Student Performance Analysis System for Higher Secondary Education

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Abstract - *Although data mining has been successfully implemented in the business world for some time now, its use in higher education is still relatively new. It is important to study and analyze educational data especially student's performance. Using data mining the aim was to develop a model which can derive the conclusion on students academic success. To construct a model for Students academic result, these needs analyzing data, graphical representation techniques and report generation. This will help to identify the weak students and help them to score better marks. It can be used for improvement of academic results. In further studies with identifying and evaluating variables associated with process of higher education, and with the sample increase, it would be possible to produce a model which would stand as a foundation for the development of analysis system for higher education.*

Keywords—Student performance, student analysis, student development, data mining, score card

I. INTRODUCTION

Every year, educational institutes admit students under various courses from different locations, educational background and with varying merit scores in entrance examinations. Moreover, schools and junior colleges may be affiliated to different boards, each board having different subjects in their curriculum and also different level of depths in their subjects. Analysis of this data can very well be achieved using the concepts of data mining. For this purpose, we have analyzed the data of students 11th and 12th. This data was obtained from the information provided by the students to the institute website. Performance monitoring involves assessments which serve a vital role in providing information that is geared to help students, teachers to take decisions. The changing factors in contemporary education has led to the quest to effectively and efficiently monitor student performance in educational institutions, which is now moving away from the traditional measurement and evaluation techniques.

II. LITERATURE REVIEW

Student Performance Analysis System (SPAS) [1] Chew Li Sa et.al [1] have proposed a framework named Student Performance Analysis System (SPAS) which is able to predict the student's performance in course "TMC1013 System Analysis and Design", which in turns assists the

lectures from Information System department to identify students that are predicted to have bad performance in course "TMC1013 System Analysis and Design". The proposed system offers student performance prediction through the rules generated via data mining technique. The

data mining technique used in this project is classification, which classifies the students based on students' grade.

b) Student Performance Analyzer (SPA) SPA is existing secure online web-based software that enables educators to view the student's performance and keep track of the school's data. The SPA is a tool designed for analyzing, displaying, storing, and getting feedback of student assessment data [2]. It is a powerful analyzer tool used by schools worldwide to perform analysis and displays the analysis data once raw student data is uploaded to the system. The analysis is done by tracking the student or class to get the overall performance of student or class. It helps to identify the students' performance which is below the expected level, at expected level or above the expected level. This would allow the educators or staffs to identify the current students' performance easily. Other than that, it enables various kinds of students' performance report such as progress report and achievement report to be generated.

c) Cristobal Romero [3] Educational data mining (EDM) is an emerging interdisciplinary research area that deals with the development of methods to explore data originating in an educational context. EDM uses computational approaches to analyze educational data in order to study educational questions. This paper surveys the most relevant studies carried out in this field to date. First, it introduces EDM and describes the different groups of user, types of educational environments, and the data they provide. It then goes on to list the most typical/common tasks in the educational environment that have been resolved through data-mining techniques, and finally, some of the most promising future lines of research are discussed.

III. METHODOLOGY

A) Student Login/ Authentication

It is important to make sure to provide student belonging to the organization would get to login by common credentials which would make them easier to access the interface.
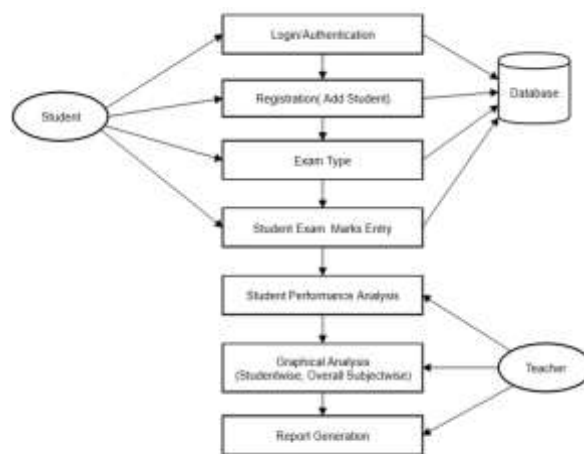

Fig: Login

Fig.3.1 Architecture Diagram

B) Registrations.

