



## DESIGN THINKING

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***Unit- 02***

### **1. Listening and Empathizing Techniques**

#### **Definition & Significance**

Listening and empathizing refer to the designer's ability to understand users' experiences, feelings, needs and context by actively engaging, hearing and connecting with them. In the context of design thinking, this step is critical because it ensures that innovation begins from the *user's world* rather than assumptions.

#### **Techniques**

- **Active Listening:** Concentrating entirely on the user, avoiding interruptions, repeating back what you heard to confirm.
- **Open-Ended Interviews:** Asking questions like “Tell me about...”, “What troubles you when...?”, rather than yes/no.
- **Empathy Mapping:** Record what the user *says, thinks, does and feels*; helps in consolidating insights.
- **Immersive Empathy:** The designer places themselves in the user's environment (e.g., spending time in the user's workspace) to experience context.

#### **Example**

If redesigning a student notes-portal, you interview students about how they use the portal at night; you listen to their frustrations (“It loads slowly”), observe their context (mobile device in poor lighting), map their feelings (frustrated, anxious about deadlines).

#### **Key Points for Exam**

- Empathy is foundational to human-centred design.
- Techniques: active listening, open-ended questions, empathy map, immersion.



- Outcome: Real insights into user behaviour, needs and pain points.

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## 2. Observation – Structured & Open-Ended Approach

### Definition & Purpose

Observation is the process of watching users in real settings to capture what they *do*, not just what they say. It complements listening by revealing hidden behaviours, workarounds or frustrations.

#### Structured Observation

- Uses predetermined checklists/metrics (e.g., number of attempts, time taken, errors).
- Quantitative, comparable.
- Example: Count how many clicks a user makes to download a note.

#### Open-Ended Observation

- Exploratory; no strict checklist; observe freely and note unexpected behaviours.
- Qualitative, rich insight.
- Example: Notice students switching apps mid-download because of frustration, or changing seating due to poor lighting.

#### Comparison & Combined Use

- Structured: measurable but may miss surprises.
- Open-ended: richer but less measurable.
- Best: Use both—structured to benchmark, open-ended to uncover surprises.

### Key Steps

1. Define context & objective.
2. Observe users silently in environment.
3. Record behaviour, context, environment.
4. Analyse and identify patterns, contradictions, latent needs.

### Exam Tip



Be prepared to compare structured vs open-ended observation, give pros/cons, and provide examples.

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### 3. Design Thinking Frameworks

#### Definition

Frameworks are structured models that outline phases or steps in the design thinking process. They provide guidance on *what* to do and *when*.

#### Common Frameworks

- **5-Stage Model** (Empathize → Define → Ideate → Prototype → Test). This sequential model outlines how designers move from user understanding to testing solutions.
- **Double Diamond Model** (Discover → Define → Develop → Deliver). Emphasises divergence (explore broadly) then convergence (narrow) in both problem and solution spaces.
- **Desirability-Feasibility-Viability Model**: Innovation lies at the intersection of what people want/desire (human), what is technically possible (feasibility), and what is business-sustainable (viability).

#### Importance

- Helps teams stay aligned.
- Ensures no step (especially empathy/define) is skipped.
- Supports iteration: frameworks are *not* strictly linear—teams often loop back.

#### Example

In your portal redesign: you start with empathizing (student interviews/observation), then define the problem (“downloads fail at night”), next ideate solutions (light-mode, offline access), prototype (mobile mock-up), test (with real students). You may loop back to empathy if test shows new pain-point.

#### Exam Focus

Explain one framework; list stages; discuss what happens in each; relate to example; emphasise iteration.



## 4. Ideation Tools

### 4.1 Brainstorming

**Definition:** A group creativity technique where participants generate as many ideas as possible in a judgement-free environment. ([Wikipedia](#))

**Key Rules:** Defer criticism, encourage wild ideas, aim for quantity, build on others' ideas. ([interaction-design.org](#))

**Example:** Team sets timer for 15 mins: "How might we improve night-study downloads?" Each writes ideas, posts sticky-notes.

