Lab 1: Problem Discovery and Need Identification

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Course: Design Thinking

Topic: Public Transport Issues

Step 1: Observation

As a daily public transport user in Bengaluru, the observation phase was carried out through regular travel using **BMTC buses and Namma Metro**, along with feeder and last-mile services. Observations are based on real-life commuting experiences across major locations such as **Majestic, Silk Board Junction, KR Puram, Whitefield, Hebbal, and Yelahanka**, during both **peak hours (8:00 AM–11:00 AM and 5:00 PM–9:00 PM)** and non-peak hours.

From everyday experience, BMTC buses frequently fail to follow scheduled timings. Long waiting periods are common, and it is often observed that **multiple buses of the same route arrive together after a long delay**, which commuters widely complain about online. This results in severe overcrowding in the first bus and poor load distribution overall.

Most bus stops lack essential infrastructure such as proper seating, shelters, route maps, and functional digital displays. In many cases, even basic shade from sun or rain is unavailable. Due to the absence of real-time information, commuters are forced to rely on asking conductors or fellow passengers, creating confusion and uncertainty, especially for new or occasional users.

Traffic congestion plays a major role in service unreliability. Routes passing through **Silk Board and KR Puram** regularly experience heavy bottlenecks during office hours. Overcrowding inside buses is a daily issue, leading to discomfort and safety concerns. Women commuters often feel unsafe in packed buses, while elderly passengers struggle with boarding and alighting due to lack of seating priority and crowded entrances.

In comparison, **Namma Metro services are relatively punctual and well organized**, which commuters appreciate. However, the lack of reliable last-mile connectivity significantly reduces

convenience. After exiting metro stations, commuters frequently depend on autos, cabs, or long walks, increasing both travel time and cost. These observations highlight operational, infrastructural, and user-experience challenges in Bengaluru's public transport system.

Step 2: User Identification (Stakeholder List)

The public transport system in Bengaluru involves multiple stakeholders, each interacting with the system differently and holding distinct expectations.

User Group	Role	Expectations
Daily Commuters (Students & IT Employees)	Primary users	Punctual, affordable, and reliable transport
Elderly & Women Passengers	Dependent users	Safety, accessibility, and seating availability
BMTC Drivers & Conductors	Service providers	Clear routes and manageable workloads
Transport Authorities (BMTC, BMRCL, BBMP)	Planning and regulation	Operational efficiency and public satisfaction

These stakeholders often have conflicting priorities. While commuters expect reliability and comfort, drivers operate under traffic pressure and tight schedules, and authorities face financial and infrastructural limitations, contributing to system-wide inefficiencies.

Step 3: Interviews / Surveys

To support observational findings, interviews and surveys were conducted with **30 Bengaluru residents**, including students, IT professionals, shop workers, daily wage earners, and senior citizens. The surveys were conducted at bus stops, metro stations, and residential areas. As a daily commuter, I also responded to survey questions based on my own experience.

Survey Questions with User Responses

1. How frequently do you use BMTC buses or Namma Metro services?

I use **BMTC buses daily** for college and local travel. Metro services are used occasionally for longer distances, but buses remain in the primary mode due to wider route availability.

2. What challenges do you commonly experience while commuting in Bengaluru?

The most common challenges are **unpredictable bus timings**, overcrowding during peak hours, lack of seating at bus stops, and traffic congestion. Waiting without knowing when the bus will arrive is extremely frustrating.

3. How do transport delays affect your professional or personal responsibilities?

Delays force me to leave home much earlier than required, which reduces personal time and increases daily stress. Missing a bus often leads to being late for classes or appointments.

4. Is information regarding bus or metro timings easily accessible?

Metro timing information is generally clear, but **bus timing information is mostly unavailable or unreliable**. Many bus stops do not have working displays, so commuters depend on asking others.

5. Do you feel safe and comfortable while using public transport?

Comfort is poor during peak hours due to overcrowding. Sudden braking and lack of space feel unsafe at times, especially for women and elderly passengers.

6. What single improvement would most enhance your commuting experience?

A **real-time bus tracking system with digital displays at bus stops** would significantly reduce waiting stress. Improved last-mile connectivity from metro stations would also help.

Key Insights from Interviews

Survey responses indicate that **schedule of unpredictability** is the most frequently reported issue. Many commuters expressed that uncertainty causes more stress than travel duration itself. Overcrowding, lack of real-time information, and poor grievance response systems contribute to frustration and reduced trust in public transport. Overall, public transport issues affect both functional efficiency and emotional well-being.

Step 4: Pain-Point Analysis

Based on observation and survey findings, commuter pain points were categorized as follows:

Category	Identified Pain Points

Functional	Delays, overcrowding, poor last-mile connectivity
Emotional	Stress, frustration, anxiety due to uncertainty
Systemic	Traffic congestion and weak inter-agency coordination

Critical Pain Point

The most critical pain point is the **unreliability and unpredictability of public transport schedules**, which negatively affect productivity, mental well-being, and public trust.

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

Problem: Unreliable public transport schedules in Bengaluru

1. Why are buses and feeder services delayed?

   → Due to severe traffic congestion.

2. Why is traffic congestion high?

   → Increased private vehicle usage and infrastructure bottlenecks.

3. Why do commuters prefer private vehicles?

   → Public transport is overcrowded and unreliable.

4. Why is public transport unreliable?

   → Inefficient route planning and lack of real-time monitoring.

5. Why is planning and monitoring inadequate?

   → Fragmented governance and limited coordination between agencies.

Root Causes Identified

- Lack of integrated transport management
- Poor use of real-time operational data
- Rapid urban growth without matching infrastructure expansion

Step 6: Wicked Problem Understanding

Public transport issues in Bengaluru represent a **wicked problem** due to their complexity and interconnected nature. Increasing buses may reduce waiting time but worsen congestion and costs. Improving metro services without fixing last-mile connectivity limits effectiveness. Social, economic, infrastructure, and behavioral factors interact continuously, making permanent solutions difficult.

Problem Classification: Wicked Problem

Step 7: Reflection

Initially, I believed traffic congestion alone caused public transport delays. However, through daily commuting, observation, and survey analysis, it became clear that the problem is **systemic**, involving planning gaps, infrastructure limitations, and poor communication.

This exercise highlighted the importance of **user-centered observation and root-cause analysis** before proposing solutions. It strengthened my understanding of design thinking principles and emphasized that effective solutions must be grounded in real commuter experiences and contextual realities.