Development of Student Attendance and Continuous Assessment Performance Dashboard

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Abstract: *Student performance dashboard provides information on the performance of student attendance and student continuous assessment. The dashboard is important as it is very related to student academic performance. The problem of monitoring during online learning has create an issue in education sector. The objective of this paper is to design and develop student dashboard for lecturer to be able to monitor the individual student attendance and their performance in continuous assessment easily. The dashboard should be able to show the total percentage of student attendance and their continuous assessment performance with relevant visual representation. Regarding student attendance, a warning message will appear in individual student dashboard if their attendance is not satisfactory. This will alert the lecturer to take further action regarding the attendance issue. In addition, the dashboard is also shared with individual student for them to view their own performance to keep their own study performance. The dashboard act as monitoring platform that give advantages to both sides of lecturer and student. For future planning, the dashboard can be used as overall student performance starting from their first year until they graduated. The dashboard can be integrated with individual student profile that can be added to their digital CV as their performance during studies are recorded and visually demonstrated.*

Keywords: student attendance, dashboard, assessment, visual representation, monitoring platform

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1. Introduction

Dashboard is a tool that can be used to display relevant information from a set of indicators to user. Through a good and relevant visual representation, the key strategies and decision making can be completed. Dashboard should contain limited, understandable information. The goals of dashboard are to monitor business processes and activities, analyse the cause of problem, and manage people and processes to improve decisions (Eckerson, 2010). A dashboard should contain text and graphics that show information for specific objectives, it should allow for any updated information and fits on single screen.

Open learning, distance learning, flexible learning and e-learning normally refers to similar definition as the students can study without having face to face with their teachers. Madrid et al. (2020) proposed a model to measure the quality of open learning courses and designed a dashboard to presents the results. The development of dashboard is important to visualize the results of the model which useful for decision making.

111

Moodle based learning management system is one of the e-learning platforms that could provide visualization dashboard. Santoso et al. (2018) created Moodle for student-cantered learning with the features of synchronous inter-action media such as for chatting, asynchronous interaction such as discussion forum, assessment, user management, and course management. The used of visualization able to highlight effects on features components in a dashboard.

Various problems of limited and non-centralized information on student attendance and continuous performance give impact on low efficiency in delivering student progress. It also could delay the decision making in reporting the student attendance to the department for further process.

The objective of the paper is to design and develop student dashboard that can used as a platform to monitor student attendance and continuous assessment performance in which this platform is real time and can be share with respective student. Hence teachers able to monitor their student performance in terms of attendance and continuous assessment and the student able to keep track their own performance also. This could boost their energy and spirit to study hard in order to achieve appropriate achievement.

2. Literature Review

Yahya and Anwar (2013) discussed the use of dashboard to manage and monitor student attendance using dashboard. The purpose of the dashboard is to show the absence rate with necessary graph. In addition, the reasons for the absent is also recorded either excused absence or unexcused absence. Corrin and de Barba (2014) showed the analysis of the use of learning analytics dashboard in providing effective feedback in blended learning environment. It motivates student and guide them towards subject and give guidance in learning activities and assessments. Kazemitabar et al. (2016) investigated on the ways to support problem-based learning facilitators and designed online tools in online learning environment to increase instructional capacity in medical field. The tool named as HOWARD which represents as Helping Others with Augmentation and Reasoning Dashboard. Juneja et al. (2016) presented types of dashboards, architecture and tool required. Besides, 9 parameters have been identified to measure the progress and performance of students in Punjabi University, Patiala. Their parameters are student attendance, monitoring student performance, average time per week spend by student, discipline, student who attend seminar, lab performance, results in three years, internet connection and geographical distribution of students.