**Limitations:** Without structure, may result in repetitive ideas; group brainstorming sometimes less productive than individual brainstorming. ([Daly Research](#))

### 4.2 Innovation Heuristics

**Definition:** Heuristics are cognitive prompts or techniques to help idea generation by changing usual thought patterns (e.g., substitute, combine, reverse). ([Design Society](#))

#### Techniques:

- Substitute: replace a component/function
- Combine: merge two functions
- Adapt: borrow idea from another domain
- Reverse: invert the process
- Eliminate/Minify: reduce complexity

**Example:** For download portal — "What if we eliminated login requirement for free notes?"

**Research Evidence:** Use of heuristics leads to more diverse, outside-paradigm ideas than simple brainstorming. ([Daly Research](#))

### 4.3 Behaviour Models

**Definition:** Models that explain why users behave the way they do, used to design solutions that fit actual user habits.

**Example:** The Fogg Behaviour Model:  $\text{Behaviour} = \text{Motivation} \times \text{Ability} \times \text{Trigger}$ . If one factor is missing, behaviour won't happen.

**Application:** For notes-portal: Trigger = exam-reminder notification; Ability = easy mobile download; Motivation = desire to pass.



## 4.4 Overcoming Cognitive Fixedness

**Definition:** Cognitive fixedness (or functional fixedness) is the mental barrier where you see objects/functions only in their conventional use, limiting creativity. ([Design Society](#))

### Techniques to Overcome:

- Reframing the problem: ask “What if we instead ...?”
- Use analogical thinking: borrow from other domains (e.g., fast-food queue system for file downloads).
- Use provoking methods like “worst possible idea” then invert.
- Use constraints purposely—time/ material limits stimulate creativity.

**Example:** Instead of “download notes”, ask “What if students listened to notes while walking?” leads to audio-notes idea.

### Exam Tip Summary for Ideation Tools

Be able to: define each tool, describe how/when to use, give example, highlight advantages & limitations.

## 5. Exercises and Case-Based Discussions

### Exercises

- **Empathy & Observation Exercise:** In pairs observe students in library for 20 mins: note structured data (e.g., how many switched app) and open observation (e.g., frustration, posture). Later create empathy map.
- **Ideation Workshop:** Pose “How might we ...?” question. Run 10 min brainstorming, then apply two heuristics to regenerate ideas. Short-list 2 ideas for prototype.
- **Fixedness Break-out Exercise:** Ask participants list five assumptions about a common object/service (e.g., “notes must be PDF”). Then challenge each assumption and generate alternative ideas.

### Case-Based Discussion

**Case Example:** Redesigning a hospital waiting area (or your portal for students).



- Step1: Empathize (interview patients/students)
- Step2: Observe (waiting area/portal use)
- Step3: Define problem (e.g., “Students feel anxious and stuck because download fails late at night”)
- Step4: Ideate (brainstorm + heuristics)
- Step5: Behaviour modelling (map trigger/action/reward)
- Step6: Overcome fixedness (challenge assumption “notes only exist in text”)
- Step7: Prototype & Test (mock portal, pilot with students)

**Discussion Points:** What listening/observation techniques were used? Which heuristic produced best idea? How did behaviour model inform solution? What assumption was challenged?

