

## Design and Technology at Princess Frederica

### Overview

Design and Technology at Princess Frederica includes the use of a broad range of knowledge, skills, and understanding, and prompts engagement in a wide variety of activities. Pupils design and make products that solve real and relevant problems within a variety of contexts. We aim to nurture creativity and innovation through design and by exploring the designed and made world in which we all live and work. Through evaluation of past and present Design and Technology, the children develop a critical understanding of its impact on daily life and the wider world.

DT is taught through discrete, meaningful lessons in which, children are taught through the three phases of designing, making and evaluating their own products. Each year group focuses on 3 topics throughout the year and each topic will focus on a separate set of skills. As children progress through the school, they are presented with opportunities to develop these skills, as similar topics are revisited and built upon. In each year group there is a detailed outline of the projects covered as they relate to the Design and Technology National Curriculum. In each year, pupils study three units of DT, usually one per term.

### Vision

- Investigate and evaluate existing products.
- Evaluate and analyse creative works using artistic terms.
- Know about great artists, craft makers and designers from different times and cultures.

### Intent

By the end of Year 1, children will be able to,

- Understand what an axle and chassis are (Mechanisms)
- **To assemble a vehicle with moving wheels** (Mechanisms)
- To understand how simple mechanisms related to moving vehicles work (Mechanisms)
- **To assembled a free standing frame following their design** (Structures)
- Design and made a complete personalised free-standing photograph frame. (Structures)
- Understand what a balanced diet is (Food)
- Design and make a sandwich using healthy ingredients (Food)
- Understand the 'balanced plate' model for healthy eating and apply this to ideas about how the sandwich contributes to a healthy diet (Food)

By the end of Year 2, children will be able to,

- **Use simple sewing techniques to make a purse and decorate it?** (Textiles- sewing)
- Can I design and make a purse using a simple sewing technique that meets their design criteria? (Textiles- sewing)
- Explore different ways of securing a treasure chest? (Mechanisms)
- Make a secure clasp using different materials? (Mechanisms)
- Understand that different fruits come from different parts of the world (Food)
- **Design a British/tropical fruit salad** (Food)
- Prepare fruit using a range of techniques (Food)

By the end of Year 3, children will be able to,

- To follow a design to make a moving monster using pneumatic system (Mechanisms)

- To design and make a model monster with at least one moving part controlled by a pneumatic system (Mechanisms)
- To design and construct a bridge to hold a maximum weight of 2kg (Structures)
- Investigate different structures to withstand this weight (Structures)
- Design and build a bridge by reinforcing and strengthening materials to hold 2kg (Structures)
- To prepare a scone based pizza base and use seasonal vegetables and herbs to make a healthy pizza (Food)
- Explore ingredients according to taste, appearance or texture and seasonality to create a pizza (Food)

By the end of Year 4, children will be able to,

- To design and make a musical instrument using paper mache (Structures)
- Recognise that sounds can be created in many different ways (Structures)
- Explore how they plan to make their instrument by measuring, marking out, cutting and assembling their instrument with accuracy (Structures)
- Explore and make a range of different breads (Food)
- Understand the science of baking with yeast (Food)
- Use bread making techniques (knead, rise, prove) (Food)
- Understand issues related to food safety and hygiene (Food)
- To design and make a working torch using a simple electric circuit (Electrical)
- To be operated by a switch (Electrical)
- To evaluate it against design criteria (Electrical)

By the end of Year 5, children will be able to,

- Design and prepare a soup using healthy, seasonal vegetables.
- Adapt a basic recipe to develop a product with specified criteria using vegetables and herbs grown in our embankment.
- Design and assemble a moving toy using a cam mechanism system (Mechanisms)
- Produce sketches and step-by-step plans by measuring, marking out and cutting accurately (Mechanisms)
- Investigate several shelters (Structures)
- To design and make a model shelter (Structures)
- Reinforce and strengthen frameworks using triangulation (Structures)
- Carry out a fair test (Structures)

By the end of Year 6, children will be able to,

- Design and make a pair of slippers using sewing skills (Sewing)
- Evaluate critically both the appearance and function of the slipper (Sewing)
- Investigate slippers to inform their own designing and making (Sewing)
- Explore the history of pasta (Food)
- Design ingredients for filling (Food)
- Make and cook filled pasta (Food)
- Evaluate flavours used (Food)
- design and make a fairground ride that rotates using a motor (Electrical)
- evaluate and modify their ride (Electrical)
- Understand the rotation produced by the motor to drive a moving part on a model they have made, employing belts and pulleys (Electrical)

### **Implementation**

- A design and technology lesson is completed once per term with between 5 to 7 weeks spent on a specific focus.
- In maths, children develop skills around careful use of measuring equipment such as rulers and scales which are skills that are used in design and technology.
- Clubs such as woodwork club aim to develop children's design and technology skills in greater depth.

### **Impact**

- Children can apply skills learnt in other subject areas to the work they are doing in design and technology. (E.g. Children learn about electrical circuits and can then apply this knowledge when making a torch).
- Children develop skills that they can apply to solve a selection of different challenges.
- Children understand the importance of working safely with a range of different tools and resources.

### **Supporting all learners**

Children are supported through differentiation where this is needed. SEND Pupils are supported by additional scaffolding in the lesson. This might be through personalised templates for written work, word mats, visuals, overlays or personalised visuals such as focus slides. More able children are encouraged to apply their knowledge with less confident children so they are using and applying. There is also an expectation that SEND children will succeed against targets outlined in bold on the end of year expectations for what a child has achieved. These act as an overriding focus through the unit for SEND children (This is a minimum expectation and any SEND children who show confidence and success in a particular area will be challenged with our areas).

### **Assessment**

Children broadly move through the curriculum at the same pace. In lessons, there is an expectation that the teacher focuses on the bottom 20% of the class ensuring they are supported with in the moment and over the shoulder feedback to support them with succeeding. At the end of the unit, progress is measured against the assessment question and against the unit targets which link to the expectations for what children will be able to do by the end of the year. Any children who have not succeeded in achieving the unit targets, this is indicated by the teacher on their assessment overviews.