

HOMETUTORINK: A MOBILE APPLICATION FOR PRIVATE-TUTORING SERVICES

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ABSTRACT

The inclination of parents towards having their children to obtain best possible academic results as well as to secure scholarships for higher education are the common practices in Malaysia. Some of these parents are willing to pay high price to secure the best tutors for home or private tuitions. This is because the teachers at schools are struggling to handle high numbers of students per class as well as incapacity of teachers to provide one-to-one coaching and mentoring due to high workloads. Hence, home or private tutoring is next practical solution that contributes in the building the academic excellence of the children because of the one to one coaching and mentoring, small class, close monitoring on the learning, and continuous observation on the student's performance. However, the parents are still facing impediments to decide the desirable home or private tutor for each specific subject at the reasonable rate. Therefore, this paper discusses on the issues faced by the parents in securing home/private tutor as well as a new developed mobile application to facilitate private-tutoring services. With the application HomeTutorink, parents, teachers, tutors, and students have better opportunities to decide, earn, learn, and thrive successfully together..

Keywords: home; private; tutor; education; academic; performance

INTRODUCTION

Every parent in Malaysia has a common objective for their children, which is to ensure the children able to obtain the best grades in school academic or curriculum performance. Parents are willing to invest in external-school education activities to improve their children's academic performance [1]. Home tutoring is a famous option for private supplementary education activities to improve their children's educational performance. A survey related to household expenditure conducted in 2004/2005 showed that 20.1 percent of the household expenses of a family with a minimum one child in the range of 7-19 years old are used to pay their children private tutoring fees [2].

In order for parents to find a tutor, it requires an effort to explore traditional advertisements such as banners

and newspaper ads space or surf-through website advertisement which listed various tutors or teachers. However, there are issues raised in finding a home-tutor such as getting a suitable and an effective home-tutor for their children. The fee for home-tutor class is pretty expensive these days. Apart from the high ceiling price of the class, parents are at risk of signing their kids to classes that offer low quality in teaching and delivery methods. It is necessary to find an immediate solution for these issues, such as allow parents to change the tutor without the need to pay for the four sessions or gain updated information on the teaching performances or feedback from their previous clients.

Currently, there are very few available intermediary's mobile application platforms available on the application marketplace, which allows parents to seek

a bigger scope of private-tutors in Malaysia through a specific criterion to match them together. There are high demands for private tutoring in Malaysia and in fact, approximately 93% of families in Malaysia that spent their money on their children private-tutoring activities, allocated tenth-per cent amounts from their income to channel funds on their kid's private tutoring [3].

Somehow, there is no proper utilisation to develop a competitive intermediary's platform, which plays a role as a marketplace for home-tutoring services. Most parents have their own specification whenever they are looking for a home- tutor to teach their kids on one or more subjects, such as location, education level, mode of class and availability of time- session. Besides, parents absolutely want to minimise the possible risk of getting an ineffective home-tutor since it does involve high cost.

Besides issues related to parents finding a suitable tutor for their children, a fast-paced side income application such as Grab, Uber and MyCar has become top mobile applications in Malaysia because of the benefits provided from those apps. The idea of everyone can be a taxi driver or rider were super-effective and in fact, some of the driver who used those application as the medium to earn side-income are now able to turn it as a full-time career. This concept will be adopted in this project as a solution to helps parents to find a qualified and suitable tutor for their children as well as to provide a medium for extra earning to the qualified personnel to teach subjects offered in the schools.

The objectives of this paper are (1) to share the issues faced by the parents in securing home or private tutor, and (2) to introduce a new developed mobile application to facilitate private-tutoring services.

LITERATURE REVIEW

Formal school education in Malaysia

Formal school education in Malaysia consists of few levels which have been established by Malaysia

Ministry of Education (MoE), and it starts with pre-school, primary school, lower secondary school and upper secondary school [4]. Each level of education is categorised to a specific range of age groups with a specific aim and an objective set on every level. Early education for Malaysian is pre-school education which set for children from 4-6 years old with childcare and nursery program which held in public or private kindergarten. Then, proceed to primary school which set for children from 7-12 years old and after that would be the secondary school education, set for the children from 13-17 years old.

Private-tutoring in Malaysia

Private tutoring can be defined as an extra class conducted outside of the formal school education system in which the tutor teaches the similar subjects undertaken in school by the students for financial and educational gains [2]. Private tutoring in Malaysia is famous because of the oversized classes in the school making it hard for teachers to focus on every student in the class. It is difficult to ensure that each every student received the same rate of attention, learning and understanding on the lesson, including monitoring of the student's performance. Moreover, private tutoring not only offers a way to improve their understanding and application of the subject but also focuses on skills needed for tackling the trigger point in examination questions [5].

Private tutoring can be found into two modes of classes, either conducted in a Tuition, Guidance or Learning Centre with classes conducted in 5-15 students or personal one-to-one tutoring which normally happened in the student living place [3]. The phenomenon of private tutoring in the Malaysia education industry has widely known and practised by students since 90's. A study conducted by Chew and Leong in 1995 [6] indicates 52% of 8432 secondary school students received some form of private tutoring. Figure 1 shows the numbers of students who receive private tutoring based on the study conducted by Chew and Leong.