## Exam Preparation Tips

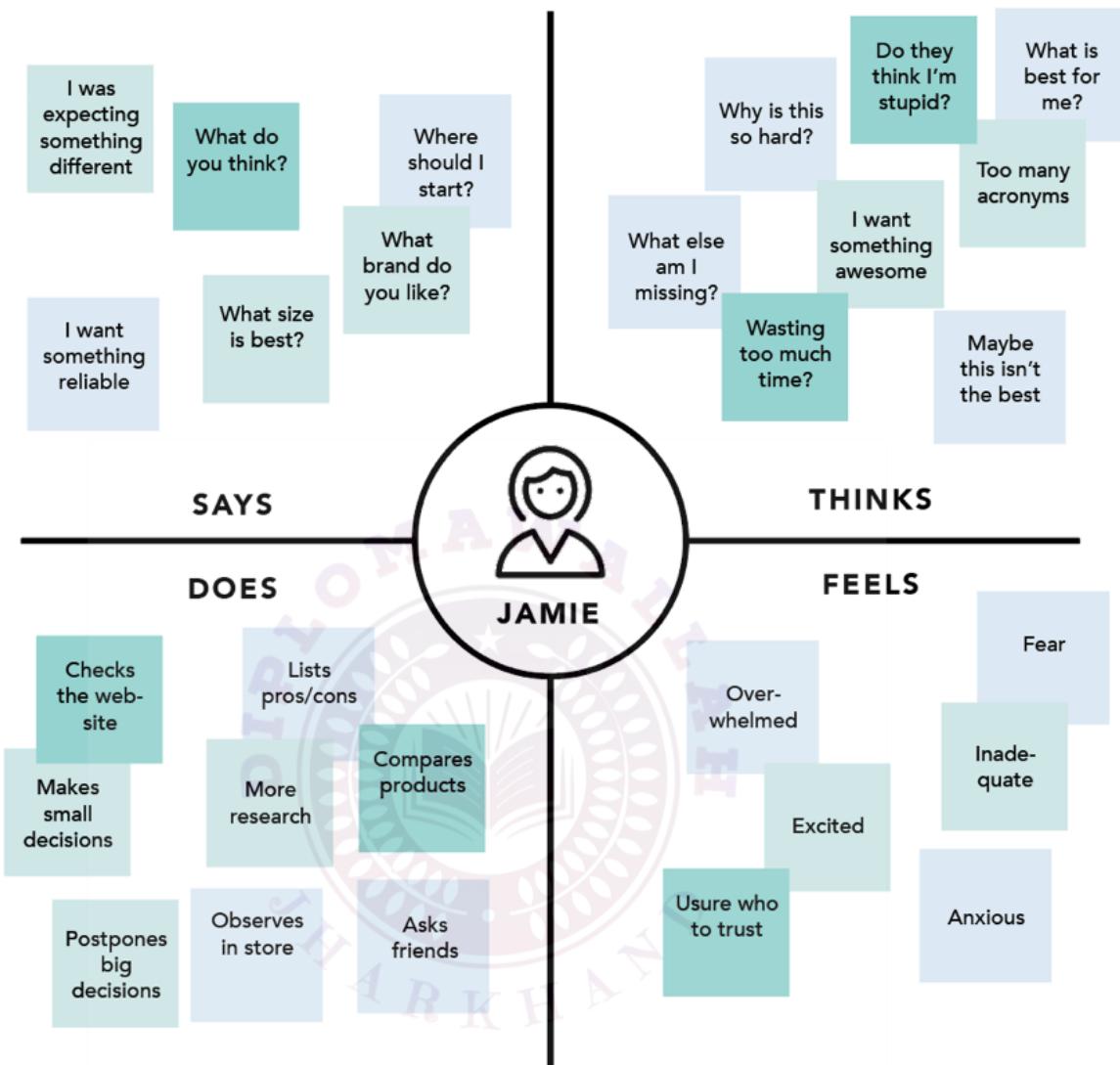
- Be able to outline an exercise for each tool/topic.
- Use case scenarios: frame problem, apply techniques, show outcome.
- Use bullet lists for techniques and steps for clarity.
- Provide real-life relevant examples (e.g., your domain of student notes) for better relevance.

