

Design and Implementation of Home Tuition Application

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ABSTRACT

Today's digital-age students have more access to a variety of smartphone apps tailored to supplement their education than ever before. Especially in the pandemic of COVID-19, the need for such an application for personalized learning has gained a lot of popularity. The main objective of this study is to design and develop a mobile application for home tuition application to school students in facilitating their studies due to COVID-19. The mobile application is for Android devices only, by using the mobile application, which is specialized for Android devices and for school students. This application that provides users to easily get a private tutor to help students in their field to excel. This application saves time to search for a private teacher quickly, as the user can choose the teacher near his area, so students need a teacher to understand lessons well and understand the lessons. Application is developed using the Dynamic Systems Development Method and a questionnaire was used to collect data for the pre and post-development phase of the development. The study showed a promising result in enhancing the teaching and learning experience for the affected people due to pandemic.

Introduction

Given the importance of education in our present time, which has become an essential thing in the world, improving education in all ways, due to the importance of adulthood. As it has become in our present time that there are difficulties faced by the student, meaning all students in the world in our present time, with the presence of COVID-19 as schools have not been opened that prevents students from going to school due to COVID-19 and the education process was completed because education remotely.

This gives the motivation to develop and application designed to serve school students to facilitate the student's teaching process through the private home teacher. In this application there are private teachers with their personal file, so through this application the student can enter this application and search for a teacher in terms of knowledge, experience, gender, residence status and the teacher's nationality and also he can determine the number of lesson hours, book a seat with him or submit a request. Also, through this application, we will write a precautionary list for students and teachers while the teacher goes to students at home due to COVID-19. Therefore, the student needs to do home tutoring to understand the lessons through the tutor. The student can improve his scientific level through the teacher. There are many ways to facilitate student learning, understanding lessons, and improving their educational level, including these methods (learning from school, studying in colleges, private teacher, etc.). This project aims at school students to make it easier for student to obtain a private teacher close to his area. This application helps school students in Amman to get a private home tutor from their area. This is in order to provide them with comfort and to save their time while searching for a teacher near them easily. This application helps teachers to get additional income by getting students that need help to understand the lessons for an amount of money. Where students easily get the teacher who they want and book a seat with him. So students won't have to search for a teacher for a long term. This is an app that makes it easy for them to have a private home tutor.

Literature Review

A literature review is an information that has been published on a specific topic. Those were published in a specified period. This is to understand the relationship between the business contexts of any application. Also, his contribution to other work or literature review of the relevant work has an important role. The literature review is a summary of a synthesis of a lot of information. The objective of synthesizing a lot of information is to arrange and rearrange the information as well. The benefits of reviewing the literature lie in that it advises the reader evaluates the sources and

summarize the important information about the source also provides an overview of any topic and defines the main requirements for the development as well as the design of the lessons home application.

Therefore, the student needs to do home tutoring to understand the lessons through the tutor. The student can improve his scientific level through the teacher. Student rely on the online learning management system instead of 1-1 learning which enable us for this project helping students and teachers in this COVID-19 era.

There are many ways to facilitate student learning, understanding lessons, and improving their educational level, including these methods (learning from school, studying in colleges, private teacher, etc.). This project aims at school students to make it easier for student to obtain a private teacher close to his area. This application helps school students in Amman to get a private home tutor from their area. This is in order to provide them with comfort and to save their time while searching for a teacher near them easily. This application helps teachers to get additional income by getting students that need help to understand the lessons for an amount of money. Where students easily get the teacher who they wants and book a seat with him. So students won't have to search for a teacher for a long term. This is an app that makes it easy for them to have a private home tutor. To help students in our present time due to COVID-19. Schools were prevented from opening and it became distance education. Therefore students need guidance learning and here our application will help local students and teachers to interact with each other.

Methodology

A methodology is a set of stages, guidelines and thoughts that help us gathering data on the topic we want and check its success. The choice of the type of methodology depends first on the nature of the project as well as the resources and timelines available. There are many types of methodologies that can be used during project development such as waterfall model, spiral model, incremental model, rapid application development model, dynamic system development model, etc .Therefore, the methodology is very of use for the success of the proposed project because it helps in verifying experimental details and also helps in identifying the organisms and also providing the necessary explanations in addition to discovering explanations for sudden patterns.

For the conducted study Dynamic System Development Method (DSDM) model because it will help to complete the project step by step in the correct manner within the stipulated budget. Therefore, there are many reasons that make us choose this model (DSDM), such as showing consequences promptly and directly, showing early indicators of the success or failure of the project. In addition, in order to increase the performance of the application and helps to improve the quality of services, also the something primary tasks are delivered quickly and at the time specified (K.U. Sarker et al., 2018)(K.U. Sarker, Bin Deraman, Hasan, Mahmood, et al., 2019)(K.U. Sarker, Bin Deraman, Hasan, & Abbas, 2019)(Kamal Uddin Sarker et al., 2020)(Kamal Uddin Sarker, 2020)(K.U. Sarker et al., 2020).

Design and Implementation

Figure 1. shows context diagram of the application.

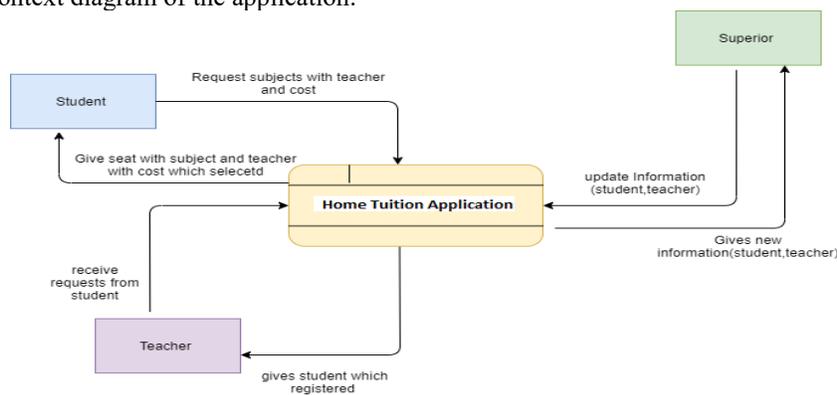


Figure 1. Context Diagram.