Table 4 Distribution of students receiving supplementary tutoring by race in Malaysia

Race	<i>Receiving tutoring</i>		<i>Not receiving tutoring</i>	
	Number	%	Number	%
Malay	1,471	39	2,265	61
Chinese	2,213	63	1,276	37
Indian	449	71	182	29
Others	236	41	340	59

Figure 1 Survey conducted in 1995 on numbers of students receiving private tutoring, by race in Malaysia [6]

Even after a decade, the trends of hiring or sending private tutors are still inclining, and this can be proven through a survey conducted in 2011, on Form 1 student from eight schools in Kuala Lumpur and Selangor giving a result of 88% from the total numbers of respondents had received private tutoring during their primary-school years [7]. In Malaysia, private tutors could be anyone from school teachers, college or university students, lecturers or anyone who can teach and assist school students to enhance their academic performance.

Factors that drive the expansion of private-tutoring demands in Malaysia

Based from an earlier review of the past studies on private-tutoring, sending their children to a private tutor institution or hire a private tutor to improve their academic performance have been the primary key to success in academic excellence for school students. The expansion of private tutoring has been driven by few elements such as Malaysia education structure evaluation based on an examination, limited seats on subsidised university and scholarships as well as from the mentality perspectives, the Asian "A" culture.

The primary reason why private-tutoring has become an attraction among parents is because of the aspiration from parents to have their kids to obtained the best grades in their academic performances. The curriculum structure of education outline in Malaysia (KBSM and KSSR) have giving emphasis on examination to the students in academic evaluation,

which leads to the conclusion of students with many A's or with the best grades will be considered as the best student [8].

Other than that, the limitations of financial resources, limited number of seats in subsidised universities and scholarships have contributed to intense competition among school students for them to save a spot for their future higher education placement. Parents are willing to invest in assuring their kid's education future, and this has contributed to increases in demand in private-tutoring [3]. In order for a student to obtain scholarships and education sponsorships, it requires a specific academic achievement in school. Thus, some students need to have a great academic result from the public examination.

Besides academic excellence and economy, ethnicity culture in Asia also plays a big role in contributing to the demand for private tutoring in Malaysia. In Asia, the cultures emphasis on the importance of excellence result in academic result, especially among Confucius [9]. For some reason, in a family gathering for a specific occasion, Asian families tend to show pride based on their children success in academic achievement. This culture has created a competition between families and friends in having their children at the best performance of academic results.

Electronic Commerce

E-commerce or Electronic Commerce can be defined as transactions that happen between a business

organisation and another business organisation (B2B) or with external parties such as customers or clients, suppliers and distributors (B2C) or consumers with another consumer (C2C) through information technology as intermediary's platform [10]. E-commerce is business transactions that happen online, which currently have been used widely by many business organisations and government agencies in Malaysia to enhance their business and management process to their targeted audience.

The practices of e-commerce were influenced by the growing number of internet users every year, and according to of US consulting firm, AT Kearney, e-commerce in Malaysia could contributing 6.4% to the GDP, which approximately equivalent to RM114 billion in revenue [10]. Today, there are more than 4 billion internet users in the world who used the internet for various purposes, from business to personal [11]. Figure 2 shows the number of internet users in Malaysia.

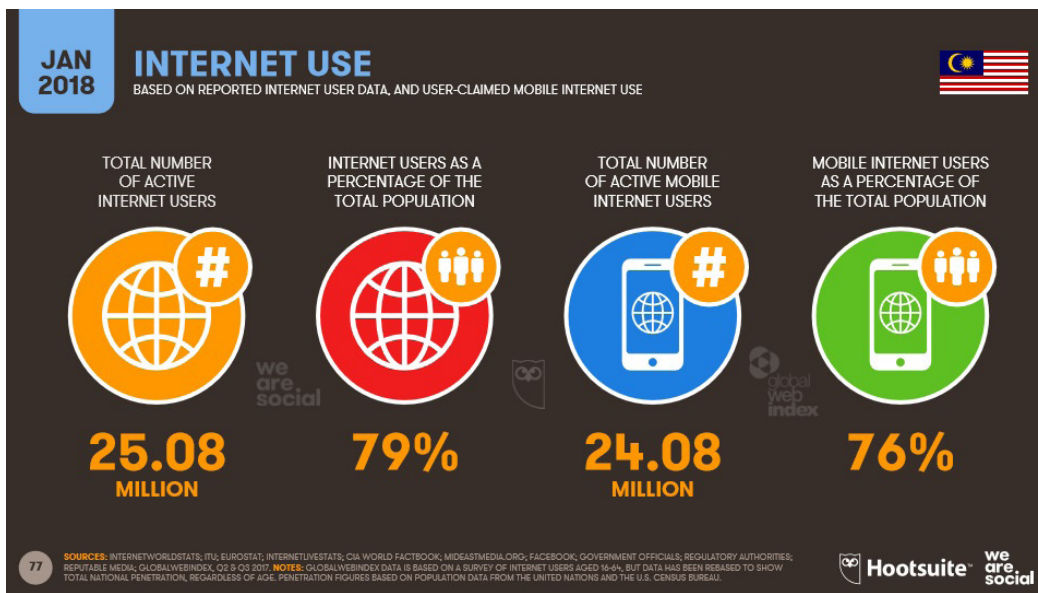


Figure 2 Percentage and number of internet users from the total population in Malaysia [11]

