Mobile Self-Management System for University Students using Mobile Application Development Lifecycle (MADLC)

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***Abstract*—This study examined the effects of self-management system in the academic enhancement for poor student who got CGPAs below 2.0 in Universiti Teknologi MARA (UiTM), Malaysia. In this research, the qualitative study was conducted to explore, describe, and examine how the self-management system helped UiTM students to develop motivation and concentration in their studies. This project used Mobile Application Development Lifecycle (MADLC) with respect to mobile applications development. The purpose of this project helped students managed themselves using the recent technologies which are mobile application, computer added learning and self-management system compared to traditional method. The proposed system showed that students that used this system improved their study and get better CGPAs.**

***Index Terms*—Mobile Application Development Lifecycle; Qualitative Study; Self-Management System.**

I. INTRODUCTION

Self-management strategies have been used for students with a wide range of academic courses especially for poor performance students. Self-management is a key skill that helped students to develop motivation and concentration on their studies. The self-management system has become a support tools in high education, however, there are no such self-management system in UiTM.

There are several reasons lead to poor academic performance in university such as improper timetable, inadequate study time and slowness in getting the information. Furthermore, students with improper timetable have problems in managing time and other responsibility in their classes.

Self-management systems have been used with a wide range of academic courses especially for poor performance students. Self-management systems are key skills that help students to develop motivations and concentrations on their studies. These systems have become tools in providing an additional support to teachers and students [1]. In this research, self-management system is developed in mobile platform.

The aim of this research is to develop self-management system in mobile platform that assist students with poor academic performance in managing themselves for their study. Students can manage their classes through timetable scheduling, track their lecture tasks, assignments and reminders. This system also can notify students about their incomplete task, daily classes and upcoming exam. Students can prepare themselves to finish and keep update their tasks.

II. RELATED STUDIES

The objectives of self-management systems used to teach students independently complete their tasks and take an active role to monitor and reinforce their own actions. The goals of using these systems are to foster self-reliance and independence. Generally, self-management systems have a few components such as scheduling, time management, reminder and note.

A. Scheduling

Scheduling system in the simplest form is a listing of activities and events organized by time. Currently, scheduling application in mobile device has become a preferred method for keeping study schedules for universities students. Scheduling is important to people in order to manage their daily activities especially to students.

The scheduler system acts as a medium for the students to communicate, to share, to authenticate, to know the different activities, to participate in the events, to set reminder, to get updates from the forums [2]. Their activities become more effective if the schedule is carefully made. To develop an efficient scheduling system, it's also needs to be cooperated with time management module.

B. Time Management

Time management system has been referred as a technique for effective time use, by accommodate sufficient time to complete the numerous task required [3][4]. According to [5], students procrastinate their class task and they experience a sturdy in finishing their assignment. Therefore, in order to keep schedules in plan, time management module is used to organize future occasions and to make decisions [6].

C. Reminder/Alarm

Nowadays, students use reminder everyday regardless their age to manage their lives [7]. It represents such as a calendar, sticky notes, diaries or visual reminders. Reminder is an example of assistive technology. There are many methods of reminder to help students. Using reminder, students can track their work that are not completed. Students can add their homework, upcoming projects and test so they can track their tasks and also be reminded when the deadline are due. A last-minute work can be avoided and students can be fully prepared for all their upcoming tasks. According to a study [8] conducted by McGraw-Hill Education in 2015, about 62% students said that using reminder on smartphone helps them to feel more prepared for class.

D. Notes

Many students and lecturers feel that note-taking is an important skill to have, however students did not manage to take the notes [9].

Taking notes on a digital device can be less restrictive depending on the application students' use. The note-taking applications allow students to play back their notes, which are a great tool for students who are audible learners. Additionally, when using this technology, students can also record sound from the lectures.

E. Mobile Application Development Lifecycle

For the proposed self-management system, the methodology used is Mobile Application Development Lifecycle (MADLC). This methodology is chosen because MADLC allow a systematic approach in development as mobile application are different from the desktop application and have a complicated functionality [10]. Figure 1 shows the phases in MADLC methodology. There are seven phases in MADLC that is identification, design development, prototyping, testing, deployment and maintenance. Most of industry-oriented application is developed using MADLC model [10]. According to [11], there is needed to have a distinct mobile application development lifecycle model. In mobile application development, it involves various complex functionality and services like telephony services, location based services and different connectivity modes.

