

Design Thinking and DFSS Application in Paper Helicopter Design

Paper
Helicopter
Design



Empathize

Define

Ideate

Prototype

Test

1. Empathize (10 minutes)
• Task: Discuss the customer complaints as a group.
• Prompt: "Why is spinning important? How does sensitivity to the angle impact user experience?"
• Activity: Observe the provided helicopter design by testing it. Drop the helicopter from various heights and angles, noting inconsistencies in spinning and stability.

2. Define (10 minutes)
• Task: Frame the problem based on observations.
• Prompt: "How might we design a helicopter that spins consistently and performs well regardless of the angle it is held?"
• Output: Write down a clear problem statement.

3. Ideate (15 minutes)
• Task: Brainstorm solutions to improve the helicopter design.
• Prompt: "What changes can we make to improve spinning and robustness? Think about shape, size, balance, and weight distribution."
• Activity: Sketch different designs and list features you want to test (e.g., adding weight, adjusting blade length).

4. Prototype (20 minutes)
• Task: Create at least two prototypes based on your ideas.
• Activity:
 - Modify the founder's design using scissors, tape, and other materials.
 - Focus on balancing the weight and adjusting the blade size or shape.
• Reminder: Document the changes made for each prototype.

5. Test (20 minutes)
• Task: Test each prototype to evaluate spinning performance and robustness.
• Activity:
 - Drop each prototype from a fixed height.
 - Observe and record spinning behavior, stability, and sensitivity to the drop angle.
 - Use a stopwatch to measure how long the helicopter takes to reach the ground.



Design Thinking: Empathize → Define → Ideate → Prototype → Test

DFSS: Identify → Define → → Develop → →

Optimize

Verify