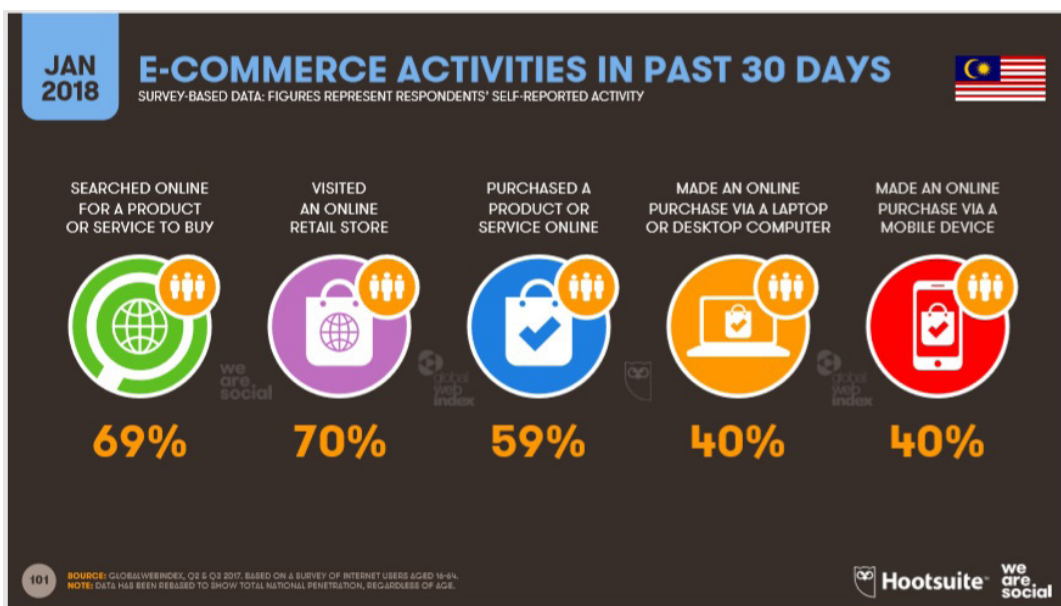


Figure 3 E-commerce activities of internet users in the past 30 days of 2018 [11]

Internet users in Malaysia become dependent on doing important activities such as shopping, paying bills, travelling booking, transportation hailing, information seeking and many others because of the platforms itself able to facilitate effectively in conducting several activities simultaneously in their daily life [12]. Besides, e-commerce allows small-medium enterprise companies to develop their business growth and remain competitive in the marketplace. This is because the operation, selling and marketing on the online marketplace are much cost-effective and efficient as compared to opening a physical store [13]. Figure 3 shows the e-commerce activities among internet users in Malaysia in the past 30 days of 2018.

Mobile Application

A mobile application is a software that runs on a mobile device such as smartphones, tablets and PDA's which perform several tasks for its users [14]. There are several types of mobile applications that have been built to meet their targeted user such as games, social networking, maps, news, business, education, financial, weather and travel booking and information [15]. The mobile application can be downloaded through several platforms based on the type of operating system and mobile devices. Currently, the most common platforms used to download mobile apps are Apple Store (for iPhone) and Play Store (for Android).

METHODOLOGY

The development approach for this project is the Rapid Application Development (RAD) model. The model was selected because of the capabilities to adapt to any changes that happened throughout the project duration. In the RAD, there are four main phases which include requirement planning, user design, construction phase and cutover phase. Each of the phase plays important roles to ensure the success of the development project.

Requirement Planning

By identifying the problems and understanding the information gained, specific objectives and requirements of the application were determined. The application will be operated on an android smartphone, with key features of,

- a. list of private tutors with specific criteria's to be selected by the parents,
- b. list of jobs for the private tutors to apply and promote themselves,
- c. private messages for communication and interaction,
- d. dashboard to manage the student and private tutor schedules.

These features and functionalities are designed for parents from the age of 21-65 and private tutors from the age of 18-65.

User Design

The application user-interface design and the system architecture of the mobile application are developed based on the information and requirement gathered from the previous phase. Each part of the application features and functionalities are designed according to use case diagram and activity diagram. The design of the interfaces are customized accordingly to the requirements given by the users that promotes good user experience. The essential requirement are login, registering, hiring private tutors and accept jobs.

Construction Phase

The process of integrating the system architecture design and logical function through programming and coding development are conducted in this phase. Every part of the module, input, process and expected output are built on Android studio and firebase as the cloud database. After the development, system testing are initiated to assure the expected functionalities and features components works well.

