**WEEK – 2**

**COURSE NAME – PRODUCT DESING THINKING FRAME WORK**

**COLLEGE NAME – QUANTUM UNEVERSITY**

**BATCH NUMBER- 01**

**TASK NO – 4**

**TASK NAME – A city has introduced smart trash bins with sensors to detect waste levels and open  
automatically. The system aims to automate waste collection by sending alerts when  
bins are full. However, sensor malfunctions and unclear indicators have led to  
overflowing bins and slow adoption**

**EMPATHY MAP FOR SMART TRASH BIN USERS**

**1.SAY (What users express out load)**

* **“This bin doesn’t always open when I need it to.”**
* **“I don’t understand what these lights mean.”**
* **“I prefer using the old bins—they were simple.”**

**2. THINK (What users are thinking but might not say)**

* **“Is this system actually making things better?”**
* **“What if the bin is broken or full? Should I use another one?”**
* **“Technology is good, but it should be simple to use.”**

**3. DO (User behaviour and actions)**

* **Hesitates to use smart bins due to confusion.**
* **Ignores bins that appear malfunctioning.**
* **Throws waste outside the bin if it doesn’t open.**
* **Avoids interacting with the technology, especially older users.**

**4. FEEL (Emotional reactions)**

* **Frustrated when the bin doesn’t open properly.**
* **Confused by unclear LED signals.**
* **Resistant to change, especially among older users.**
* **Concerned about the hygiene and reliability of the system.**

**Connecting Empathy Map to the Design Thinking Approach**

**1. Empathize:**

* **User Research: Conduct interviews and surveys with city residents to understand their pain points.**
* **Observations: Analyze real-time interactions with smart bins.**
* **Stakeholder Input: Gather feedback from waste management teams and authorities.**

**2. Define:**

* **Problem Statement:**

**“Users struggle with unreliable sensors, unclear indicators, and a lack of awareness, leading to frustration, slow adoption, and overflowing bins.”**

**3. Ideate:**

**Potential Solutions:**

* **Sensor Improvement: Use AI-driven or motion-detection sensors for better accuracy.**
* **Clear Indicators: Introduce color-coded lights (e.g., green = open, red = full) and audio cues.**
* **User Education: Launch awareness campaigns, posters, and interactive sessions.**
* **Alternative Access: Manual override option for users uncomfortable with automation.**

**4. Prototype:**

* **Develop an improved smart bin model with:**
* **Reliable sensors and error-resistant mechanisms.**
* **Intuitive LED + audio notifications.**
* **QR-code-based tutorials for easy learning.**
* **Manual access for users hesitant about technology.**

**5. Test:**

* **Pilot Deployment: Implement updated bins in a small area.**
* **User Feedback: Collect real-world insights and observe usage patterns.**
* **Iterate & Improve: Make refinements based on user suggestions before city-wide rollout.**

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