

# Problem Statement ID: 25011

## Smart Curriculum Activity & Attendance App

### Problem

Manual attendance systems are time-consuming, error-prone, and reduce teaching efficiency. Students also waste free periods without structured guidance, leading to poor productivity and weak alignment with academic and career goals. Institutions lack integrated tools that combine attendance tracking with personalized student development.

### Solution

A centralized smart platform that automates attendance through dynamic QR codes (6s refresh), face recognition, and seat mapping to prevent proxies. Beyond attendance, it provides academic support, AI-powered assistance, and role-based dashboards for students, teachers, coordinators, and principals. The system suggests personalized academic/career activities during free slots, enhancing student engagement.

### Key Features

- Triple-Layer Attendance: QR + Face + Seat mapping.
- Academic Support: Study materials, report cards, timetables, and updates.
- Role-Based Dashboards: Students, teachers, coordinators, and principals.
- AI Chatbot (Aditya): Guidance for academics, extracurriculars, and free-slot utilization.
- Real-Time Insights: Attendance validation, announcements, analytics, and performance tracking.

### Feasibility

- Technical: Uses React.js, Node.js, MySQL, TensorFlow, and AWS for robust deployment.
- Operational: Simplifies attendance, saves teaching time, and improves student engagement.
- Economic: Low-cost, scalable, and affordable to implement.
- Legal: Data privacy and security ensured with JWT & bcrypt.

### Impact & Benefits

- Students: Transparent attendance, better productivity, personalized guidance.
- Teachers: Saves class time, prevents proxies, enables real-time monitoring.
- Institutions: Improved efficiency, trust, and NEP 2020 alignment for tech-driven education.
- Social: Enhances engagement & fairness in attendance.
- Economic: Reduces manual workload and costs.
- Educational: Supports personalized and experiential learning.
- Environmental: Cuts down paper use with digital reports.

### Uniqueness

- Triple-layer attendance system.
- AI chatbot for extracurricular + academic guidance.
- Single integrated solution for academics, administration, and student development.

### References

- Automated Attendance Management Systems, IJTEL, 2022.
- AI-Powered Learning Management Systems, IEEE, 2023.
- National Education Policy (NEP 2020), Government of India.