Mechanisms and Materials

Moving Fire Engines

Previous Knowledge

- Modelling with a range of materials in Early Years.
- Understand that toys can replicate real objects.
- Materials have different properties.

Learning point 1: Design research

I can identify the design features of a moving toy.

- Look at fire engines from 1666 and today and identify some key features of both.
- Discuss how they move and other features that will move or function on them.
- What shapes can we see and what objects could we use to make a toy fire engine?
- Record some of this information in a sketchbook.
- Present the design brief in sketchbooks:

Make a moving fire engine toy which can be played with by a 5-7 year old.

Learning point 2: Axles and wheels

I can explain how wheels and axles can allow a toy to move.

- Look at a variety of different toy vehicles and discuss the moving parts.
- Identify the wheels and axles on all of the toys and discuss how they are held in place.
- Sketch the mechanism and consider how to join them to your design.

Sketch an initial design, highlighting the wheels and axles and where they will be attached to enable movement.

Learning point 3: Joining card and paper

I can join paper and card using glue, split pins and tape.

- Discuss which fastenings would be best for joining paper to paper/card.
- Use a template to create a simple cuboid model and join the edges.
- Start to design the decoration of the toy in sketchbooks.

Create a simple cuboid fire engine which is joined using glue, tape and includes a split pin fastening.

Learning point 4: Designing the vehicle

I can create an appropriate design for a moving fire engine toy.

- Review the research from the first week.
- Decide which fire engine would be more appealing for children to play with.
- Create a final design in your sketchbooks and label the design with colours, materials and features.
- Start to decorate the cuboid design from the previous session.

Decorate the fire engines to look either contemporary or historic.

Final Piece: A moving fire engine toy.

I can create a toy fire engine which moves.

- Review the designs from the previous week.
- Continue to paint and decorate the final design to make it look like a fire engine.
- Add a moving feature using a split pin (ladder or hose, for example).
- Critique the design against the design brief, evaluating its effectiveness and style.

Critique your work. Does your design meet the brief? What do you like about it? What would you change? How?

Vocabulary

Design: a drawing to show something before it's made.
Mechanism: parts which work together.
Construction: the action of building something, usually a structure.
Evaluate: assess or sum up a project based on its successes and improvements.