Student Performance Analysis System (SPAS)

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Abstract— Almost every university have their own management system to manage the students' records. Currently, even though there is a student management system that manages the students' records in Universiti Malaysia Sarawak (UNIMAS), no permission is provided for lecturers to access the system. This is because the access permission is only to top management such as Deans and Deputy Deans of Undergraduate and Student Development due to its privacy setting. Thus, this project proposes a system named Student Performance Analysis System (SPAS) to keep track of students' result in the Faculty of Computer Science and Information Technology (FCSIT). The proposed system offer a predictive system that is able to predict the students' performance in course "TMC1013 System Analysis and Design", which in turns assists the lecturers 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.

Keywords- Student performance; student analysis; data mining; student performance analysis; classification; prediction; system

I. INTRODUCTION

Students are the main asset for various universities. Universities and students play an important role in producing graduates of high qualities with its academic performance achievement. Academic performance achievement is the level of achievement of the students' educational goal that can be measured and tested through examination, assessments and other form of measurements. However, the academic performance achievement varies as different kind of students may have different level of performance achievement.

The student academic performance is usually stored in student management system, in different formats such as files, document, records, images and other formats. These available students' data could be extracted to produce useful information. However, the increasing amount of students' data becomes hard to be analysed by using traditional statistic techniques and database management tools [4]. Thus, a tool is necessary for universities to extract the useful information. This useful information could be used to predict the students' performance.

Currently, in Universiti Malaysia Sarawak (UNIMAS), even though there is Intelligent Mining and Decision Support System (InMinds) that is able to view student performance, it is limited only to top management such as Deans and Deputy Deans of Undergraduate and Student Development due to its privacies setting. The lecturers, who are not part of top management, do not have the permission to view the students' performance. Presently, lecturers seek for students' data manually, from students' files and records, without aid from automated system. Thus, it is a hurdle for each lecturer to retrieve information of their students' data throughout the semesters. The proposed performance analysis system allows lecturers to retrieve the students' previous performance in courses offered by FCSIT and increase the understanding of factors that contribute to students' performances in present courses taken by students. Other than that, the IS lecturers are able to predict students' performance in course "TMC1013 System Analysis and Design". Thus, this helps the faculty to aim for higher success rate in the future.

In this project, a system is developed to predict student academic performance in course "TMC1013 System Analysis and Design" offered by FCSIT through analysing the students' performance using data mining classification techniques. Moreover, Student Performance Analysis System (SPAS) is developed to assist lecturers in consulting with students by giving lecturers the permission to view the students' past performance in a particular course and semester.

There are a few objectives that are identified during the development of this system:

    i.   To develop a system for students' performance analysis.

    ii.   To assist the IS lecturers in analysing and predicting student performance in course "TMC1013 System Analysis and Design" by using data mining technique in the proposed system.

    iii.   To identify the factors that affect the students' performance in course "TMC1013 System Analysis and Design"

    iv.   To assist lecturers in keeping track of the students' progress throughout the semester.

II. LITERATURE REVIEW

A background study is done to review similar existing systems used to perform student performance analysis. Three existing system are chosen because these systems are similar to the proposed system.

A. Faculty Support System (FSS)

Shana and Venkatacalam has proposed a framework named Faculty Support System (FSS) which is low in cost as it uses cost effective open source analysis software, WEKA to analyse the students' performance in a course