

SafeSchool: AI-Powered Emotional & Physical Safety for Student

**Because safety is more than just CCTV —
it's emotional care**



Presented by

**Abhishek
Kumar**

30 Nov 2025

The Problem (Real-World in Pain Point)

- Hidden emotional stress among students (bullying, anxiety, fear, isolation, harassment).
- Lack of real-time monitoring of well-being.
- Parents unaware of safety during commute.
- Privacy issue: Cameras are intrusive and not allowed in classrooms.

“1 in 4 Indian students face emotional distress without early intervention.”

Vision

Create a connected, caring ecosystem for child well-being.

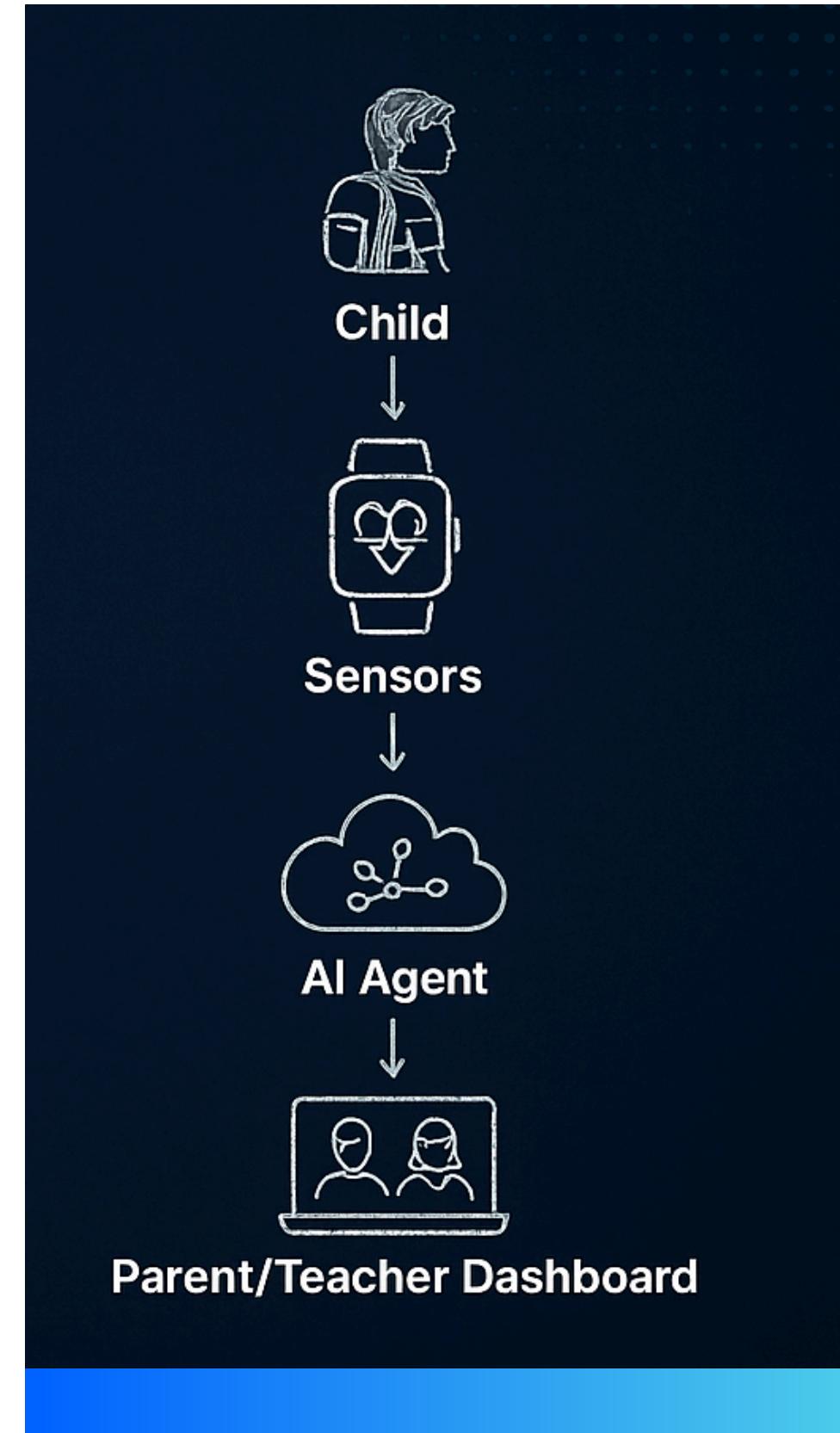
Mission

Use AI and IoT to detect distress and ensure safety, ethically

Child → Sensors → AI Agent → Cloud → Parent/Teacher
Dashboard → Support & Intervention