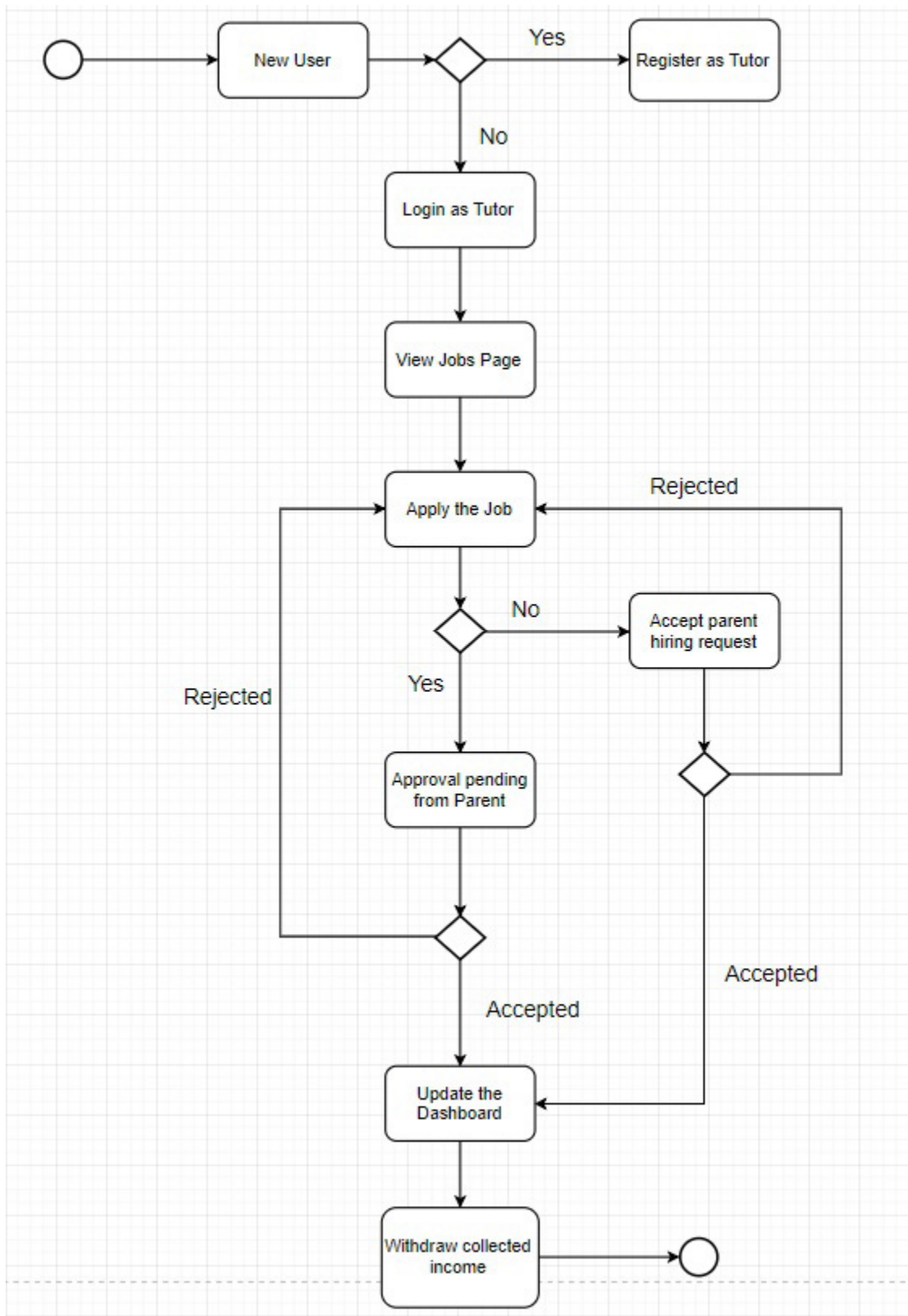


Figure 4 Activity diagram for Parent (top) & Tutor (bottom)