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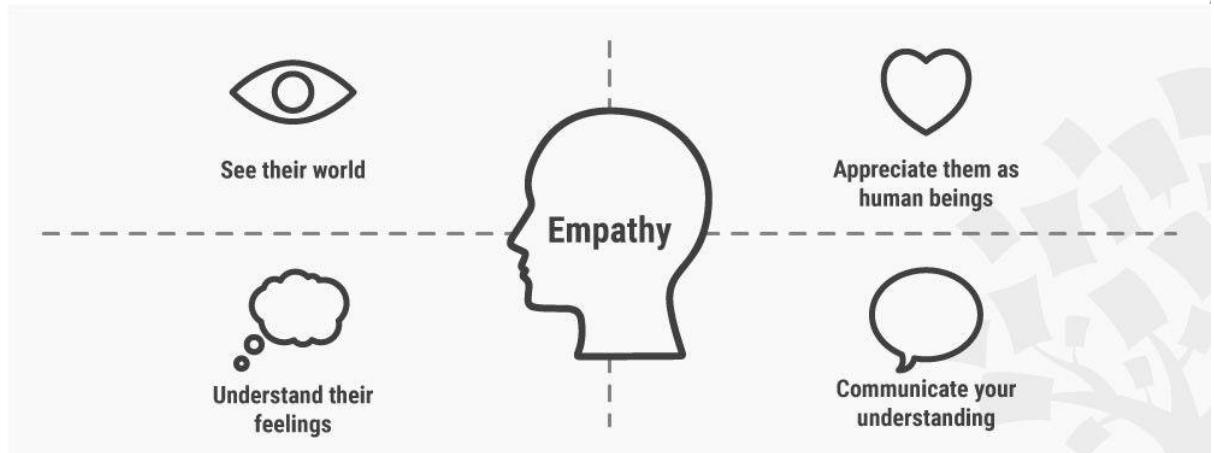
## 6. Summary & Key Takeaways