3. Methodology

Student performance dashboard provides information on the performance of student attendance and student continuous assessment. This dashboard is important as it is very related to student academic performance. The lecturer able to monitor the individual student attendance and their performance in continuous assessment easily. The framework consists of 3 parts which are student information, attendance report and student continuous performance. The framework is shown in Figure 1.
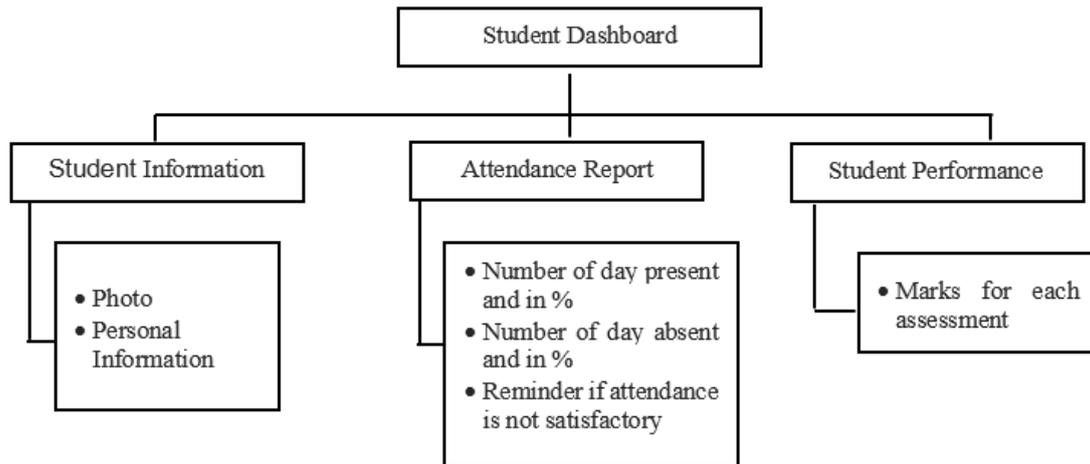
Figure 1: Framework of Student Dashboard

In the first part which is student information, the student photo and their personal information is captured and stored. In the second part, attendance report records the attendance of the student by storing the number of present and absent day and convert it to percentage. A warning message will appear if the attendance of the student is not more than 80 %. This will alert the lecturer to take further action regarding the attendance issue. The last part stores the performance of student continuous assessment. The mark for each assessment is stored. In addition, the dashboard is also shared with individual student for them to view their own performance to keep their own study performance.

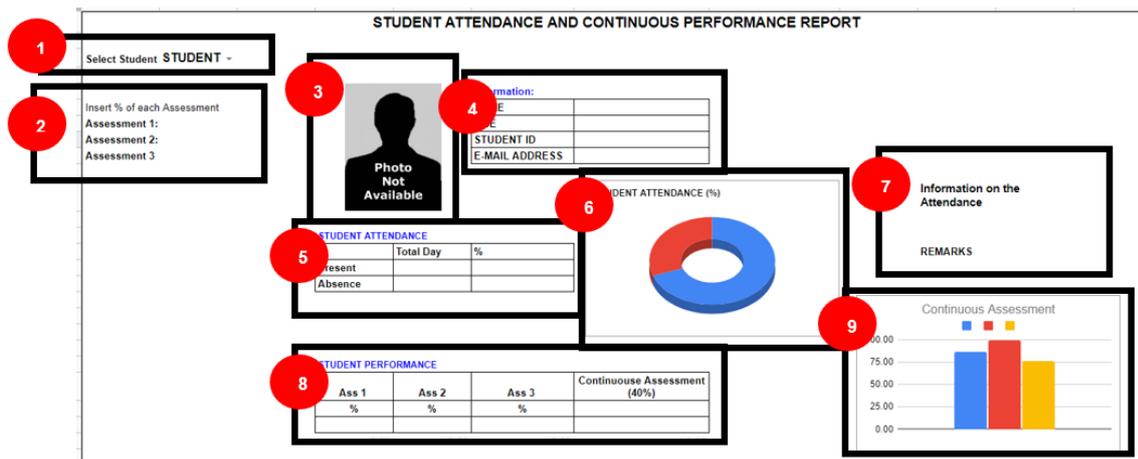Figure 2 shows the layout design of Student Performance Dashboard. There are 9 items are required in the dashboard.

