

Lab 1: Problem Discovery and Need Identification

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Course: Design Thinking

Topic: Lack of Real-Time Information at Bus Stops in Bengaluru

Step 1: Observation

As a regular public transport user in Bengaluru, the observation phase was carried out through daily and occasional travel using BMTC buses across multiple locations such as Majestic, KR Puram, Whitefield, Hebbal, and Yelahanka. Observations were made during both peak hours (8:00 AM–11:00 AM and 5:00 PM–9:00 PM) and non-peak hours.

From everyday commuting experience, it was observed that most bus stops do not provide clear or reliable information about bus arrival timings. Many stops either lack digital display boards or have non-functional boards. As a result, commuters are forced to wait without knowing when the bus will arrive.

It was also observed that elderly commuters and occasional users struggle the most due to the absence of bus numbers and route information. Younger commuters frequently check mobile applications or Google, while older commuters often wait and guess or ask fellow passengers. Long waiting times without information cause visible frustration and anxiety among users.

These observations highlight a major communication gap in public transport infrastructure, where uncertainty causes more stress than the actual delay.

Step 2: User Identification (Stakeholder List)

The public transport information system involves multiple stakeholders who interact with the system differently.

| User Group | Role | Expectations |
|----------------------------|------------------|---------------------------------|
| Young Commuters (Students) | Occasional users | Quick access to arrival timings |

| | | |
|------------------------------|-----------------------|-------------------------------------|
| Elderly Commuters | Daily dependent users | Clear, simple, reliable information |
| BMTC Drivers & Conductors | Service providers | Reduced passenger confusion |
| Transport Authorities (BMTC) | Management | Improved service trust |

These stakeholders have different needs, but all are affected by the lack of real-time information at bus stops.

Step 3: Interviews / Surveys

To support observations, a survey was conducted among bus users of different age groups, including students and elderly commuters.

Sample Survey Questions:

1. How often do you travel by bus?
2. How clear is the bus route information at your bus stop?
3. What problem do you face the most at bus stops due to lack of display?
4. What do you usually do when there is no information display?
5. What solution would help the most?

Key User Responses:

- “Occasionally”
- “Very clear”
- “Don’t know bus arrival time”
- “Check phone apps/Google”
- “A digital board showing bus timings would help.”

Survey responses clearly indicate that real-time information is the most demanded improvement.

Step 4: Pain-Point Analysis

Based on observation and survey data, the pain points were categorized as follows:

| Category | Identified Pain Points |
|------------|--|
| Functional | No arrival timing, unclear bus numbers |
| Emotional | Stress, anxiety, frustration |

| | |
|---------------|---|
| Behavioral | Guessing buses, repeated phone checking |
| Accessibility | Elderly users unable to use apps |

Critical Pain Point

The most critical pain point is **waiting without knowing when the bus will arrive**, which leads to confusion, stress, and missed buses.

Step 5: Root Cause Identification (5-Why Analysis)

Problem: Commuters do not know bus arrival timings.

1. Why is arrival time unknown?
 - No working digital display at bus stops.
2. Why are displays missing or not working?
 - Poor maintenance and lack of real-time systems.
3. Why is real-time tracking not implemented?
 - Limited use of operational data.
4. Why is data not used effectively?
 - Lack of integrated transport management.
5. Why is integration weak?
 - Fragmented planning and execution.

Root Causes Identified

- Absence of real-time information systems
- Poor infrastructure maintenance
- Lack of user-centered design

Step 6: Wicked Problem Understanding

The lack of bus stop information is a wicked problem because it is interconnected with traffic congestion, operational delays, infrastructure limitations, and governance issues. Simply increasing buses will not solve uncertainty unless real-time communication is improved.

Problem Classification: Wicked Problem

Step 7: Reflection

1. What assumptions were incorrect?

Incorrect assumptions:

- Elderly commuters avoid buses
- Delays are the main problem
- Users complain only because buses are late

Reality:

The main issue is **not knowing when the bus will arrive**.

2. How did user perspectives change your understanding?

User perspectives showed that uncertainty is more stressful than delay. I understood that commuters do not mind waiting, but they feel anxious when there is no information about bus arrival timings.

3. Why is jumping to solutions risky?

Jumping to solutions is risky because it may solve the wrong problem. Without understanding users, solutions may ignore real needs and fail to reduce confusion or stress.

4. What skills did you develop through this lab?

Through this lab, I developed skills in observation, empathy, user research, problem analysis, and critical thinking.

