Student Performance Analyser

Problem Statement:

Currently, students, parents, and faculty face difficulties in tracking and analyzing a student's overall performance in academics, co-curricular, and extra-curricular activities. There is no single system that allows for easy calculation and comparison of academic scores, which include different components like exams, internal assessments, and term work. Similarly, there is no way to systematically track student participation and achievements in activities outside of academics. As a result, it becomes difficult to get a clear picture of a student's strengths and weaknesses in comparison to their classmates.

Students often struggle to understand their position in class and are unsure about how to improve. They need better insights into their performance. Parents also face challenges as they have limited access to their child's progress beyond academic grades. They want a way to track both academic and non-academic achievements. Faculty members spend a lot of time manually calculating scores and providing feedback, which can be tedious and prone to errors. Additionally, Heads of Departments (HODs) need a structured system to monitor overall student performance and make informed decisions based on data.

Objectives:

1. To design a centralized platform for recording and analyzing students' academic, co-curricular, and extra-curricular performance integrating Course Outcomes (COs) and Bloom's Taxonomy mapping.
2. To automate academic score calculations (ESE, IA, Viva, Term Work, CSE, and faculty feedback) by implementing a weighted evaluation model that includes course outcomes and Bloom's Taxonomy levels, reducing manual errors.
3. To provide students and parents with personalized dashboards that display semester-wise grades, CO-wise performance, Bloom's level distribution, relative rankings, and activity record.
4. To enable faculty and HODs with advanced analytics and reporting, such as comparisons and course outcome tracking, Bloom's level coverage, batch trends, subject-wise performance) for informed decision-making.

Relevance to ICT Domain

This project is closely related to the ICT field, mainly under software development and data analytics. It provides a digital platform that makes student performance tracking and course outcome evaluation faster, more reliable, and easier to access.

In the ICT domain, education technology is an important trend, and institutes are moving toward automated systems for reporting and accreditation. By using analytics and centralized records, the project supports the demand for data-driven decision making.

At the same time, the project deals with issues such as handling large amounts of student data, keeping records secure, and designing effective solutions, ensuring better accuracy and efficiency.

Feasibility Analysis (Technical Feasibility)

Frontend Development: React.js for the web portal (HOD , faculty).

Flutter for cross-platform mobile apps (students, parents).

Backend Development: Node.js & Express.js for building APIs.

Database Management: MySQL for structured relational data.

Programming Languages: JavaScript (MERN), Dart (Flutter).

Visualization & Analytics: charts js and Rechart for academic and activity dashboards.

Export options for PDF reports for HODs.

Version control: GitHub

Sends report of student students and parents via email.

Market/User Needs Analysis:

Engineering colleges today are required to adopt outcome-based education and continuously track student performance against Course Outcomes (COs) and Bloom's Taxonomy. However, many institutions still rely on manual calculations and scattered records, which often leads to errors and consumes a lot of time.

A centralized system can solve this problem by supporting different stakeholders. For faculty members and heads of departments, it allows subject-wise and batch-wise performance tracking, quick generation of CO reports, and preparation of official evaluation data in less time.

For students, the system provides a clear view of their academic standing and helps them understand whether their strengths lie in hardware or software domains. Parents can also benefit by gaining access not only to grades but also to overall development, including co-curricular and extra-curricular activities.

There is a need for this kind of system because engineering colleges want tools that save time, reduce mistakes, and give clear information. By joining academic checking with activity tracking, this project helps meet the real needs of engineering colleges.

Team members and contributions

Harsh Dosi (92200133002) : Contributed in flutter mobile app development (frontend + backend)

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