The Solution Overview

- A smart wearable watch that monitors physiological signals + motion.
- Detects stress, panic, or unsafe conditions.
- Sends alerts to parents and school dashboard.
- No camera, no mic — privacy-first design.
- Visual:
- Show the product concept image (watch + cloud + dashboard).



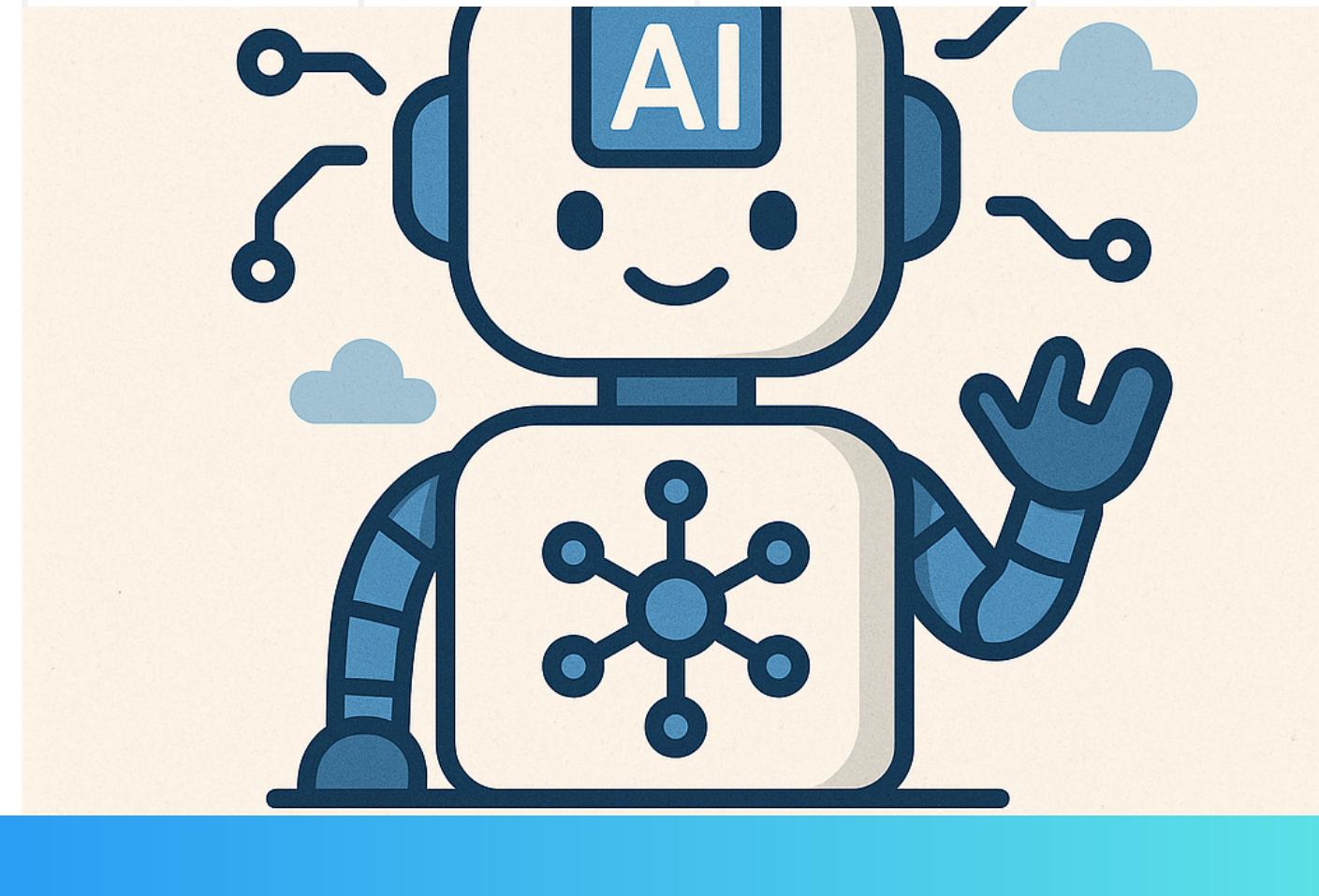
Prototype Architecture



- Sensors used (HR, HRV, GSR, Motion, Temp, GPS, SOS).
- ESP32 MCU → Cloud → Dashboard data flow.
- Simple architecture diagram:
- Sensors → ESP32 → Wi-Fi → Cloud AI → Dashboard

The AI Agent

Explain intelligence
behind the system.



- Hybrid AI System:
- Rule-based Edge AI (instant detection)
- Cloud AI (pattern learning + emotional prediction)
- Learns each child's “normal pattern” and detects emotional deviations.
- Produces a Stress Index and trends.

Prototype Cost & Feasibility