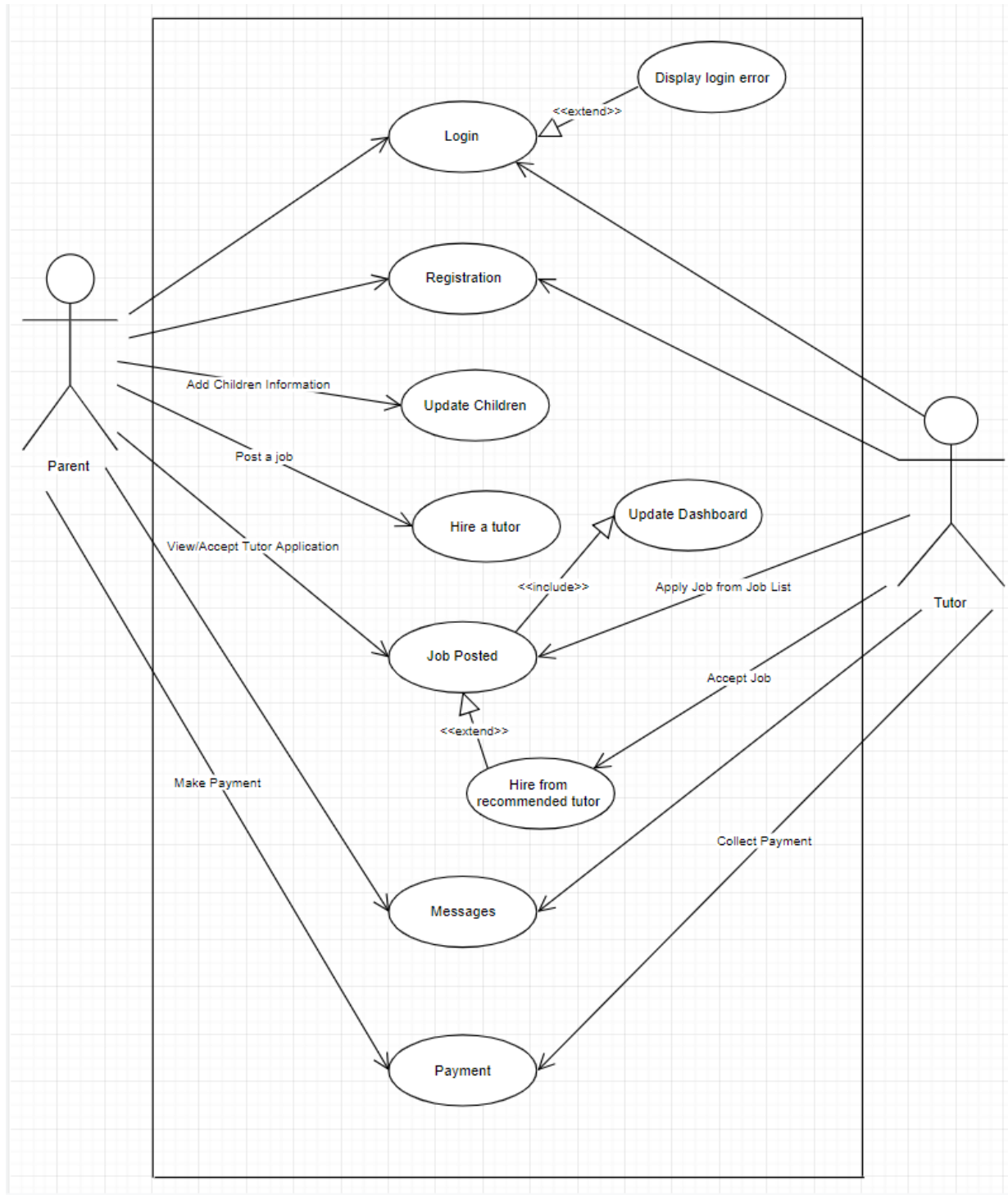


Figure 5 Use case diagram of the HomeTutorink mobile application

Cutover Phase

At this final phase of the RAD module, the whole process is finalised and the installation of the mobile application on a Smartphone process initiated. This phase is where the project deliverable can be seen physically but, it will not be released directly to the end-user yet. The acceptance testing is required to see how the completed product works on the first activation. Any flaws identified from user acceptance testing will be fixed accordingly before the application is declared as ready to be used by the end-user.

The survey focus on the respondents' perceptions of mobile application platform for addressing the existing issues and managing private-tutor class for their children. The majority of the respondents (covers up to 95.9%) responded that they would be interesting to use it while the balance of 4.1% telling on the opposite opinion. This result shows the potential of this mobile application to be widely used by the parents in Malaysia to manage their children's external education classes and activities.

If there is a platform on a mobile application to manage the private-tutor class for your children, would you be interest to use it?

73 responses

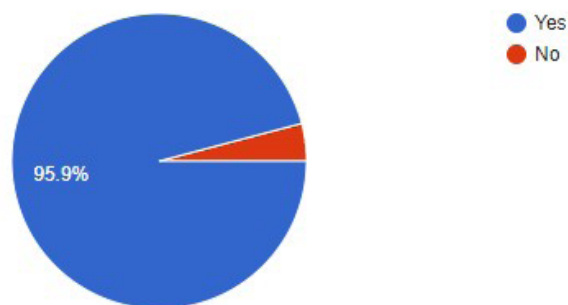


Figure 6 Interest of mobile application for home-tutor

RESULT AND DISCUSSION

Results of Data Gathering

As part of the data gathering process, the author has surveyed targeted parents in Malaysia to identify the characteristic of parents who sent their children to private-tutoring classes. The main objective of this survey is to have an insight on the project's relevancy and how is it reliable and fit for parents and tutors in private-tutoring services. This survey was distributed through social media pages and communication application platforms to gain a broader range of respondents which influence the answers and responses. Figure 6 shows one of the survey questions from the survey forms distributed.

Comparison of Features with other applications

In Malaysia, several organisations developed the same type of mobile-application as HomeTutorink and have been in the industries for 1-3 years. However, all of them only operates as an agent and not as an independent platform which either operates as a private tutor's advertisement for gaining potential clients or as an agent which taking commission from the first class conducted. Table 1 shows a comparison of another two mobile applications with their features that provides the same services.

Table 1 Comparison of HomeTutorink with other mobile applications

	Application Features	Target User	Dashboard	Hiring Tutor (for Parent)	Find Jobs (for Tutor)	Message Box
Mobile Application	<u>MyPrivateTutor</u>	Tutor	✓	×	✓	×
	Tuition Hero	Tutor	×	×	✓	×
	<u>HomeTutorink</u>	Parents and Tutor	✓	✓	✓	✓

The other two mobile applications were developed to accommodate private-tutors on finding jobs and promote themselves while HomeTutorink is built to accommodate parents on finding private-tutors for their children and also assisting private-tutors to find jobs.

Prototype Interface

The prototype design is important in determining the graphical user interface and the functional flow of the application. The prototype user interface was designed by referring to the activity diagram that has been designed in Figure 4. The design is from the perspective of parents and tutors (users).

Parent perspective

The parent is one of the key users in the application, and it requires a specific function outline from one phase to another. From the parent perspective, there are five functional pages built, including login, registration, dashboard, hiring and message inbox.

Login Page: Parent

On the start page of the mobile application, the parent needs to log in user id and password to proceed to the dashboard that contain the information of their children which have been entered during the sign-up process. If the parent is a new user, the parent needs to register themselves and enter every required detail. Figure 7 shows the login page of the mobile application from the parent perspective.