Figure 2: Layout Design for the Student Performance Dashboard

The first item is the list of students in a class. Then, as it is limited to three assessments, the percentage of each assessment is required to be filled. Student photo is stored in third item. Then, student information such as name, age, student no and student e-mail address are stored. It is important to capture the student attendance by capturing their present and absence day. Then the percentage of the attendance are calculated and visualize in a 3D pie chart. In addition, a remark on student attendance is captured in item seven. This remark can be an alarm for

113

lecturer to take note on the student attendance. In item eight the percentage of each assessment is recorded and bar graph to visualize each assessment is shown.

4. Results

Figure 3 shows the design of student dashboard with selection of student list that the lecturer can choose for record purposes.
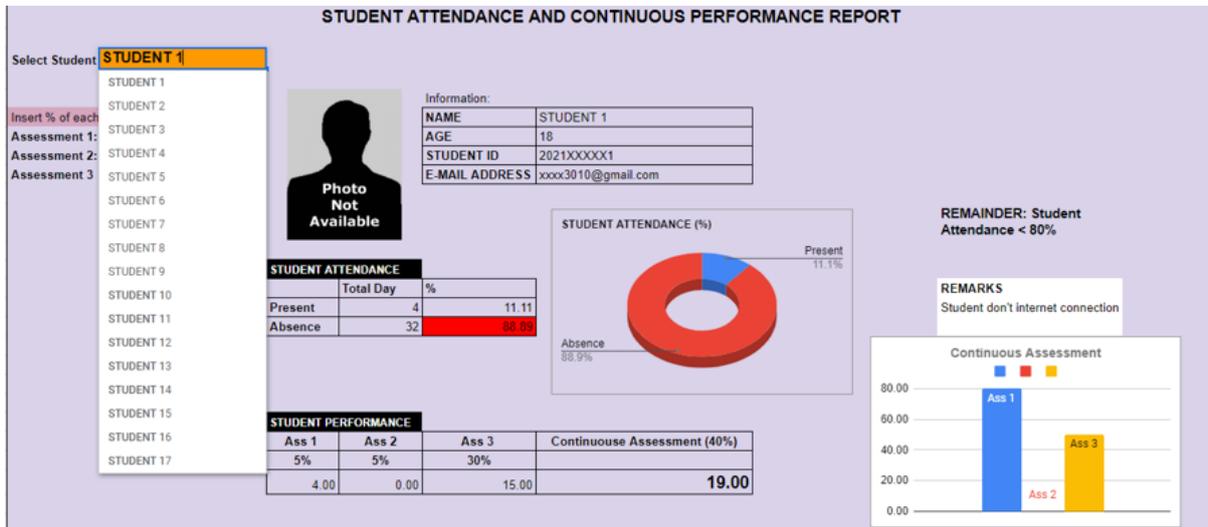

Figure 3: Selection of Student List in Student Dashboard

All the information is automatically store from the database of student information, student attendance and student marks.