Student would have to enter their detailed information Name, Roll No, Class, Email, and Contact No. This data would then be stored in backend database. Student must ensure that they enter data according to correct format.

Fig: Student basic data entry

C) Student Exam mark entry

In order to analyze students result in course they have to import important components listed below along with selection of student name, Roll No.

Exam type selection:

From:
- Unit test 1
- Unit test 2
- Semester 1
- Semester 2
- Preliminary 1
- Preliminary 2

Subject name selection from:

- English
- Mathematics
- Physics
- Chemistry
- Biology
- Information Technology.

Fig: Student marks entry
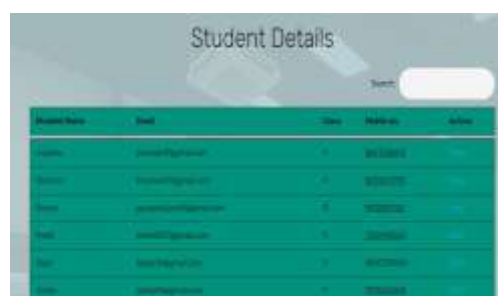
D) Graphical analysis:

In order to graphically analyze student result components such as student name, Roll no, has to be selected. And select the view button across the student record.

Graphical analysis would be done in 2 parts:

Individual student wise: Where the record of individual would be displayed graphically by first providing roll no and name of student.

And then selecting exam type as unit test1, semester1.

All subjects are represented graphically along x axis and their marks distributed along y axis.

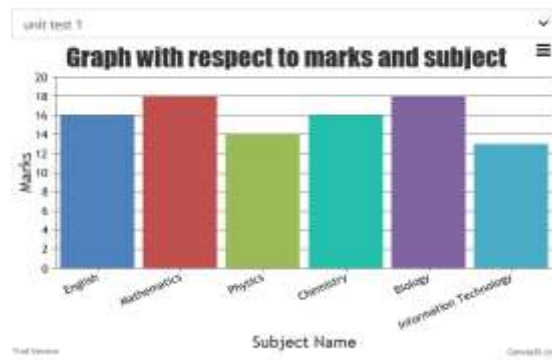Fig: Selection of student record for individual graphical analysis

Fig :Studentwise individual analysis

2. *Overall graph* would be displayed where teacher has to select subject and exam type (for ex: English subject unit test). Xaxis represents all the student and y axis represents mark distribution of that Exam for that subject.
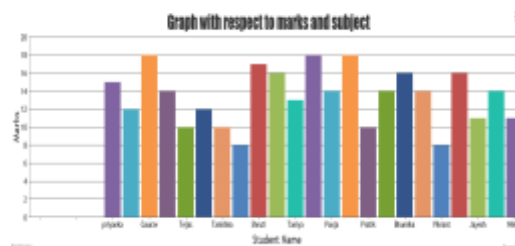

Fig: subject and exam type selection

Fig: Subjectwise Overall student performance

E)   Report Generation:

After selecting student and examination type. The data would be displayed in report all subject marks would be displayed along with total marks, percentage and indication of Pass or Fail overall.

Fig: Result

IV. CONCLUSION

The project concentrates on a development of the system for student performance analysis. In future the system can be extended to analyze and predict the performance of the student to guide them for recruitment and higher studies. This system aims to guide students in the areas where they are lacking and where improvement is required. Predicting student academic performance is often one of the biggest efforts in Educational Data Mining. The study explores the possibility to predict the success rate of students enrolled in a course using analysis. The main objective of our methodology is to examine the major factors which are causing dropout of student and to help the students of higher secondary (11th, 12th) to improve their performance by evaluating them. The results of the study show that our proposed model is very helpful to analyse student's result on behalf of their performance

V. REFERENCES

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