and unknown passions. We teach DT to develop these life skills and begin core memories and education to later be built on throughout school and in future life.

By the end of Early years & Key Stage 1

National Curriculum

When designing and making, pupils should be taught to:

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

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

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.

At Elm Tree we prioritise:

Structures

Talk about their ideas and existing products

Choose Between a numbers of materials

Explore features of structures

Making stable structures with card

To name common pieces of equipment

To know that a stable structure does not topple

To understand structures are something built for a reason
To add weight to a structure to make it more secure
To know materials can be manipulated to improve strength and stiffness
To know structures with flat bases are more stable

Mechanisms

To request equipment
Refine grip for pencil and scissors
To know a mechanism allows something to move
To know a slider mechanism goes side to side
To understand for a wheel to move it needs to be attached to an axle
To recognise mechanisms in every day things
To know that a lever is something that turns on a pivot

Cooking and Nutrition

Chop food safely
Identify fruit and vegetable
Grate, peel and juice
Describe food – taste, smell, look. Feel
To know five main food groups
To know ingredients is what we need to make a recipe

Textiles

Design simple pattern on paper
Cut fabric neatly
Thread a needle
Join fabric using running stitch
Decorate fabric using running stitch or glue

**By the end of Key Stage 1, Pupils will have made:
(Depending on what year cycle)**

Structures

A park
A bridge
A boat
A pirate ship

Mechanisms

Moon buggy
Fairground wheel
Moving meerkat
Moving fire on a house
A boat with a moving part

Food and Nutrition

Healthy smoothie
Food instrument
Royal banquet

Textiles

Soft toy
Penguin puppet
Super hero cloak

By the end of Key Stage 2

National Curriculum

When designing and making, pupils should be 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 and exploded 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], 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

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 [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.

At Elm Tree we prioritise:

Structures

Recognise features of a castle

Construct a range of 3D shapes

Design a product based on function ability, labelling features and materials needed

Understand a flat base is more stable

Understand the importance of strength and stiffness

Develop drawing and sketching skills

Selecting materials and components based on their functional skills

Consider feedback from peers and teachers

Compare made product to existing products (physical or pictures)

Structure something using layering and ribbing

To know something can be strengthened by manipulating materials

To know what a free standing structure is

To know what a frame structure is

Design a stable structure that can support weight

Use triangles to create a truss bridge

Build a wooden bridge structure

Adapt and improve own bridge structure identifying weaknesses

Mechanisms

Create a design based on criteria and target audience

Take part in idea storming

Suggest simple safety rules

Cut out more complex shapes

Handle different sizes and types of scissors with confidence.

Using PVA glue to join corrugated card and light wood (e.g. balsa wood).

Sealing edges with tape to cover gaps in joins.

Beginning to understand how mechanisms work.

Recognising pneumatic systems in everyday objects (e.g. car boot, adjustable chair.)

To know that different tools and equipment have different dangers.

To know that scissors are useful for cutting out complex shapes,

To know that designers and inventors create products.

To know that choices of materials and equipment can affect the final product.

To know that feedback is ideas and suggestions from other people that can help improve their work.

To know that mechanical systems have more than one mechanism that moves to make them work.

To know that mechanical systems are often hidden in products to make them look more appealing.

To know that pushing air can be used to move a mechanism.

To understand how pneumatic systems work.

To understand that pneumatic systems can be used as part of a mechanism.

To understand that all moving things have kinetic energy.

To understand that kinetic energy is the energy that something (object/person) has by being in motion.

To know that air resistance is the level of drag on an object as it is forced through the air.

To understand that the shape of a moving object will affect how it moves due to air resistance.

To know that the mechanism in an automata uses a system of cams, axles and followers

Electrical Systems

Create a final design for the electric poster.

Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear.

Measure and mark materials out using a template or ruler.

Fit an electrical component (bulb).

Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).

To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit.

To understand common features of an electric product (switch, battery or plug, dials, buttons etc.).

To list examples of common electric products (kettle, remote control etc.).

To understand that an electric product uses an electrical system to work (function).

To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.

To understand that electrical conductors are materials which electricity can pass through.

To understand that electrical insulators are materials which electricity cannot pass through.

To know that a battery contains stored electricity that can be used to power products.

To know that batteries contain acid, which can be dangerous if they leak.

Cooking and Nutrition

Identifying seasonal ingredients from the UK.

Following the instructions within a recipe.

Tasting seasonal ingredients.

Peeling foods by hand or with a peeler.

Cutting ingredients safely.

Choosing ingredients based on a design brief.

Following a baking recipe.

Understanding safety and hygiene rules.

Adapting a recipe.

Understanding cross-contamination.

Using preparation skills.

Making a developed recipe

Textiles

Following design criteria.

Selecting and cutting fabrics with ease using fabric scissors.

Threading needles with greater independence.
Tying knots with greater independence.
Sewing cross stitch to join fabric.
Decorating fabric using appliqué.
Completing design ideas with stuffing and sewing the edges or embellishing
Measuring, marking and cutting fabric using a paper template.
Selecting a stitch style to join fabric.
Working neatly by sewing small, straight stitches.
Incorporating a fastening to a design.
To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro.
To know that different fastening types are useful for different purposes
To know that when two edges of fabric have been joined together it is called a seam
To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.
To understand that it is easier to finish simpler designs to a high standard.
To know that soft toys are often made by creating appendages separately and then attaching them to the main body

**By the end of Key Stage 1, Pupils will have make:
(Depending on what year cycle)**

Structures

Bridge
Shield
Aqueduct
Castle
Illumination (electrical systems)

Mechanisms

A pulley system to raise a sail
Sliding door on spaceship
Sling shot moon buggy with headlights (electrical systems)
A lowering and raising system for prisoner cage
Booby Trap
Moving toy
Pneumatic toy
Automata toy

Textiles

Cloak
Leather breastplate
Egyptian necklace
Gas mask
Fur tunic

Food and Nutrition

Soup
Wartime Food
Healthy Dip
Greek base food