



**TOPIC:**

Mechanical Systems – Pop Up Book



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**YEAR GROUP:**

Y6

**TERM:**

Autumn

**What I already know...**

Continuing to build on the KS2 Design Technology curriculum:

**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**

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

**What I will know after this unit...**

- I will understand that an input is the motion used to start a mechanism and an output is the motion that happens as a result of starting the input
- I will understand that structures use the movement of the pages to work and that the mechanisms control movement
- I will be able to design a book with a mixture of structures and mechanisms
- I will be able to use paper, card and glue to make my structure as detailed in my design (sliders, pivots and folds to produce movement)
- I will be able to use spacers to hide relevant parts of my mechanisms
- I will be able to complete the surface decoration of my pop-up book by adding the story with pictures and captions
- I will consider the preferences and needs of the user
- I will be able to produce a book which is neat, accurate and securely assembled

## Key Vocabulary

aesthetic, computer-aided-design (CAD), caption, design, design brief, design criteria, exploded-diagram, function, input, linkage, mechanism, motion, output, pivot, prototype, slider, structure, template

### Mechanical Systems - Pop-up book

Aesthetic	How an object or product looks.
CAD	Computer-aided-design. To use the computer to design a product, diagram or drawing.
Caption	A short piece of writing under a picture that describes or explains the picture.
Design	To make, draw or write plans for something.
Design brief	A description of what you are going to design and make and how it will work.
Design criteria	To help designers focus their ideas and test the success of them.
Exploded-diagram	A diagram which shows all of the parts of a product, including the internal and external parts.
Function	How an object or product operates or works.
Input	Input is the motion used to start a mechanism.
Linkage	A set of bars linked together to form a mechanism.
Mechanism	A system of parts working together.
Motion	The movement an object makes when controlled by an input or output (e.g. left, right, up, down).
Output	Output is the motion that happens as a result of starting the input.
Pivots	A shaft or pin on which something turns.
Prototype	A simple model that lets you test out your idea, showing how it will look and work.
Sliders	A part of a mechanism which allows an object to move from side-to-side (e.g. left-to-right).
Structure	Something which stands, usually on its own.
Template	A stencil made of metal, plastic, or paper, used for making many copies of a shape or to help cut material accurately (e.g. biscuit cutter).

### Key fact

Kapow  
Primary

**Input** is the **motion** used to start a **mechanism**. **Output** is the **motion** that happens as a result of the **input**.



Think of a see-saw, when you sit on your side of the see-saw (**input**) your friend goes up on the other side. (**output**)

### Did you know?



Did you know that the first children's pop-up books were invented in the 1700s? That's over 300 years ago! Lothar Meggendorfer was a well-known pop-up author in the 1800s.