

# Langton Primary School

## Design and Technology Curriculum – Upper Key Stage 2



### Learning Goals

#### Pupils should be taught to:

- 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
- 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
- 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

### Subject Element - Everyday Products

Investigate and analyse a range of existing products.

#### Vocabulary

Cloche, cold frame, greenhouse, Tetra Pak, Tupperware, Bag, Bottle, Box, Can, Carton, cling film, Compostable, food packaging, Jar, recyclable, Recycle, Reuse, home furnishing, home product, design feature, Nightlight, Programmable, programmable device, sensor, Switch, compound machine, device, simple machine

## Subject Element – Staying Safe

Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.

### Vocabulary

safety rules, supervision

## Subject Element – Generation of Ideas

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.

### Vocabulary

Design, design criteria, diagram, health and safety, Plan, dimension, build, deconstruct, net, reconstruct, Sketch, annotate, design criteria, Plan, annotated sketch, design criteria, exploded diagram, annotated sketch, labelled diagram, prototype

## Subject Element – Evaluation

Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made.

### Vocabulary

Evaluate, Evaluation, improve, Success, demonstrate, discussion, evaluate, explain, feedback, finish, improve, improvement, quality, reflect, strength, Structure, change, design criteria, effective, evaluation, findings, improvement, observation, Suitability, fulfil design criteria, success, appearance, Attractive, design criteria, evaluation, improvement, purpose, review, finish, improvement, Modification, change

## Subject Element – Structures

Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

### Vocabulary

diagonal strut, frame structure, stability, strength, three-dimensional, triangular shape, cone, cube, cuboid, hexagonal prism, net, packaging, prototype, triangular prism

## Subject Element – Investigation

Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.

### Vocabulary

G clamp, bench hook, butt joint, explore, gluing, hacksaw, hot glue gun, improve, investigate, joining, reinforcing, strengthening, Test, triangular corner, component, cut, join, material, Test

## Subject Element – Materials For Purpose

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.

### Vocabulary

Glass, hardwearing, material, plastic, property, purpose, strength, transparent, waterproof, Polystyrene, card, cardboard, cling film, glass, paper, plastic, tin, tin foil,, appearance, colour, elasticity, material, natural, pattern, shape, synthetic, textile, texture, Yarn, comfortable, delicate, durable, Fabric,, flexibility, , flexible, lightweight, man-made, , natural, property, soft, strength, stretchy, strong, synthetic, textile,, texture, tough, use, versatile, Waterproof, conductive, Material, non-conductive, Purpose,, characteristic, material, property, rigid, smooth, strength

## Subject Element – Mechanisms and Movement

Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).

### Vocabulary

Actuator, air, air pressure, compress, compressor, force, gas, hinge, lever, movement, piston, plunger, pneumatic system, pneumatics, power, reservoir, syringe, Valve

## Subject Element – Food Preparation and Cooking

Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

### Vocabulary

Blend, boil, brown, chop, cooked, dice, food hygiene, food preparation, Grate, health and, safety, mash, peel, puree, raw, sauté, simmer, Steam, bake, blend, boil, brush, chop, cool, crush, cut, dough, fry, halve, health and safety, heat, hygiene, knead, mash, mix, peel, pour, prove, recipe, reheat, simmer, slow cook, spoon, spread, sprinkle, stir, store, yeast

## Subject Element – Nutrition

Understand and apply the principles of a healthy and varied diet.

### Vocabulary

Carbohydrate, fat, fibre, fresh, fruit, healthy, kilocalorie, kilojoule, mineral, nutrient, nutritional value, protein, salt, saturated fat, seasonal food, soup, sugar, vegetable, Vitamin, Eatwell guide, balanced, carbohydrate, daily menu, dairy, diet, fruit, healthy, oil, organic, protein, vegetable

## Subject Element – Origins of Food

Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

### Vocabulary

Produce, seasonal fruit, seasonal vegetable, Seasonality, animal feed, additive, farm, fertiliser, labour intensive, organic, pesticide, whole food

## Subject Element – Cutting and Joining Textiles

Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.

### Vocabulary

Appliqué, arrange, embellish, fabric crumb, layer, pin, repair, stitch, tack

## Subject Element – Decorating and Embellishing Textiles

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.

### Vocabulary

Appliqué, embellishment, Velcro, button, embroidery, fastening, press stud, ribbon, sew, tie, toggle, zip

## Subject Element – Compare and Contrast

Investigate and analyse a range of existing products.

### Vocabulary

Difference, Similarity, advantage, Compare, comparison, disadvantage, ingredient, nutritional value, taste, texture, use by date, arch bridge, beam bridge, Material, span, support, suspension bridge, truss bridge, Type, evaluate

## Subject Element – Electricity

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.

### Vocabulary

Circuit, circuit component, debug, electricity, micro: bit, programmable device, programming

## Subject Element – Use of I.C.T

Apply their understanding of computing to program, monitor and control their products.

### Vocabulary

LED, coding, debug, environmental variable, light sensor, light-emitting diode, Micro: bit, program, programmable sensor, Programming, sensor

## Subject Element – Significant People

Understand how key events and individuals in design and technology have helped shape the world.

### Vocabulary

Roman builders, ancient Egyptians, prehistoric builders, Isambard Kingdom Brunel, Sir Benjamin Baker, Sir John Fowler, Thomas Telford, engineer

**To comply with the SEND Regulations and Disability Regulations 2014 and the Equality Act 2010 please see our school accessibility plan and the SEND information in the policies and SEND section of this website.**