

Topic: Mechanisms	Year group	Term
Levers and Linkages	Year 3	Summer 1 6 sessions

Background knowledge

A **linkage** or linked **lever** system is a number of **levers** that are joined together. They are connected by means of a pivot, which can be either a fixed or a moving pivot. Image source. A **linkage** is designed to change the direction of force and movement. It builds on the basic knowledge the children developed in year 1 with their sliders etc.

What should I already know?

You can make things move by connecting pieces together eg. Levers and sliders (Y1)
How to work safely and accurately with scissors, how to use split pins.

National Curriculum Objectives / Key Skills	The Journey
Design - Use research and design criteria to inform the design of functional, appealing products that are fit for purpose, aimed at particular groups or individuals. - Generate, develop, model and communicate their ideas through discussion, annotated sketches. Make - Select from and use a wider range of tools and equipment to perform practical tasks. - Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities Evaluate - Investigate a range of existing products - Evaluate their ideas and products against their own design criteria Technical knowledge - Understand and use mechanical systems in their products, (for example levers and linkages) - I can investigate and evaluate existing products to help inspire my design. - I can design an appealing, functional product for a set audience. - I can draw an annotated sketch diagram for my design and make/ write a simple plan. - I can make a product that uses a mechanism to make it move (eg. levers, linkages) - I can explore methods of joining materials in mechanisms and make informed choices about which to pick to make my mechanism successful. - I can prove that my design meets the criteria, explaining to others	- WALT: Understand how levers and linkages work. Draw on knowledge of basic levers from year 1. Children could have a go at making a simple linkage system. - WALT: investigate linkages in existing products. Explore products that use linkage systems, in particular toys. - WALT: Design a moving product- Design a moving toy for a child, set design criteria to the class. Draw an annotated sketch of their product. Discuss the materials used and how they will put it together. - WALT: Create a prototype of my product. Use the mock up to write a simple plan, and adjust design. - WALT: Make the moving product - WALT: Evaluate my product Model going through the criteria to show where it does meet, and where it doesn't-using this to suggest future improvements.

Outcomes

An overview of what children will know / can do

Working towards: I can make a simple linkage system with support

Expected: I can make a moving toy product, thinking about the audience.

Exceeding: I can make an appealing moving toy that is finished well.

Key Vocabulary

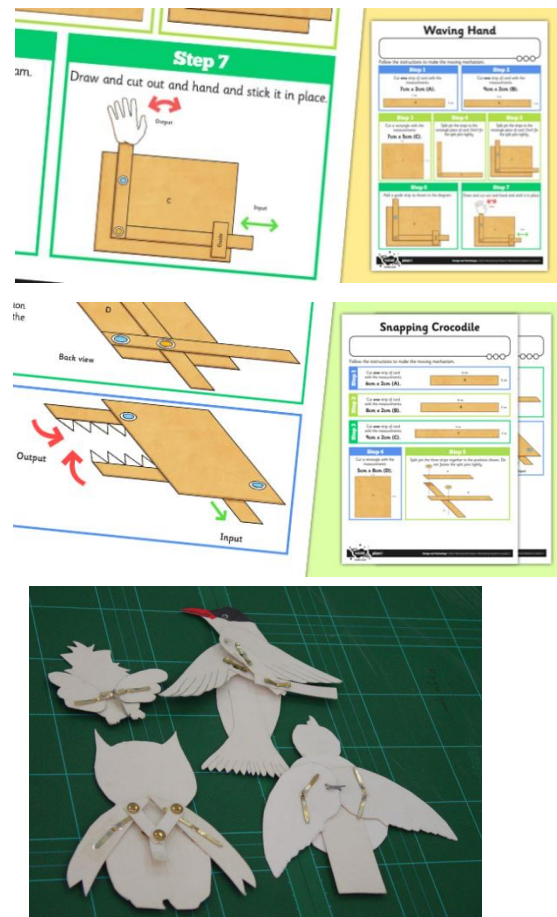
Linkage- a series of connected levers to work together to make something move or change direction.

Audience- The group of people the product is intended for.

Prototype- a simple mock up version of the finished product to check the mechanism will work and the product will be successful.

Material- What you choose to make your levers and sliders out of.

Timeline / Diagrams



Key people / places

Assessment questions / outcomes

Can you tell me what a linkage system is?

How are linkages used in existing products/name some products that use a linkage system.

How will you join the levers in your linkage system? Why?

Can you tell me what is wrong with this mechanism?

Who is your audience? What do you think the main factors will need to be to make your product successful for this group of people?

Why do people make prototypes of new products?

Were you happy with your moving toy?

What would you change?

How did it match the design criteria?