

Design Technology: The Art of Prototyping

Learning objective: To understand the purpose of prototyping in the design process and how to use iterative testing to refine a product.

Use these flashcards to test your knowledge of how Max the monkey and Kit the fox develop their inventions. Read the front, think of your answer, then flip to check if you are correct.

What is a prototype?

A prototype is an early, experimental model of a product built to test a concept or a specific feature before the final version is created.

Why is it important to create a prototype before the final product?

It allows designers to identify flaws, test if the product works as intended, and save time and money by fixing mistakes early.

What does 'iterative design' mean?

Iterative design is the process of repeating steps—designing, building, testing, and refining—to gradually improve a product.

Define 'user testing' in the context of prototyping.

User testing involves giving your prototype to someone else to see how they use it and gathering their feedback on what works and what could be improved.

What is the difference between a functional prototype and an aesthetic prototype?

A functional prototype tests how the product works, while an aesthetic prototype focuses on the look, shape, and feel of the product.

Why might Kit the fox choose low-cost materials like cardboard or tape for a first prototype?

Using inexpensive materials allows for quick construction and makes it easier to discard or change the model without worry if it doesn't work perfectly.

Explain the role of 'feedback' in the prototyping process.

Feedback provides an outside perspective on the product, helping the designer see issues they might have missed themselves.

What is a 'design brief'?

A design brief is a written document that outlines the goals, constraints, and requirements of a project before the prototyping begins.

If a prototype fails during testing, is it a mistake? Justify your answer.

No, it is a learning opportunity. Failure in prototyping provides valuable data on what does not work, which guides the next, better version.

What might happen if a designer skips the prototyping stage?

They risk producing a final product that is faulty, difficult to use, or does not meet the needs of the user, leading to wasted resources.

Compare and contrast 'modifications' and 'refinements'.

Modifications are often bigger changes to the structure or function, whereas refinements are smaller, detailed improvements to polish the design.

If Max the monkey builds a prototype bridge that collapses, what steps should he take next?

Max should analyse why it collapsed, identify the weak point, sketch a modification, and build a new, improved prototype to test his theory.