Prove affordability and practicality.

- Bulk version < ₹2,500 possible.
- Much cheaper than CCTV systems (₹1L+/classroom).
- Visual:
- Pie chart of cost share (MCU, Sensors, GPS, Battery, etc.)

Component	Cost (₹)
ESP32 MCU	350
MAX30102 HR Sensor	250
GSR Sensor	200
MPU6050 Motion	150
Temperature + GPS + Battery	1,000
PCB + Case	400
Total Cost (Prototype)	₹2,800–₹3,500

Market Opportunity & Reach

Show potential
and viability

- TAM: 246.9M students in India
- SAM: 60–100M urban/private students
- SOM: 1% \approx ₹180 crore potential
- Example: Delhi alone = ₹90 crore addressable value.
- Growing IoT + mental health awareness = huge adoption scope.
- Visual:
- Three concentric circles (TAM → SAM → SOM) or India map highlighting metros.

Market Analysis Continues

Total Addressable Market (TAM)

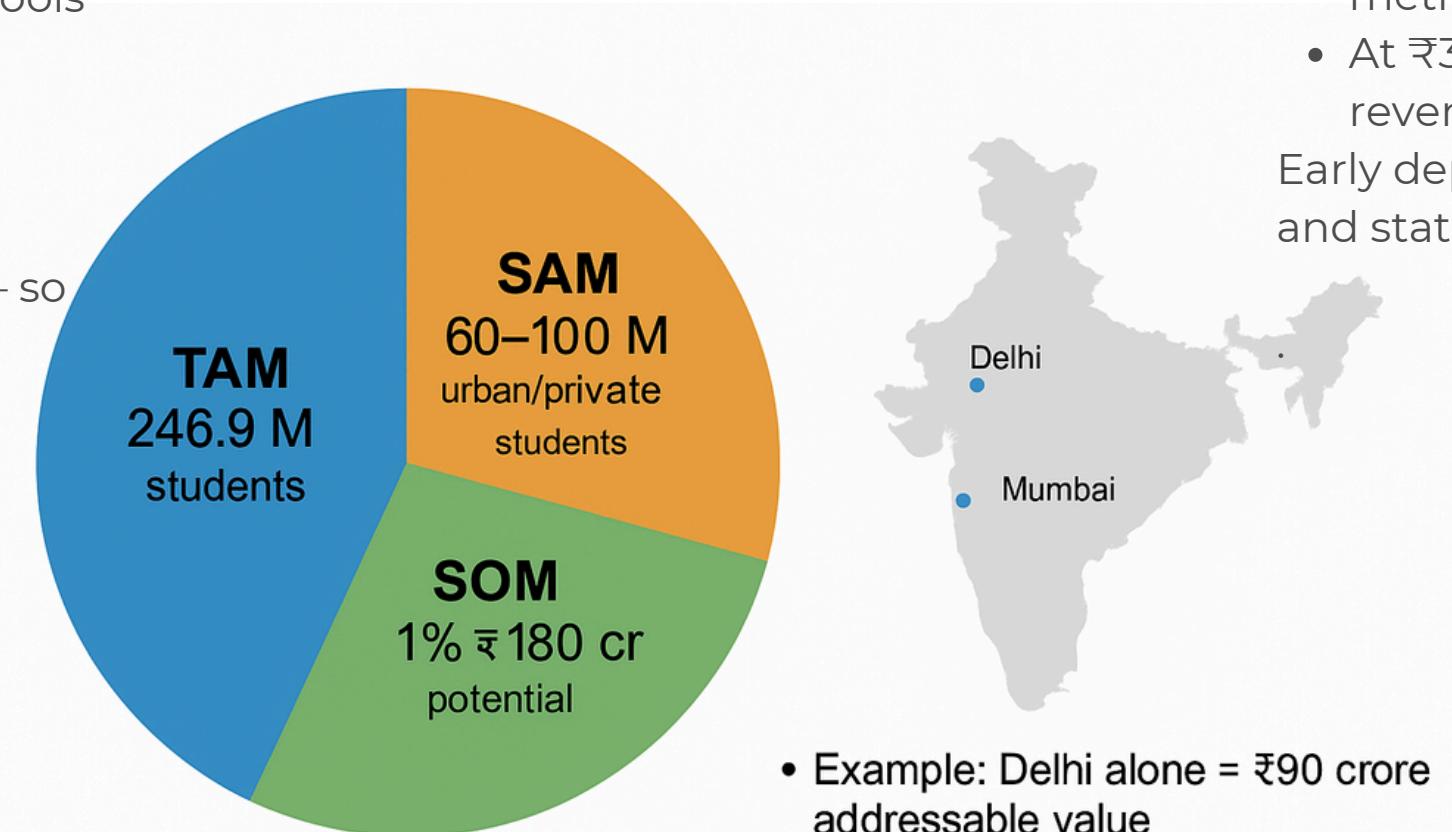
All students in India who could benefit from SafeSchool.