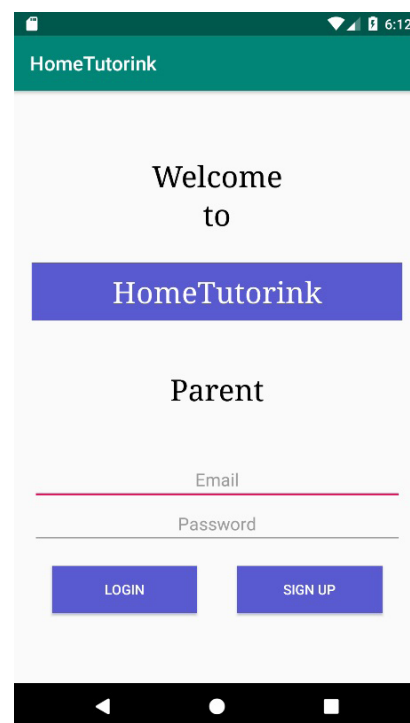


Figure 7 Login Page, Parent perspective

Register Page: Parent

Every new user needs to register in order to access the mobile application. Once the parent has signed up, he or she is required to enter the name and education information of their children as the application will separate their children's profile accordingly to make it more efficient for the job-matching backend process. Figure 8 shows the register and add the children's page of the mobile application for the parent perspective.

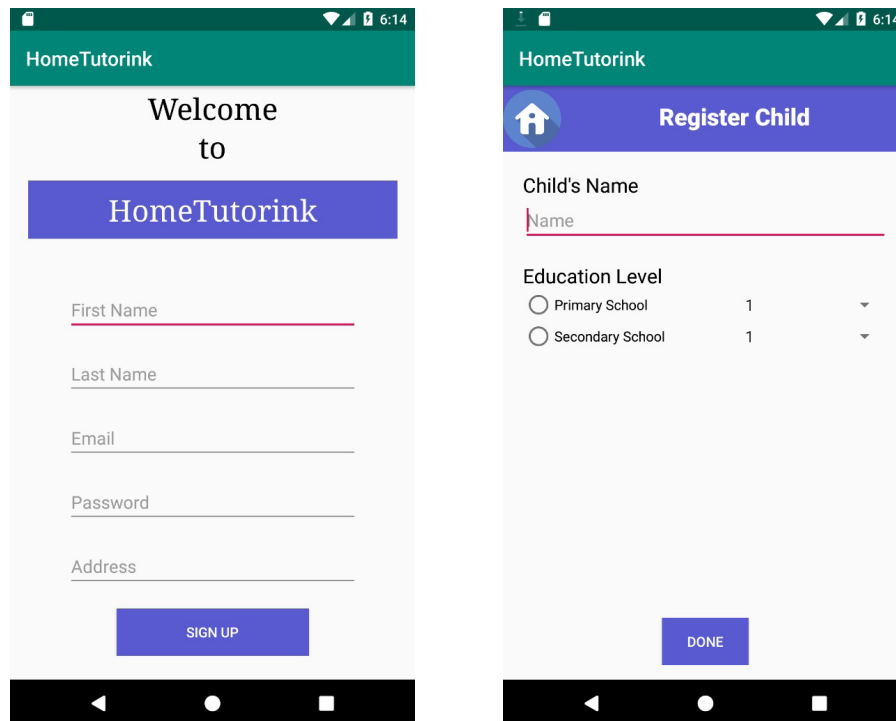


Figure 8 Register and add children page, Parent perspective

Dashboard page: Parent

The dashboard page is the page where the parent can observe their children's schedules. The dashboard shows the subjects, name of tutor and time of classes on a specific date on the month as an indicator of "class-date". Figure 9 shows the dashboard page of the mobile application for the parent perspective.

Hiring Page: Parent

For the process of hiring a private tutor, the parent is required to open a job by selecting the children, subjects and location preference from the scroll-down options. Once the job has been posted, the parent can choose a private-tutor either by hiring the tutor who applied or from the recommended tutor list. The hiring process is completed if the tutor accepted the final job offer. Figure 10 shows the hiring and job posted page of the mobile application.

