

Design and Technology Knowledge Organiser



Topic : How can we use CAMs to create movement for an

Year UKS2

Strand: Mechanical Product

Southwold Primary School

What should I already know?

- That mechanisms are a system of parts that work together to create motion.
- That a pneumatic system can be used as part of a mechanism.
- Pneumatic systems are used in a range of everyday objects.

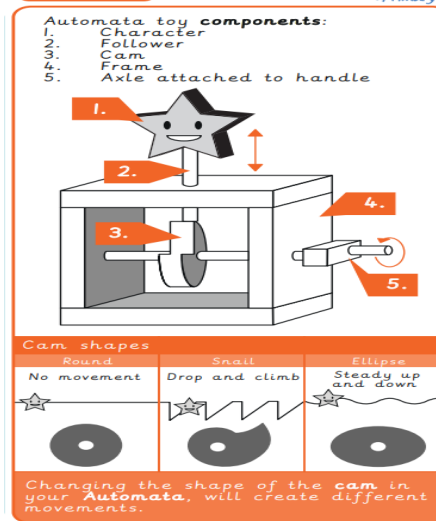
What will I know by the end of this unit?

- That the mechanism in an automata uses a system of cams, axles and followers.
- That different shaped cams produce different outputs.
- That an automata is a hand-powered mechanical toy.

Design Technology: Skills and Enquiry

- Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement.
- Understanding how linkages change the direction of a force.
- Making things move at the same time.
- Understanding and drawing cross-sectional diagrams to show the inner-workings of my design.
- Measuring, marking and checking the accuracy of the jelutong and dowel pieces required.
- Measuring, marking and cutting components accurately using a ruler and scissors.
- Assembling components accurately to make a stable frame.
- Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles.

Design



What will I be able to do by the end of this unit?

- Mark, saw and cut out the components and supports of their toy with a varying degree of accuracy to the intended measurements.
- Follow health and safety rules, taking care with the equipment.
- Attempt a partial assembly of their toys using an exploded-diagram, following a teacher's demonstration.
- Develop a design idea with some descriptive notes.
- Explore different cam profiles and choose three for their follower toppers with an explanation of their choices.
- Create neat, decorated follower toppers with some accuracy.
- Measure and cut panels that fit with some inaccuracies

Vocabulary

automata	Mechanical toys/kinetic art. Hand-powered mechanisms to create movement in a scene of characters.
axle	Axle rotates, turning cam with it. It is attached to the handle.
clamp	Tool hooked to the table for holding wood still when sawing.
cam	Rotating or sliding piece in mechanism. Changes rotary movement to linear motion.
cutting list	An outline drawn true to size on paper, which shows the size and how many pieces you will need for the project.
drill bit	Cutting tools that go in the drill to make different sized holes.
finish	To complete your project with a high quality appearance.
frame	Rectangular structure, holding the automata together.
follower	The post which traces the shape of the cam, rising and falling in a linear or reciprocating motion.
jelutong	Type of softwood, lightweight, easy to cut and shape.
linkage	A set of bars linked together to form a mechanism.
tenon saw	Saw with a flat blade, used for cutting wood in straight lines or angles.

Health and Safety

How to Use a Saw

- Fix the wood in a vice or clamp.
- Hold the saw with one hand.
- Place the other hand on the table, away from the saw.
- Start by pulling the saw back, before gently sawing.
- Try to keep the saw straight.