- Population: 246.9 million students (K-12)
- Schools: 1.47 million (Govt + Pvt)
- If even a basic ₹3,000 unit were deployed nationwide:
- TAM \approx ₹7.4 lakh crore (~US \$89 billion)
- Supported by the booming Indian wearable market (119M units shipped in 2024)
- — showing that low-cost hardware adoption is already mainstream.

Serviceable Available Market (SAM)

- Urban population: 36.5% (Census 2024 projection)
- Private-school enrollment: ~70 million students
- Combined: ~60–100 million tech-accessible students.
- These belong mostly to CBSE, ICSE, and metro schools (Delhi, Mumbai, Bengaluru, Hyderabad, Pune, Guwahati) where:
 - IoT infrastructure (Wi-Fi, ERP, smart ID) already exists.
 - Parents spend ₹40k–₹1.5L/year on education — so ₹3k–₹5k safety device is affordable.

💰 SAM \approx ₹1.8 lakh crore (~US \$21 billion)



Serviceable Obtainable Market (SOM)

Realistic entry:

- Target 0.5–1% of SAM = ~600k–1 million students in pilot metros.
- At ₹3,000 per device \rightarrow ₹180–₹300 crore potential revenue.

Early deployment through CSR tie-ups, school networks, and state education tech grants will accelerate reach.



- Example: Delhi alone = ₹90 crore addressable value
- Growing IoT + mental health awareness = huge adoption scope

Competitor Analysis

Prove uniqueness.

Competitor	Features	Gaps
Noise/GOQii	HR, SpO ₂	No emotional AI, no school dashboard
SmartBus/NeoTrack	GPS tracking	No emotion detection
CCTV	Visual safety only	Privacy invasion



Future Scope & Impact

- **Integrate NB-IoT/LTE-M for full-time connectivity.**
- **Add TinyML Edge AI → offline learning.**
- **Expand to special-needs monitoring / elder safety.**
- **School + CSR tie-ups for deployment**
 - **Long-term impact:**
 - **Early stress detection**
 - **Safer environments**
- **Data-driven emotional support systems.**

Get in Touch with me Thank you

8057666181

ak2458ak@gmail.com

abhishek.kumar22b@iiitg.ac.in

IIITG