Figure 4 and Figure 5 show the sample for Student 1 and Student 2 respectively. From Figure 4, a remainder is displays as the attendance of student is very poor which is less than 80% and the percentage of attendance also in red color. Besides, a remark is also shown, that state the problem that student might encounter. Based on this visualization, the lecturer can think of the further action that need to be taken. In addition, the bar chart for the continuous assessment is also shown. It can be observed that the student did not submit Assessment 2.
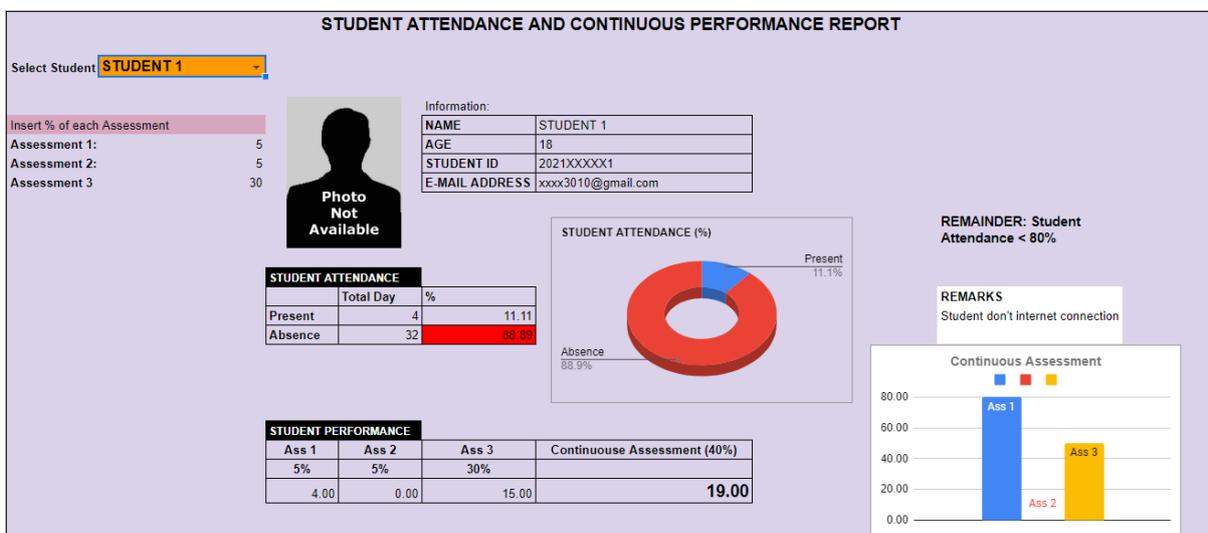

Figure 4: Sample Student 1

Figure 5 shows the sample of Student 2 where the performance of continuous assessments consist of 3 assessments is also shown. From this visualization, it can be seen a notification that the student attendance is good.
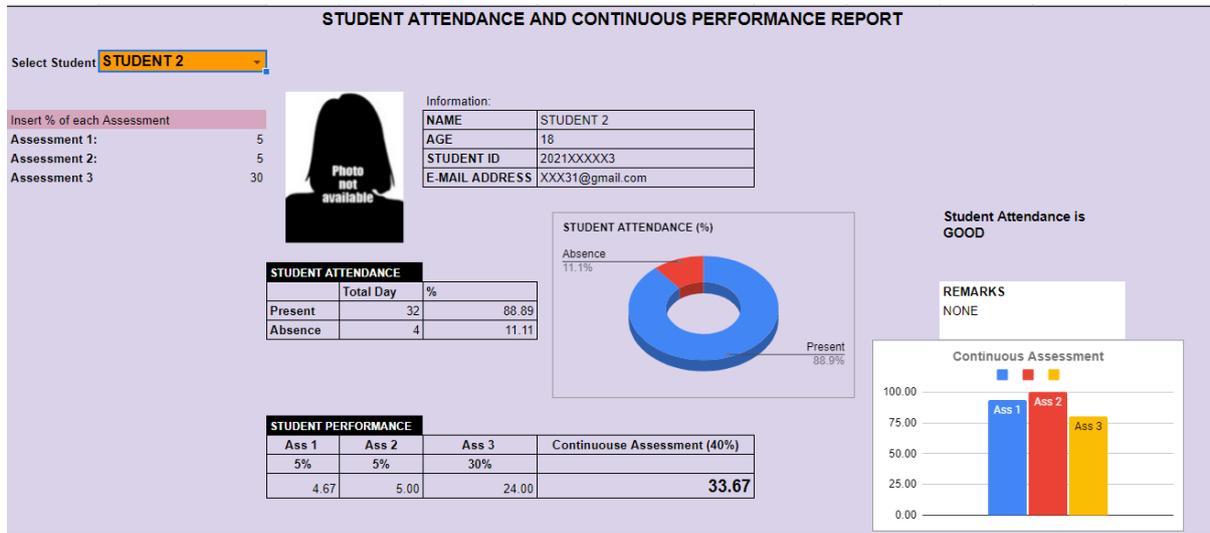