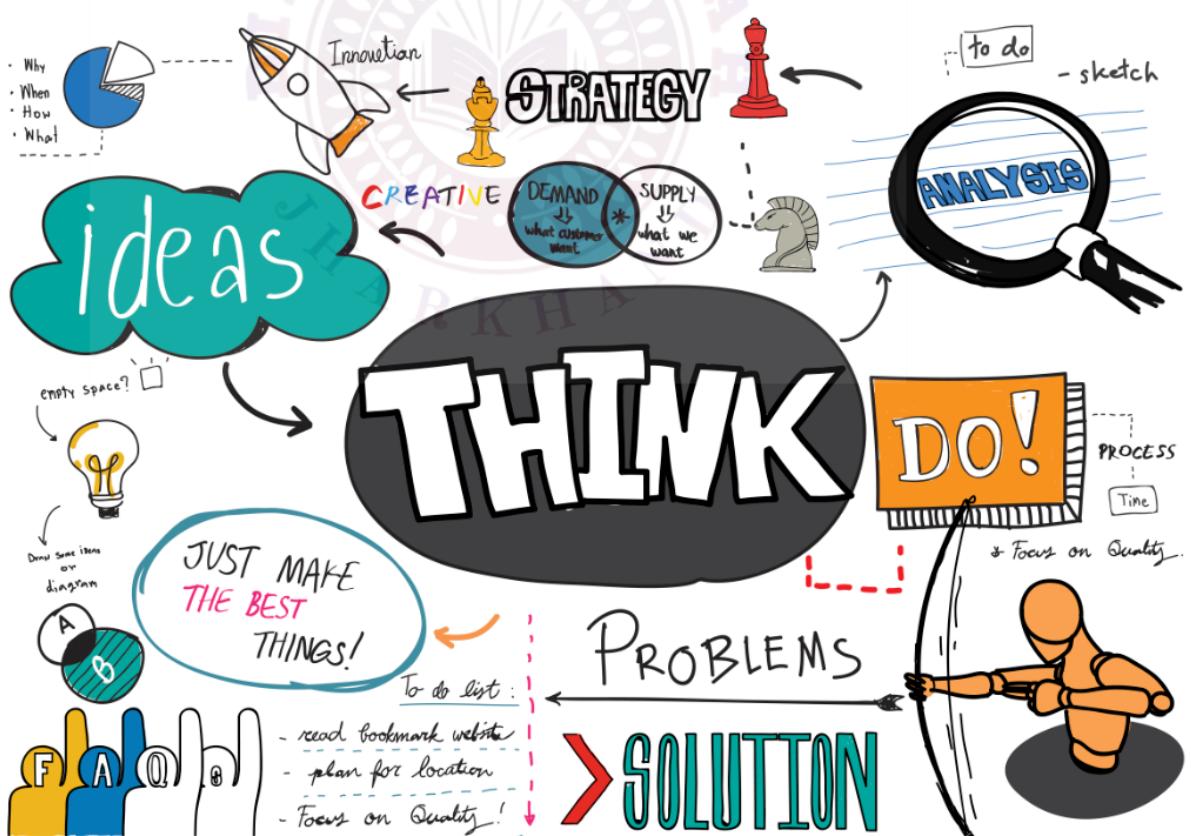
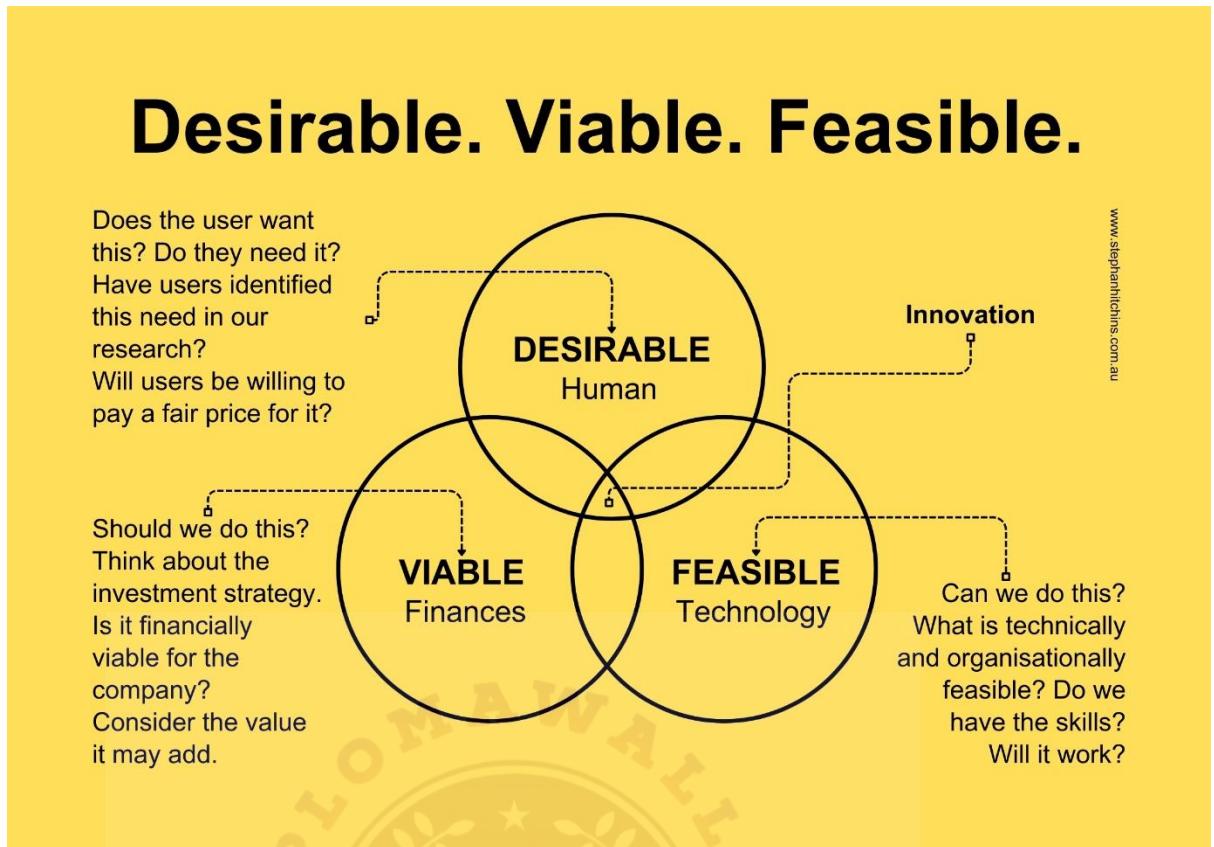
- **Listening & Empathizing:** The foundation for human-centred design.
- **Observation:** Captures what users do; structured vs open-ended both important.
- **Frameworks:** Provide structure to process; ensure inclusion of empathy, ideation, iteration.
- **Ideation Tools:** Brainstorming, heuristics, behaviour models, overcoming fixedness—tools for creative solution generation.
- **Exercises & Cases:** Essential for applying concepts, reinforcing learning and preparing for exams.

