

Max's Engineering Lab: The Prototyping Blueprint

Learning objective: To understand the process of iterative design by creating a prototype and evaluating its functionality against a specific design brief.

Max the monkey is preparing to design a new invention, but he knows that even the best ideas need a trial run! A prototype is a first or preliminary model of something from which other forms are developed. Use this template to document your design process. First, sketch your idea, then explain how it works. Finally, use the 'Review' section to justify your design choices and explain how you would refine your prototype if you had a larger budget or better materials.

Word bank: prototype · iterative · functionality · materials · refinement · durability · user-friendly · specification · aesthetic · ergonomic

1. Design Brief: State the problem your invention solves and who the primary user will be. Why is this invention necessary? (3 marks)

2. Materials Selection: List the materials you have chosen for your prototype. Justify your choices based on their properties (e.g., strength, weight, or cost). (4 marks)

3. The Testing Phase: Describe the steps you took to test your prototype. What specific function were you checking for success? (3 marks)

4. Evaluation: Compare your prototype to your original plan. Did it function as expected? If not, identify the exact point of failure. (4 marks)

5. Refinement Strategy: Explain why you would change your design if you were to build 'Prototype 2.0'. How would these changes improve the final product? (5 marks)

6. Critical Thinking: If your prototype was to be sold in a shop, what might happen if the cost of materials increased by £5.00 per unit? How would you adapt your design to keep it affordable? (6 marks)

Extension challenge: Design an advert for your finished product. Focus on the 'unique selling point' of your invention. How would you convince a customer that it is worth buying? Write a persuasive paragraph using at least three words from the word bank.