



The Project Title

Design, make and evaluate a moving toy for younger children for entertainment

What should I already know?

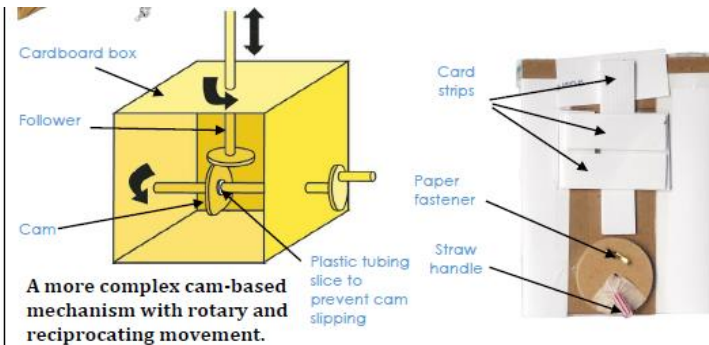
- Experience of axles, axle holders and wheels that are fixed or free moving.
- Basic understanding of different types of movement.
- Experience of cutting and joining techniques with a range of materials including card, plastic and wood.
- An understanding of how to strengthen and stiffen structures

Powerful Knowledge

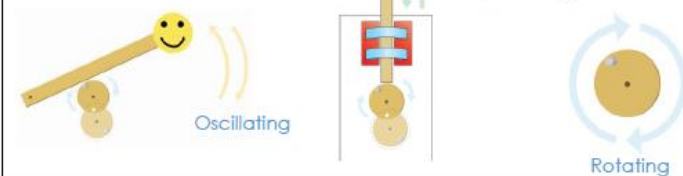
- Generate ideas by carrying out research using surveys, interviews and web based resources
- Create designs using annotated exploded drawings and drawings from different views
- Formulate step by step plans
- Compare the final product with the design criteria
- Test the product with the intended user
- Understand that mechanical systems have an input, process and an output
- Understand how cams can be used to produce different types of movement and change the direction of movement

Useful Diagrams

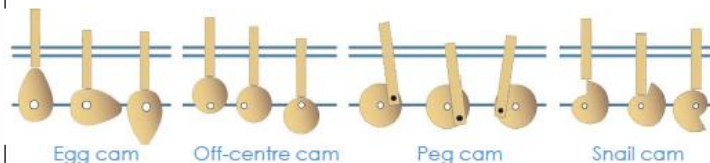
An example of a toy using cams:



Types of movement



Types of cams



Vocabulary

cam

A mechanism that changes one sort of movement to another. Cams can be an off-centre wheel or a specially shaped wheel.

lever

A piece of rigid material that moves to and fro around a pivot point creating oscillating motion.

slider

A piece of rigid material that moves backwards and forwards in a straight line creating reciprocating motion.

guide

A piece of material used to guide the movement of another.

spacer

A piece of material used to create extra space to allow moving parts to move freely.