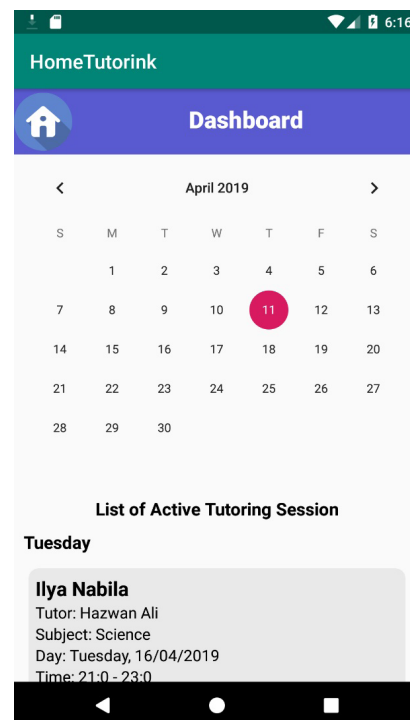


Figure 9 Dashboard page, Parent perspective

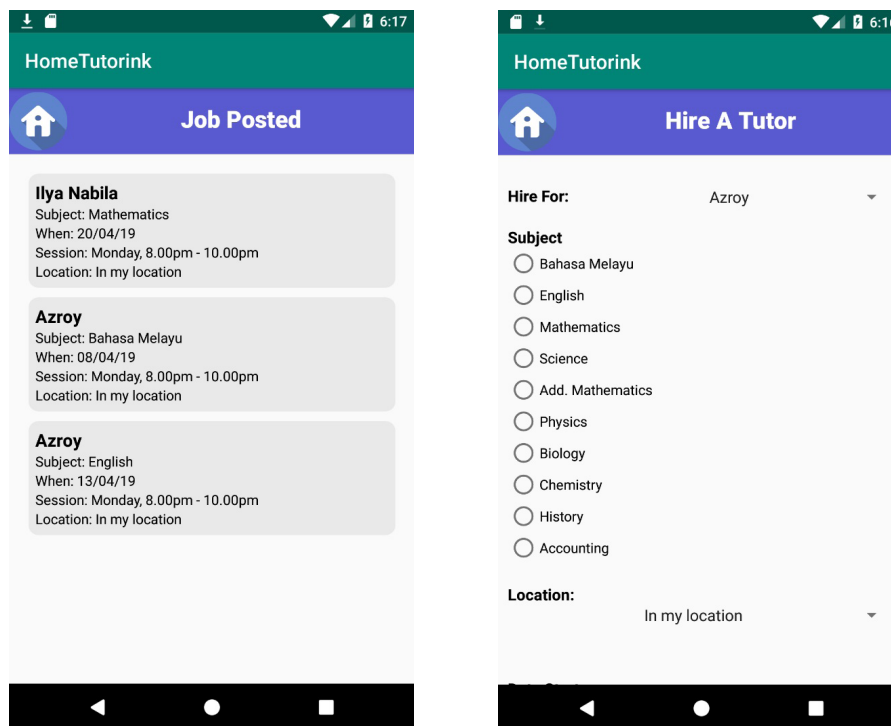


Figure 10 Hiring and job posted page, Parent perspective

Tutor perspective

The tutor is the second user group in this application and the functional flow specification for the tutor will be different from the parent perspective. From the tutor's perspective, there are five functional pages built which include login, registration, dashboard, job list, and message inbox.

Login page: Tutor

Upon the start page of the application, the tutor is required to log in their user id and password to proceed to the home page and their dashboard, which contains job schedules for the whole one specific month. If the tutor is a new user, he or she needs to register themselves and enter every required information. Figure 11 shows the login page of the mobile application from the tutor's perspective.

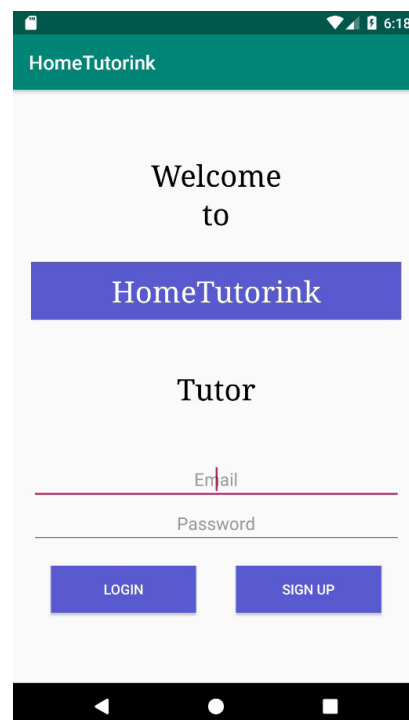


Figure 11 Login page, Tutor perspective

Register page: Tutor

In order to fulfil and complete the registration, the tutor needs to fulfil all the details, including the qualification, working and teaching experience, and subject preference. The registration process can only be done if the potential tutor has a minimum qualification of diploma because it is part of the business requirement for the application. Once the tutor has signed up, he or she will be redirected to the home page and job dashboard. Figure 12 shows the register page of the mobile application for the tutor's perspective.

Dashboard page: Tutor

The dashboard for the tutor brings the same function as the one in the parent perspective, which provides the view of job schedules. It shows all the names of the students, education level, subject, date & time and the address of the client. Figure 13 shows the Dashboard page for a tutor.

The figure displays two screenshots of the HomeTutorink mobile application interface for tutor registration. Both screens feature a green header with the app name and a white background with a purple 'Welcome to HomeTutorink' banner. The left screenshot shows the initial registration form with input fields for First Name, Last Name, Email, Password, and Address, followed by a purple 'SIGN UP' button. The right screenshot shows the same form with additional sections: 'Qualification' (Diploma, Degree, Master, PHD), 'Teaching Experiences' (Location, Describe), and 'Subject Preferences' (Add. Mathematics, Physics, Mathematics, Science, Biology, Chemistry, Bahasa Melayu, English, History, Accounting).

