Year 3 Sheet Materials (mechanisms) Levers, Pivots and Pop Ups

HOLLY PARK PRIMARY SCHOOL

Prior Learing

Year 1 Pop up cards
- Fold, tear and cut paper and card
- Cut along lines, straight and curved
- Use hole punch
- Insert paper fasteners for card linkages
- Create hinges
- Use simple pop ups - **V Fold Pop up, Mouth Mechanism Internal Stands**
- Investigate joining's temporary, fixed and moving

Key Knowledge

LEVERS — LEVER

LINKAGE   FIXED PIVOT   LOOSE PIVOT

V FOLD   MOUTH   INTERNAL STANDS

Key Vocabulary

Mechanisms - Are the parts that make something work. Mechanisms are all around us! Most objects that help in our lives are made up of different mechanisms.

Lever - The use a fulcrum (a fixed point around which the lever can pivot) to make things move in arc (curve).

Linkage – The part of the mechanism used to join one or more levers to produce the type of movement required

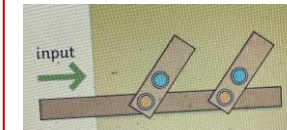**Pivot** - To turn on a central point.

Rotary Motion - Turning round in a circle, e.g. a wheel.

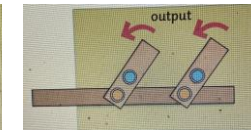**Linear motion -** Moving in a straight line, e.g. paper trimmer.

Oscillating motion - Swinging from side to side in an arc, e.g. a pendulum in a clock.
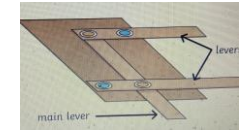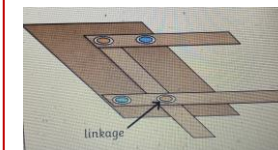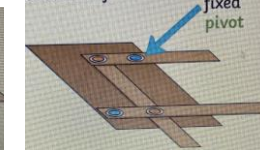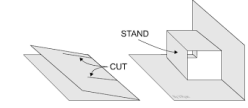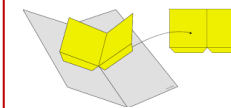
Key Skills

- Cut slots
- Cut internal shapes
- Use lolly-sticks/card to make levers and linkages
- Use linkages to make movement larger or more varied.
- Use and explore complex pop-ups

Learning Objectives

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
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Health & Safety

All children need to be supervised closely when using scissors.

End Points and Assessment Of Core Learning

Designing:
<u>Understanding contexts, users and purposes</u> - gather information about user needs; develop their own design criteria; describe the user, purpose and design features of their products and explain how they will work.
<u>Generating, developing, modelling and communicating ideas</u> - generate realistic ideas based on user needs; use a range of drawing skills, discussion, prototypes and pattern pieces.
Making:
<u>Planning</u> - order the main stages of making; select suitable tools, equipment, materials and components and explain their choices.
<u>Practical skills and techniques</u> - follow procedures for safety and hygiene; use a wider range of materials and components; measure, mark out, cut, shape, assemble, join, combine and finish with some accuracy.
Evaluating:
<u>Own ideas and products</u> evaluate their ideas and products against their design criteria.
<u>Existing products</u> - investigate how well products have been designed and made, whether they are fit for purpose and meet user needs; why materials have been chosen, the methods of construction used and how well they work.
<u>Key events and individuals</u> - know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.
Technical Knowledge:
<u>Making products work</u> - know that materials have functional and aesthetic qualities; how to make strong, stiff shell structures; use the correct technical vocabulary.