

Final Report: AI-based Drop-out Prediction and Counseling System

1. Problem Statement

Student dropouts remain one of the biggest challenges for public institutions. By the time results are declared, many students have already lost motivation. There is no consolidated mechanism to monitor attendance, academic performance, and fee payment simultaneously. This leads to missed opportunities for timely intervention.

2. Objectives

- Consolidate student data (attendance, marks, and fees) into a unified system.
- Detect early warning signals by categorizing students into Red, Yellow, and Green zones.
- Empower mentors and parents with timely alerts.
- Provide students with personalized guidance via chatbot integration.
- Support colleges with a scalable, low-cost, and easy-to-use solution using Salesforce.

3. Stakeholders

- **Admin (College):** Uploads data, configures dashboards, and monitors reports.
- **Mentors/Teachers:** Receive alerts and counsel at-risk students.
- **Parents:** Get notified about their child's zone and fee status.
- **Students:** Access their dashboards, receive alerts, and interact with chatbot for guidance.

4. System Architecture

The system is designed in Salesforce with the following architecture:

- **Custom Objects:** Student, Attendance, Marks, Fees.
- **Data Source:** Google Sheets linked via Coefficient for real-time updates.
- **Zone Logic:** Formula fields categorize students into Red, Yellow, and Green zones.
- **Alerts:** Salesforce Email Alerts notify stakeholders automatically.
- **Visualization:** Dashboards built with charts to show student risk distribution.

5. Data Model

- **Student__c:** Roll_Number, Name, Class, Zone_Status.
- **Attendance_Record__c:** Percentage, Date, Subject (linked to Student).
- **Marks_Record__c:** Score, Max_Score, Test_Date, Attempts (linked to Student).
- **Fee_Record__c:** Amount_Due, Amount_Paid, Status (Paid, Partial, Overdue, linked to Student).

6. Zone Classification Logic

- **Red Zone:** Attendance < 50% OR Marks < 40% OR Fee Status = Overdue.
- **Yellow Zone:** Attendance between 50%–75% OR Marks between 40%–60% OR Fee Status = Partial.
- **Green Zone:** Attendance > 75% AND Marks > 60% AND Fee Status = Paid. This ensures a multi-factor classification that highlights risk early.

7. Data Integration

- Google Sheets created with standardized headers for Attendance, Marks, and Fees. - Connected to Salesforce using **Coefficient App**. - Automatic data refresh ensures that dashboards and alerts are always updated. - This avoids manual imports and errors, making the system reliable.

8. Alerts & Notifications

Salesforce **Email Alerts** and **Workflow Rules** were used to notify stakeholders: - **Mentors:** Notified when a student enters the Red Zone. - **Parents:** Notified if fee status is Overdue or Partial. - **Students:** Receive an email with a dashboard link showing their status. - **Admins:** Receive summary alerts for the number of students in each zone.

9. Dashboard & Chatbot

- Dashboards created with Salesforce Reports. - Graphs show student distribution across Red, Yellow, and Green zones. - Mentors can search by Roll Number, Name, or Class. - Integrated **Agentforce Chatbot** to provide personalized suggestions to students. - Example: If a student is in Yellow Zone due to low attendance, chatbot advises better schedule management.

10. Conclusion & Future Scope

This project demonstrates how Salesforce CRM can be adapted to address student dropouts in a cost-effective and efficient manner. The system integrates existing spreadsheets, applies rule-based classification, automates alerts, and provides dashboards. **Future Scope:** - Use Machine Learning for predictive insights beyond rule-based thresholds. - Add SMS/WhatsApp integration for wider parent communication. - Include peer benchmarking for students to compare their progress with class averages. - Expand to multiple institutes with centralized monitoring.