**InstEdu**

**Problem Statement**

Students often visit the staff room to meet a teacher, only to find them unavailable. This results in wasted time and multiple trips, leading to inefficiencies in communication.

**Proposed Solution**

A **mobile app for real-time teacher availability tracking**, which **automatically updates availability** based on the teacher’s timetable. Teachers can manually update their status only if they are **Busy** during an available slot or **On Vacation**.

**Detailed Solution**

**1. System Overview**

A **mobile app (Android & iOS)** that **automates availability tracking** using school timetables. Teachers are **automatically marked available** during free periods and can override their status only if needed.

**2. Key Features**

* **Automated Availability**: The app fetches teacher schedules and marks them **Available** during free periods.
* **Real-Time Updates**: Teachers can override their status to **Busy** or **On Vacation** if necessary.
* **Student Access**: Students can check teacher availability anytime through the app.
* **Notifications**: Students can enable alerts when a teacher becomes available.
* **Appointment Booking**: Students can schedule meetings during available slots.

**3. Technology Stack**

* **Frontend**: Mobile app (React Native / Flutter for cross-platform support).
* **Backend**: Cloud-based server for real-time updates and notifications.
* **Database**: Stores teacher schedules, availability status, and student requests.
* **Real-Time Communication**: WebSocket or Firebase for instant updates.
* **Timetable Integration**: API to fetch school schedules and auto-update availability.

**4. Workflow**

1. **Automated Availability Update**
   * The system retrieves teacher schedules from the school timetable.
   * Teachers are automatically marked **Available** during free periods.
   * Teachers are marked **Unavailable** during scheduled classes or meetings.
2. **Teacher Overrides Status** (Only if needed)
   * Teachers can manually set **Busy** during an available slot.
   * Teachers can mark themselves **On Vacation** for planned absences.
3. **Student Checks Availability**
   * Students open the mobile app to view real-time teacher status.
   * They can enable notifications for specific teachers.
4. **Appointment Scheduling**
   * Students can book meetings only in **Available** slots.
   * Teachers receive and confirm/decline requests.

**5. Implementation Steps**

1. **Timetable Integration**: Sync teacher schedules with the app.
2. **App Development**: Build the mobile interface with real-time updates.
3. **Testing & Feedback**: Pilot with a small group of teachers and students.
4. **Deployment**: Launch the app in schools with training.
5. **Maintenance & Updates**: Ensure real-time accuracy and security.

**6. Benefits**

✅ **Time-Saving**: No manual updates needed unless necessary.  
✅ **Improved Accuracy**: Availability is auto-updated from the timetable.  
✅ **Better Communication**: Students can check before visiting.  
✅ **Less Manual Effort**: Teachers only update status if needed.

**7. Challenges & Mitigation**

* **Timetable Changes** → Sync real-time updates from the school system.
* **Teachers Forgetting to Override** → Send reminders when marked available.
* **Privacy Concerns** → Restrict visibility to necessary information.

**8. Future Enhancements**

🚀 **AI Predictions**: Suggest teacher availability trends.  
🚀 **Multi-Language Support**: Improve accessibility.  
🚀 **Auto-Scheduling**: Suggest best meeting times based on past trends.

**Conclusion**

This **mobile app automates** teacher availability tracking, reducing manual effort while improving communication efficiency. **Students save time, and teachers only update when needed.**

Would you like UI mockups or additional details on implementation? 🚀