

Year 5 Design Technology Assessment: The Power of Prototyping

Learning objective: To evaluate the purpose of prototyping in the design process, identify materials for iterative modelling, and justify design improvements based on user testing.

Read each question carefully. Use your knowledge of the design-make-evaluate cycle. Ensure your explanations are clear and use subject-specific terminology.

Max the monkey is designing a new mechanism for a fruit-harvesting tool, while Kit the fox is creating a prototype for a collapsible birdhouse. Both have created 'low-fidelity' models using card, masking tape, and string to test their ideas before committing to expensive wood or metal.

Word bank: Iterative · Model · Functionality · Aesthetics · Feedback · Modification · Durability · Prototype

1. Define the term 'prototype' and explain one reason why Max would choose to build a model out of card before using wood. (2 marks)

2. What is the primary purpose of 'iterative design' during the prototyping phase? (2 marks)

3. Kit shows his birdhouse prototype to Nova the owl. Nova suggests that the entrance is too small for a blue tit. How should Kit respond to this feedback, and why is this step vital? (3 marks)

4. Compare and contrast 'aesthetics' and 'functionality' when prototyping a new invention. Give an example for each. (4 marks)

5. If you were building a prototype for a lunchbox, why might you test it using water rather than actual food? Justify your answer. (3 marks)

6. Explain why prototyping is considered a 'risk-reduction' strategy for designers. Use an example involving budget or material waste. (3 marks)

7. Write a short paragraph evaluating the importance of user testing. Imagine your prototype is a new chair. What questions would you ask a user to ensure your prototype is successful? (5 marks)

Draw: Sketch a simple prototype for a device that helps Pip the caterpillar reach books on a high shelf. Label two parts of your drawing with the materials you would use and why.



Extension challenge: Total: /25. Challenge: Imagine your prototype failed during testing. Describe the 'modification' process you would follow. How would you decide whether to 'tweak' your design or 'start from scratch'? Justify your choice.