

Design Technology Assessment: The Art of Prototyping

Learning objective: To evaluate understanding of the prototyping process, iterative design, and the importance of user feedback in product development.

Read each question carefully. Use your knowledge of the design process to provide detailed, thoughtful answers. You have 40 minutes to complete this assessment.

Max the monkey is designing a new adjustable desk tidy for his friends. He has created a 'mock-up' using cardboard, tape, and old cereal boxes. He asked Pip the caterpillar to test it by placing pens, rulers, and glue sticks inside. Pip noticed that the cardboard was too weak to hold a heavy protractor and that the compartments were too small for Max's favourite fountain pens. Max is now planning to change his design before he builds the final version using wood.

Word bank: Prototype · Iterative · Evaluation · Feedback · Functionality · Aesthetics · Modification · Materials

1. Define the term 'prototype' in your own words. Why is it important for a designer to create one before making a final product? (2 marks)

2. Identify one piece of feedback Pip gave to Max. Explain how this feedback helps Max improve his design. (2 marks)

3. Max used cardboard for his prototype. Why might a designer choose cheap or recycled materials for a prototype instead of the final materials like wood or metal? (2 marks)

4. Explain why the design process is described as 'iterative'. What might happen if a designer ignored the testing phase? (3 marks)

5. Compare and contrast 'functionality' and 'aesthetics'. Why must a successful product balance both? (3 marks)

6. Justify your answer: If Max's prototype works perfectly for his friends, does he still need to build a version out of wood? Give two reasons for your decision. (3 marks)

7. Extended Writing: Imagine you are designing a new school lunchbox. Describe your step-by-step prototyping process. How will you test the lunchbox, and how will you use the feedback you receive to make your final product as effective as possible? Consider durability, materials, and the needs of the user. (5 marks)

Draw: In the space provided, draw a simple labelled sketch of a prototype for a 'pencil-catching' device that prevents pens from rolling off a desk. Include labels for the materials you would use to build your model.



Extension challenge: Total: /25. Challenge: Write a paragraph explaining what might happen if a designer creates a prototype but fails to observe how the user interacts with it in a real-world environment. How could this lead to 'design failure'?