Our DT Curriculum gives children the opportunity to develop skills, knowledge and understanding through designing and making functional products for a range of different users. They learn about key inventions and designers. Children are encouraged to think creatively and produce innovative designs as they explore the designed and made world in which they live.

Inspiring and enabling our school community to live life to the full

YEAR FIVE

Subject: DT
Unit: Mechanisms - Cam Toys

Characteristics of an Effective Learner

Courage
Commitment
Collaboration
Creativity
Curiosity

Prior Learning:

- Year 1 – Learning about lever, slider and wheel mechanisms
- Year 1 - Building mock-up structures and shapes for their playground.
- Year 2 – Making and evaluating mock-ups for their go-carts
- Year 2 – Measuring and cutting wood with a hacksaw (1:1 supervision)
- Year 2 – Joining wood using jinks corners
- Year 2 – Knowing how wheels and axels work
- Year 3 – Using a glue gun
- Year 4 – Understanding the importance of customer appeal when making "Steady Hand game"
- Year 4 – Sawing and sanding wood to achieve a smooth finish

Key Vocabulary taught in this unit:
Cam, off-set hole, slider, follower, mechanism, gears, drill, drill bit,

Intent: What do we want the children to know, be able to do by the time they complete this unit?

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- Children choose their target market and design a moving toy encased in a box which uses a cam mechanism to make a decorate move.

Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design- Children draw annotated diagrams for several moving toy ideas including 3D diagrams and sketches from different viewpoints; they create a simple prototype from card

Make

Select from and use a wider range of tools and equipment to perform practical tasks for example, cutting, shaping, joining and finishing], accurately- children measure and cut wood neatly to 1mm accuracy; sand wood to shape it for a purpose; use a hand drill to drill holes in wood; join materials with glue gun (use a glue gun under supervision); use cams to make an up/down mechanism; describe the motions produced by various shaped cams; use linkages and cams together to make a more complex movement

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- Children use a sturdy wooden box for the main frame; dowel, bottle tops, cardboard and wooden cams, cotton reels to make their mechanism; card, textiles, printing blocks and paint to decorate

Evaluate

Investigate and analyse a range of existing products- Children study a selection of moving toys including those that use levers and gears

Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work- Children develop own criteria for evaluation; critically evaluate appearance and function, including advice for the next class of Y5's; use feedback from peers and or target market in evaluation

Understand how key events and individuals in design and technology have helped shape the world- Key designers/design events: learn about how gears were invented in China in 300BC

Technical knowledge

Apply their understanding of how to strengthen, stiffen and reinforce more complex structures- children use knowledge gained in previous year groups to strengthen and stiffen their product necessary

Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]- Using knowledge of mechanisms from Science Forces unit, children make a moving cam mechanism which turns rotary motion into linear motion

Impact / Outcome:

What will the final product / result be?

Design brief: Design and make a moving toy for a child (either KS1 or KS2)

Children will have made a moving toy with 1 or more moving parts using a cam, or series of cam, mechanisms. The product works smoothly and appeals to the target market.

P4C Inquiry (where appropriate) – n/a