

Design Technology: Mastering Mechanisms with Max the Monkey

Learning objective: To design and evaluate a functional mechanism using levers, linkages, or cams to create movement.

Use this writing frame to plan your mechanical project. Think like an engineer as you describe how your design will function. Ensure your explanations are precise and use technical vocabulary.

Max the Monkey has challenged us to create a mechanical toy that uses a specific motion to surprise the user.

Word bank: pivot · fulcrum · rotation · resistance · linkage · cam follower · oscillate · subsequently · consequently · furthermore · in order to

1. The Design Brief: What is the primary purpose of your mechanical invention and who is the intended audience? Start by saying: The purpose of my design is to... (2 marks)

2. Mechanism Selection: Which type of mechanism (lever, linkage, or cam) have you chosen and why is it the most effective for this task? Explain why... (3 marks)

3. Technical Specifications: Describe the materials you will use and how you will ensure the mechanism operates smoothly. Start by saying: To ensure the mechanism functions efficiently, I will... (3 marks)

4. Functionality Analysis: How does the input movement (the action you perform) result in the output movement? Justify your answer by describing the transfer of energy. (4 marks)

5. Refinement: If the mechanism were to become jammed or stiff during operation, what adjustments would you make to the design? What might happen if... (3 marks)

6. Evaluation: Compare and contrast your final design with your initial sketches. Did you have to modify your plan? Explain the impact of these changes. (4 marks)

Extension challenge: Design a 'Greater Depth' extension: Imagine your mechanism is scaled up to be a large-scale playground feature. Write a paragraph explaining the safety considerations you would need to implement, focusing on the forces acting upon your joints and pivots.