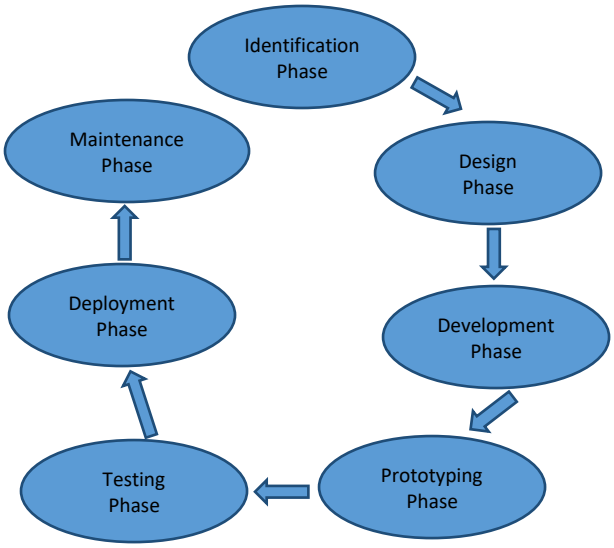

Figure 1: Mobile Application Development Lifecycle (MADLC) Model
Source: (Vithani & Kumar, 2014)

III. The Proposed System And Results

Mobile self-management system is one of the tools to help students to monitor and support their result. Figure 2 shows the main page of the system from the view of the students. Students have to login before proceeding to the next page. Then, users are directed to a dashboard page after user have successfully logged in into the application. In order to proceed to the next page, users have key-in a correct username and password in order to successfully login to this application.

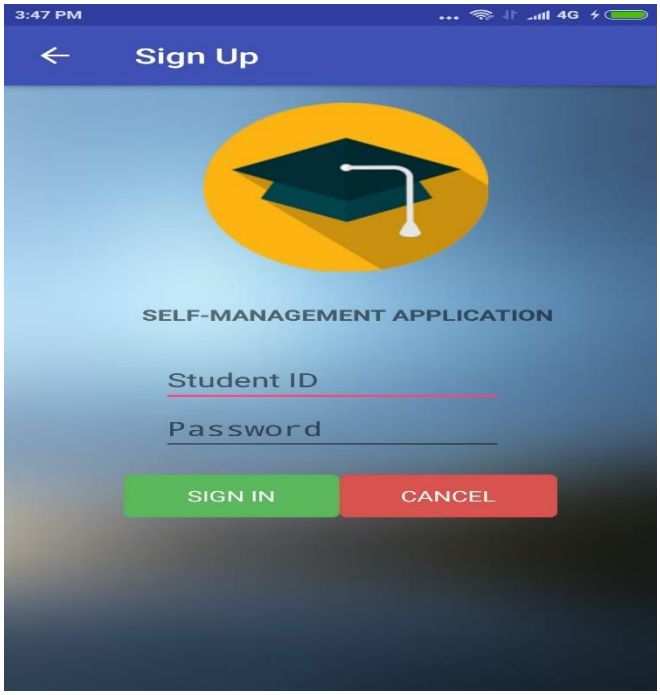

Figure 2: Mobile Self-Management System

Using the system, they are features such as student profile, CGPA calculator, manage timetable, alarm clock and notes for reminder as shown Figure 3.

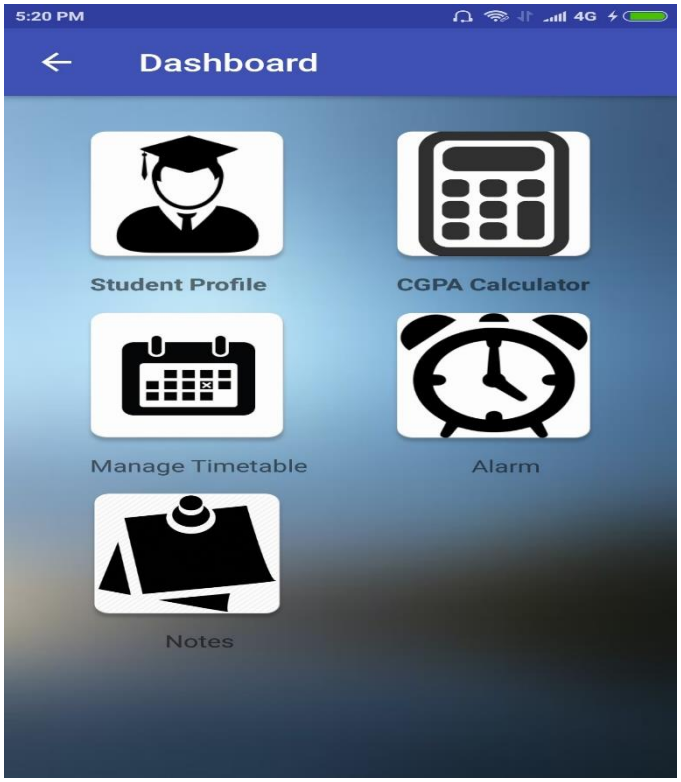

Figure 3: Dashboard of the System

In managing their lecture timetable, students have to key-in their weekly timetable. This module notified the students to their classes. This module as shown in Figure 4.

