Knowledge Progression Document for KS1 Design & Technology-

Procedural Knowledge (knowing how):

**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
- use the basic principles of a healthy and varied diet to prepare dishes
- 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.
- make linkages using card for levers and split pins for pivots.

**Evaluate**
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria
- describe the taste, texture and smell of fruit and vegetables
- adapt mechanisms when they do not work as they should.
- use peer feedback to modify a final design.
- experiment with linkages adjusting the widths, lengths and thicknesses of card used.

Declarative Knowledge (knowing that):

**Technical Knowledge**
- To know that there are differences between fruits and vegetables (where they grow, seeds, different parts of the plant)
- To know that 'diet' means the food and drink that a person or animal usually eats.
- To know that a slider mechanism moves an object from side to side.
- To know that different materials have different properties e.g., card, paper/ plastic straws, fabric.
- To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.
- To know that there is always an input and output in a mechanism
- To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.
- To know that Wheels need to be round to rotate and move.
- To know that lever is something that turns on a pivot.
- To know that in Design & Technology we call a plan a 'design'.
- To know that it is important to test designs as you go along so that any problems that may occur can be solved.
- To know that shapes and structures with wide, flat bases or legs are the most stable and why.
- To know that materials can be manipulated to improve strength and stiffness.
- To know that 'Joining technique' means connecting two pieces of material together.
- To that that there are various temporary methods of joining fabric by using staples. glue or pins
- To know that a template (or fabric pattern) is used to cut out the same shape multiple times.
- To know that food comes from a variety of sources

## What skills and knowledge do our EYFS children take into the y1 curriculum?

**Expressive Art and Design is a Specific Area of Learning in the statutory framework for the EYFS (2021)**

**Expressive Arts and Design**
-Explore, use and refine a variety of artistic effects to express ideas and feelings.
-Return to and build on their previous learning, refining ideas and developing their ability to represent them.
-Listen attentively, move to and talk about music, expressing their feelings and responses.
-Create collaboratively, sharing ideas, resources and skills.
-ELG: Creating with materials> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
-ELG: Creating with materials> Share their creations, explaining the process they have used.

## Implementation

Through Kapow Primary's Design & Technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in the six key areas.

● Cooking and nutrition ● Mechanisms/ Mechanical systems ● Structures ● Textiles ● Electrical systems (KS2 only) ● Digital world (KS2 only)

Each of the key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. The Kapow Primary scheme is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning. Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks.

Differentiated guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils' learning are available when required.

# Learning to be a designer at East Tilbury Primary

## Intent

At East Tilbury Primary School, our aim is to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. Through our scheme of work, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements.

## Knowledge Progression Document: Design & Technology (KS2)

### Procedural Knowledge (knowing how):

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

**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
- Use equipment safely, including knives, hot pans and hobs.
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques

**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
- Problem solve by suggesting potential features on a Micro: bit

**Technical knowledge**
- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- 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

### Declarative Knowledge (knowing that):

**Technical Knowledge**
- To know that humans need a healthy and varied diet
- To know that not all fruits and vegetables can be grown in the UK
- To know that they can adapt a recipe to make it healthier by substituting ingredients
- To know safety rules for using, storing and cleaning a knife safely.
- To know that air resistance is the level of drag on an object as it is forced through the air.
- To know that mechanisms can be used to change one kind of motion into another
- To know that electrical conductors are materials which electricity can pass through.
- To know that series circuits only have one direction for the electricity to flow and why all components turn off when there is a break in the circuit.
- To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.
- To know that, in programming, a 'loop' is code that repeats something again and again until stopped.
- To know that sensors can be useful in products as they mean the product can function without human input.
- To know that a Micro:bit is a pocket-sized, codable computer.
- To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.
- To know that structures can be strengthened by manipulating materials and shapes and why.
- To know that using a template helps to accurately mark out a design on fabric.
- To know the importance of consistently sized stitches.
- To know that key events and individuals in design and technology have helped shape the world.

## Vocabulary Progression Document: Design & Technology

**Foundation Stage (EYFS):**
Join, Stick, Cut, Bend, Slot, Scissors, Measure, Materials, Fix, Thread, Weave, Pattern, Sew, Sewing needle, Embroider, Design, Evaluate

**Key Stage 1 (KS1):**
Mechanisms: Axle, Axle holder, Chassis, Design, Evaluation, Fix, Mechanic, Mechanism, Model, Test, Wheel, Evaluation, Input, Lever, Linear motion, Linkage, Motion, Oscillating, Output, Pivot, Reciprocating, Rotary, Survey, Ferris wheel, Stable, Strong, Test, Waterproof, Weak
Food: Blender, Carton, Fruit, Healthy, Ingredients, Peel, Peeler, Recipe, Slice, Smoothie, Stencil, Template, Vegetable
Textiles: Decorate, Design, Fabric, Glue, Model, Hand puppet, Safety pin, Staple, Stencil, Template
Structure: Function, Man-made, Natural, Stable, Stiff, Strong, Structure, Test, Weak

**Key Stage 2 (KS2):**
Food: Climate, Dry climate, Exported, Imported, Mediterranean climate, Nationality, Nutrients, Polar climate, Seasonal food, Seasons, Temperate climate, Tropical climate, Beef, Cross-contamination, Diet, Ethical issues, Farm, Method, Packaging, Reared, Research, Substitute, Supermarket, Vegan, Vegetarian, Welfare
Structure: 2D shapes, 3D shapes, Castle, Design criteria, Evaluate, Façade, Feature, Flag, Net, Recyclable, Scoring, Tab, Aesthetic, Cladding, Design criteria, Evaluation, Frame structure, Function, Inspiration, Pavilion, Reinforce, Target audience, Texture, Theme, Adapt, Apparatus, Bench hook, Cladding, Coping saw, Dowel, Feedback, Jelutong, Landscape, Mark out, Measure, Modify, Natural materials, Plan view, Prototype, Reinforce, Sketch, Tenon saw, User, Vice.
Electrical systems: Battery, Bulb, Buzzer, Cell, Component, Conductor, Copper, Design criteria, Electrical item, Electricity, Function, Insulator, Series circuit, Switch, Test, Torch, Wire, Configuration, Current, DIY, Investigate, Motor, Motorised, Problem solve, Product analysis, Stable, Target user.
Mechanical systems: Aesthetic, Air resistance, Function, Graphics, Kinetic energy, Mechanism, Net, Structure, Aesthetic, Computer-aided design (CAD), Caption, Exploded-diagram, Pivot, Prototype, Slider
Textiles: Accurate, Adapt, Annotate, Detail, Fastening, Knot, Properties, Running-stitch, Seam, Sew, Shape, Thread, Waistcoat, Waterproof
Digital world: 3D CAD, Application (apps), Biodegradable, Boolean, Cardinal compass, Client, Compass, Concept, Convince, Corrode, Duplicate, Environmentally friendly, Equipment, Feature, Finite, Function, Functional, GPS tracker, If statement, Infinite, Navigation, Non-recyclable, Product lifecycle, Product lifespan, Program, Recyclable, Smart, Sustainable, Unsustainable, Variable, Analogue, Digital, Digital revolution, Electronic, Fasten, Function, Initiate, Key features, Micro: bit, Simulator, Smart wearables.

This vocabulary progression document outlines the key terms for primary schools following the national curriculum and the Kapow scheme of work. It provides a guideline for developing students' vocabulary and understanding of artistic terms as they progress through their primary education.



## Resources to use:

Kapow
Resources in DT cupboard