Figure 12 Register page, Tutor perspective

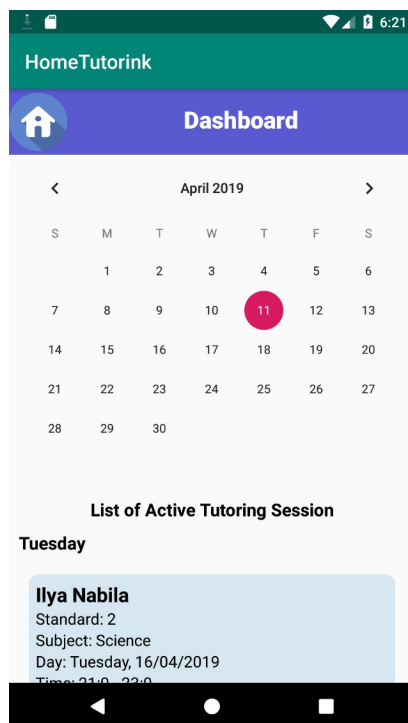


Figure 13 Dashboard page, Tutor perspective

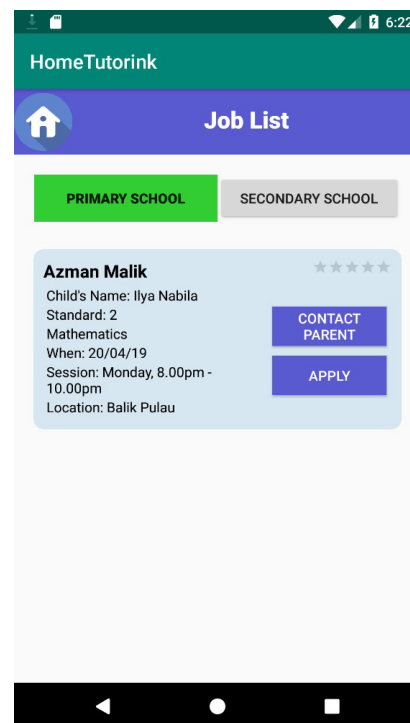


Figure 14 Job List, Tutor perspective

Job list page: Tutor

List of jobs shows the currently available job request which came from the parents whenever they open a request to hire a tutor. Once the job has been accepted after the tutor applied for the job, it will update the dashboard schedules information. Figure 14 shows the menu page for the Job List separate by education level.

Message inbox: Tutor

Message inbox is the only communication medium between parents and tutors in this application. Every message is linked together with the specific job opening, for the convenience of the tutor to refer conversations of respective jobs. The existence of the message function is to avoid external communication since it will drag out the users from continue using the application. Figure 15 shows the message inbox page of the mobile application from the tutor's perspective.

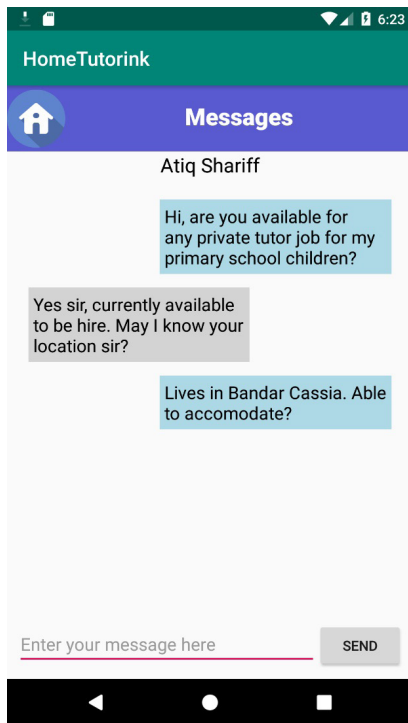


Figure 15 Message Box page, Tutor perspective

User review and feedback

After completing the development of the mobile application, the author is taking important steps on validating the mobile application functions and features to ensure it is ready to meet the users' needs. In this testing session, eight testers were appointed from the targeted user group, 4 of them are a parent, and another 4 are the private-tutors. Figure 16 shows the result from the user review and feedback evaluation, which evaluates if the application is useful and meets their needs.

The majority of 87.5% of the testers agreed that the mobile application is useful to them and the balance of 12.5% strongly agreed. This specific result shows that this mobile application has met the expectation to fulfil their users' needs by looking for private-tutors and assist the tutor to find potential clients for the tutoring services.

The application is useful to the users and meet the needs.

8 responses

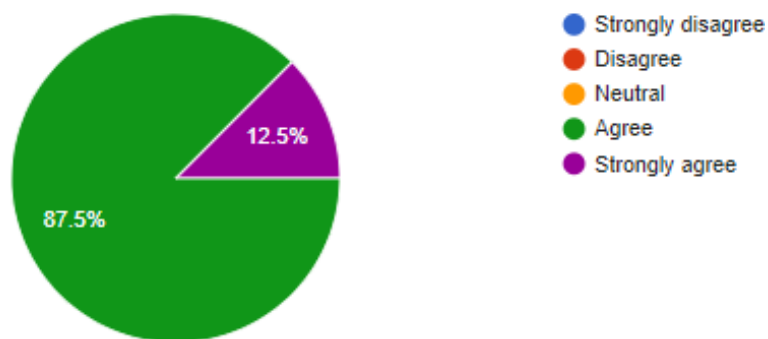


Figure 16 UAT Question 4

CONCLUSION AND RECOMMENDATIONS

It is important to keep up with the latest technologies because it provides competitive business advantages and increase the process in assisting the parents in finding a private-tutor and matches the private-tutor with the potential clients. Besides, it has become a trend in delivering services through mobile applications because of the accessibilities that a mobile application can possess within one handheld device. Plus, the mobile application has proven its capabilities in generating side-income through services such as e-hailing, food and beverage delivery and mailing and many others. Thus, through the data gathering process and literature review, the author's decision to develop a mobile application for home tutoring services in Malaysia would improve the overall process in matching between parents and private- tutor and creates the opportunity for anyone with minimum qualification of diploma to become a part-time or full-time private-tutor to generate income through the mobile application platform.

Throughout the project, every objective was achieved and a functioning mobile application to accommodate private- tutoring services as the project deliverables managed to be completed accordingly to the schedules. Based on the overall user-acceptance testing results, it shows the mobile application has met the expectation of the targeted user groups. At the end of the testing phase, the author still received some recommendations on the improvement by the testers. All of the improvement was documented and will be the next plan for future improvement.

This project can be expanded to a larger scope of targeted user and more than a private-tutoring service for school students. When it comes to the terms of private-tutoring, it can also be interpreted as coaching where the scope can be broaden to other activities such as sports coaching, e-sports (electronic

sports) coaching and management coaching. In Malaysia, commercialisation on coaching services on the mobile application is still poor, but the growth in trends for sport and electronic sports are limitless and faster than expected. This mobile application has the opportunity for improvement when the scope is broaden to other coaching services and not limited to private-tutoring for school education.

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