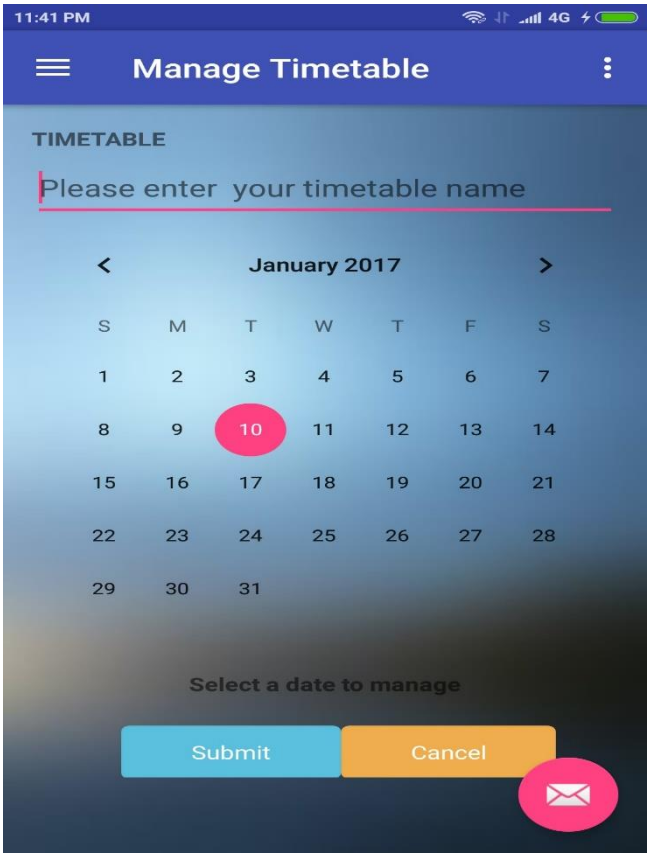

Figure 4: Timetable Management

In this research, we conducted a survey focusing a small group of students (20 students) with CGPA below 2.0 for first semester at Faculty Computer and Mathematical Sciences Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia. To evaluate the effectiveness of the proposed system, the qualitative study is conducted. In Figure 5 shows a graph explained the result from the questionnaire given to the students.

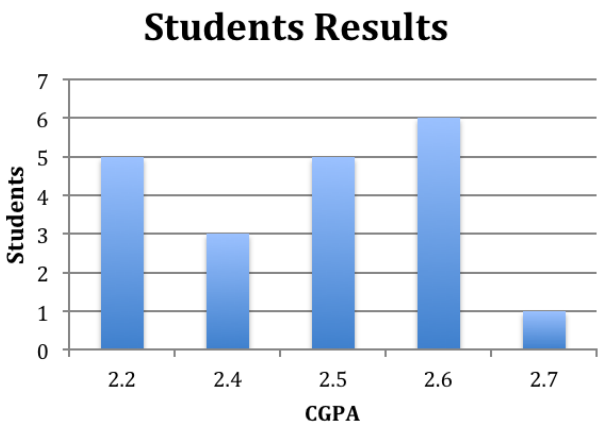

Figure 5: Result after using Self-Management system

Students are asked about their satisfaction after using this system. In Figure 6, there are questionnaire that been asked to 20 students after using this mobile application system. In Figure 7 shows about the result from the selected students.

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SELF-MANAGEMENT FEATURES:

0    1    2    3    4    5    6    7    8    9

1.  Learning to operate the system
2.  Exploring new features by trial and error
3.  Assist in manage lectures timetable
4.  Notify activities

Difficult                                    easy
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Figure 6: Questionnaire about Student's Satisfaction

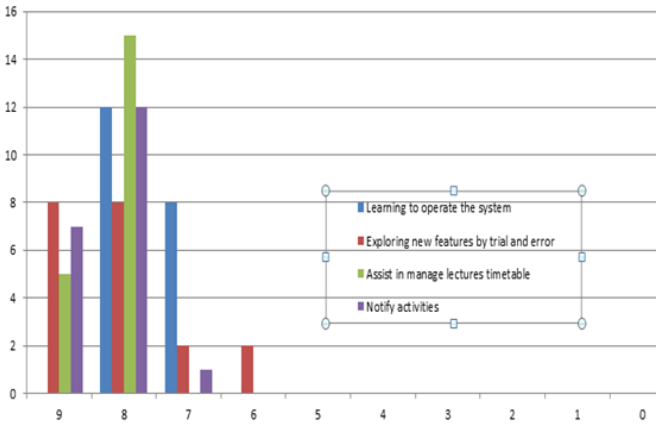

Figure 7: Result from Qualitative Study

IV. CONCLUSION

From this research, we proposed to develop this application using Mobile Application Development Lifecycle (MADLC). This method is a representation of the conventional Software Development Lifecycle (SDLC) but from the perspective of a mobile device. In order to make mobile application development process efficient, developers have to understand the application development lifecycle precisely. It helps them to develop the application seamless and feature-rich.

The proposed system is analyzed using qualitative study to a small group of students with poor result for their first semester at Faculty of Computer and Mathematical Sciences, UiTM Shah Alam. From this study, the proposed self-management system helped the students to improve their result. This proposed system give benefit to the students especially that have a poor performance in their academic.

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