Figure 5: Sample Student 2

The dashboard can also be shared with respective student through student registered e-mail address. The student's view is as in Figure 6. Basically, the lecturer and student share the same view, the different is, the student only can view their page and they cannot do any changes or modification without notifying their lecturer. Besides, they unable to access another student dashboard as it is considered confidential to the other student.
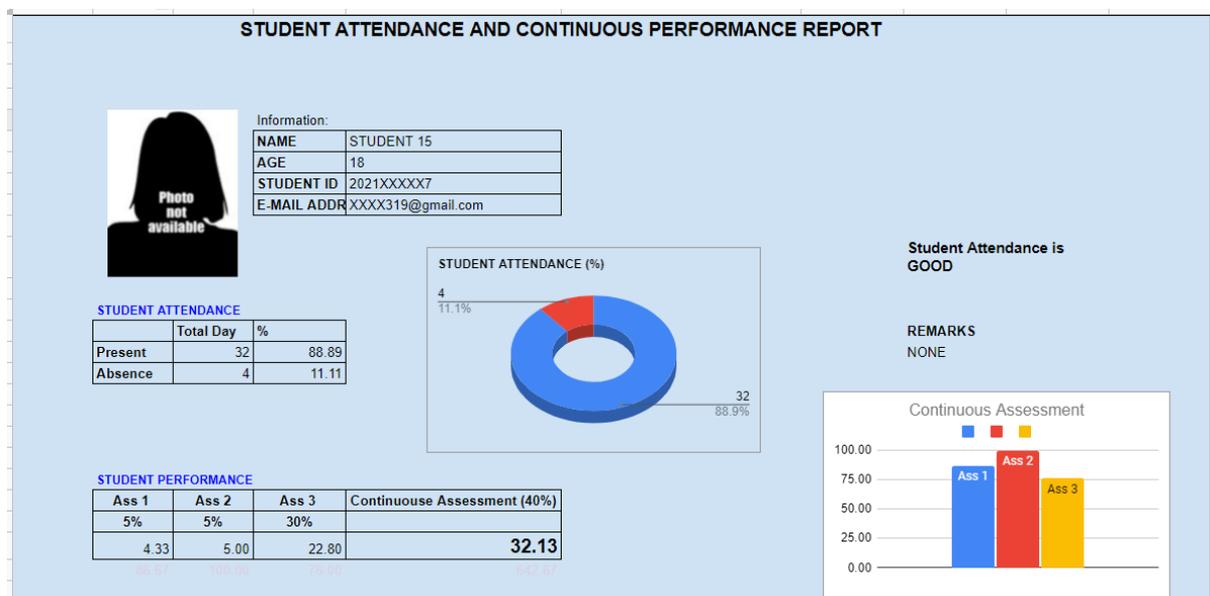

Figure 6: Sample View of Student 15 Page

This can be a digital performance card, where the lecturer monitors the student attendance and performance in real time and frequently while the student able to see their record in real time also.

4. Conclusion

As conclusion, the development of student dashboard paly important role for both parties of lecturer and student. From the dashboard it could manage student attendance and give early warning on the performance. In addition, the continuous assessment of student is also monitored. Besides, the dashboard is accessible by student and lecturer at anytime and anywhere and it require low cost to maintain. As for recommendation, a complete dashboard that covered student profile can be developed in future as it can be embedded in their digital portfolio.

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