Lab 1: Problem Discovery and Need Identification

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Course: Design Thinking

Topic: Public Transport Issues

Step 1: Observation

The observation phase of this study was conducted in **Bengaluru, Karnataka**, with a focus on the city's primary public transportation systems, namely **BMTC buses and Namma Metro**, along with associated feeder services. Observations were carried out across prominent 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 to capture variations in commuter experience.

The observations revealed that **BMTC buses frequently deviate from their scheduled timings**, resulting in prolonged waiting periods for commuters. In several instances, multiple buses arrived simultaneously after extended delays, indicating inefficient scheduling and route management. Most bus stops were found to lack essential infrastructure such as seating arrangements, route maps, shelters, and digital information displays. Due to the absence of real-time updates, passengers were observed relying on informal communication, such as asking conductors or fellow commuters for arrival information.

Traffic congestion at major junctions was identified as a significant factor affecting service reliability. Routes passing through Silk Board and KR Puram experienced severe bottlenecks, particularly during office hours. Overcrowding on buses was commonly observed, leading to discomfort and safety concerns. Women passengers reported difficulty maintaining personal safety in congested conditions, while elderly passengers and individuals with disabilities faced challenges during boarding and alighting.

Namma Metro services were observed to be relatively punctual and structured. However, the lack of effective **last-mile connectivity** significantly reduced overall convenience. Many commuters depended on auto-rickshaws, cabs, or long walking distances after exiting metro stations,

increasing both travel time and cost. These observations collectively highlight operational, infrastructural, and user-experience challenges within Bengaluru's public transport ecosystem.

Step 2: User Identification (Stakeholder List)

The public transport system in Bengaluru involves multiple stakeholders, each interacting with the system in distinct ways and possessing different expectations. Identifying these stakeholders is essential to understanding the complexity of the problem.

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 competing priorities. While commuters demand punctuality and comfort, transport authorities must balance financial constraints, infrastructure limitations, and traffic conditions, contributing to systemic complexity.

Step 3: Interviews / Surveys

To complement observational findings, **interviews and surveys were conducted with 30 residents of Bengaluru**, representing diverse demographic and occupational backgrounds, including students, IT professionals, shop workers, daily wage earners, and senior citizens. The interviews were semi-structured and conducted at bus stops, metro stations, and residential areas to ensure contextual relevance.

Sample Interview Questions

1. How frequently do you use BMTC buses or Namma Metro services?
2. What challenges do you commonly experience while commuting in Bengaluru?
3. How do transport delays affect your professional or personal responsibilities?
4. Is information regarding bus or metro timings easily accessible?
5. Do you feel safe and comfortable while using public transport?
6. What single improvement would most enhance your commuting experience?

Key Insights from Interviews

Interview responses indicated that **unpredictable delays** were the most frequently reported issue. Office-going respondents stated that uncertainty in travel time compelled them to depart earlier than necessary, negatively affecting work-life balance. Students expressed concern about missing classes or examinations due to unreliable transport services. Elderly respondents highlighted discomfort arising from overcrowding and insufficient seating facilities.

A significant number of participants emphasized the **lack of real-time tracking for buses**, which contributed to confusion, anxiety, and loss of trust in the system. Many users also expressed dissatisfaction with grievance redressal mechanisms, stating that feedback rarely resulted in observable improvements. Overall, the interviews revealed that public transport issues impact not only functional efficiency but also emotional well-being.

Step 4: Pain-Point Analysis

Based on observational data and interview insights, the identified user pain points were categorized into functional, emotional, and systemic dimensions.

Category	Identified Pain Points
Functional	Delays, overcrowding, inadequate last-mile connectivity
Emotional	Stress, frustration, anxiety related to punctuality
Systemic	Traffic congestion and lack of inter-agency coordination

Critical Pain Point

The most critical pain point identified is the **unreliability and unpredictability of public transport schedules**, which adversely affects daily productivity, psychological well-being, and public confidence in the transportation system.

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

Problem: Unreliable public transport schedules in Bengaluru

1. **Why** are buses and metro feeder services delayed?

   → Due to severe traffic congestion.

2. **Why** is traffic congestion prevalent?

→ Increased reliance on private vehicles and infrastructural bottlenecks.

3. **Why** do commuters prefer private vehicles?

   → Public transport services are perceived as unreliable and overcrowded.

4. **Why** are public transport services unreliable?

   → Inefficient route planning and limited real-time monitoring.

5. **Why** is monitoring and planning inadequate?

   → Fragmented governance structures and insufficient inter-agency coordination.

Root Causes Identified

- Absence of integrated transport and traffic management systems
- Limited utilization of real-time operational data
- Rapid urban expansion without corresponding infrastructure development

Step 6: Wicked Problem Understanding

Public transport challenges in Bengaluru can be classified as a **wicked problem** due to their inherent complexity and evolving nature. The problem lacks a single, clearly defined cause and involves multiple stakeholders with conflicting objectives. For example, increasing the number of buses may reduce waiting times but could exacerbate traffic congestion and operational costs.

Additionally, proposed solutions often generate unintended consequences, and the effectiveness of interventions changes over time due to population growth, urbanization, and shifting commuter behavior. Social, economic, technological, and infrastructural factors are deeply interconnected, making the problem resistant to simple or permanent solutions.

Problem Classification: Wicked Problem

Step 7: Reflection

Prior to this study, I assumed that traffic congestion was the primary factor contributing to public transport delays in Bengaluru. However, through systematic observation and user interviews, it became evident that the issue is fundamentally systemic, involving planning inefficiencies, infrastructural gaps, and inadequate communication mechanisms.

This lab exercise emphasized the importance of understanding user experiences and identifying root causes before proposing solutions. It demonstrated that premature solution development can exacerbate existing issues rather than resolve them. Through this process, I developed skills in empathetic observation, qualitative research, analytical reasoning, and systems thinking. Overall, the activity reinforced the principle that effective design thinking begins with a deep understanding of human needs and contextual realities.