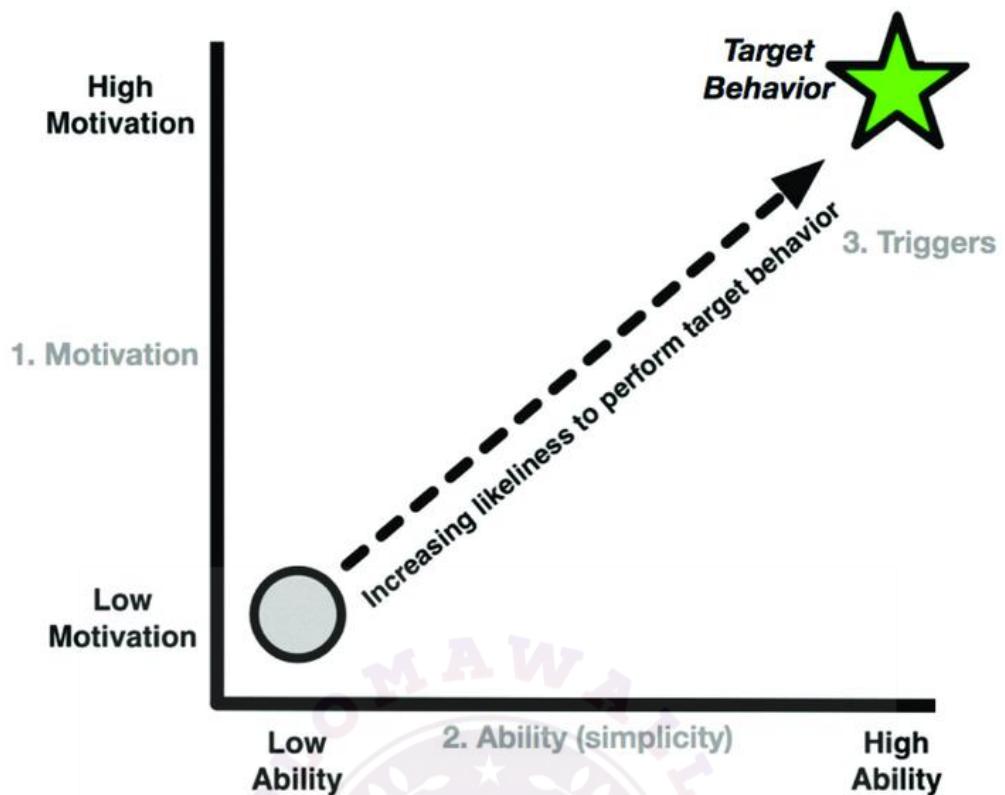
## EMPATHY MAP Example (Buying a TV)



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