Figure 2. shows data flow diagram (DFD Level 0).

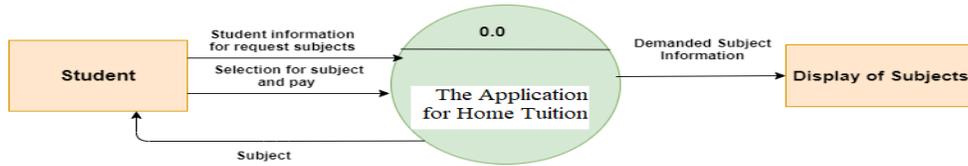


Figure 2. DFD Level 0.

Figure 3. shows data flow diagram (DFD Level 1).

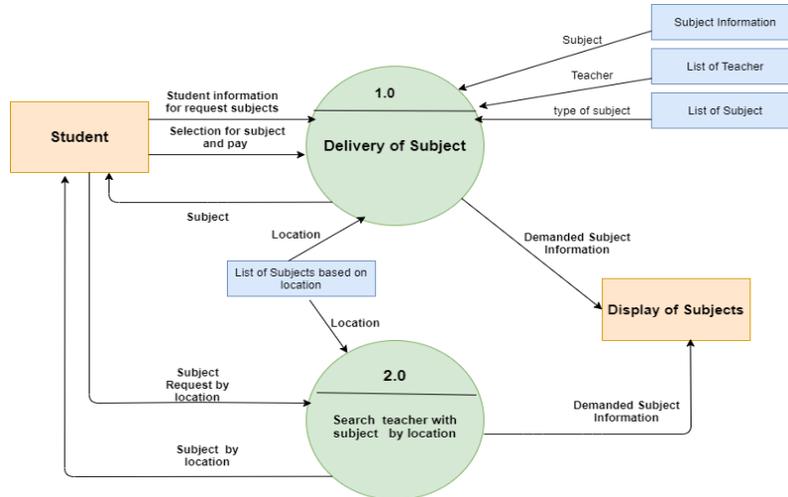


Figure 3. DFD Level 1.

Figure 4. shows the use case diagram.

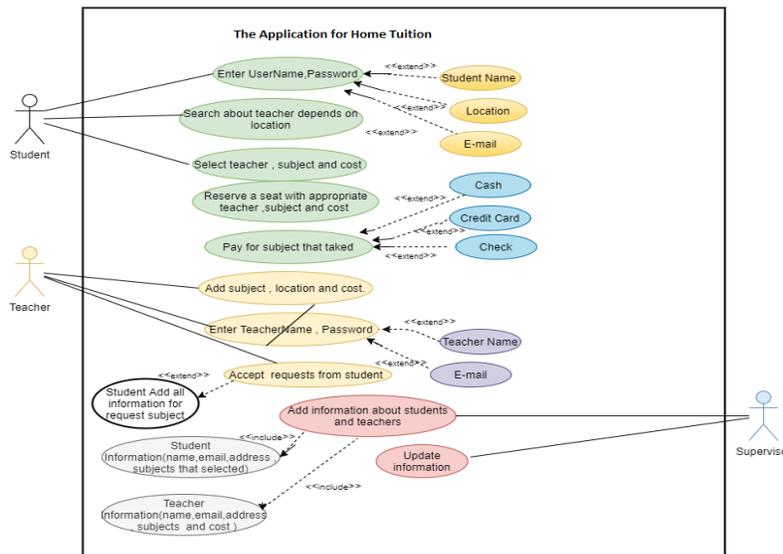


Figure 4. Use Case Diagram.

Figure 5. shows the entity relationship diagram.

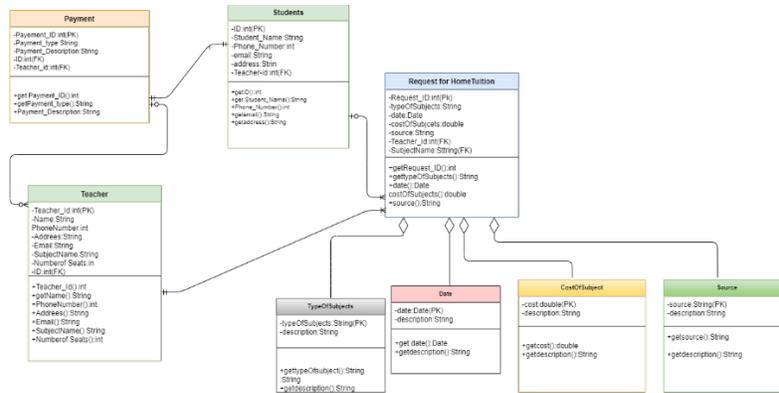


Figure 5. ERD Diagram.

Figure 6. shows the login screen of the application developed as the first prototype.



Figure 6. Login Screen.

Results and Discussion

Questionnaire was used as an instrument for data collection method. Set of 5 questions were distributed to all the stakeholders such as student, teachers and parents. The description is discussed below.

In Figure 7. It is found that 60% of the respondents and agree that the student's obtaining a home teacher is important nowadays due to COVID-19 and the failure to open schools, while 20% of the participants said that he was good and 20% said that Fair, in addition to that, there are 0 percent who said they are poor to afford.

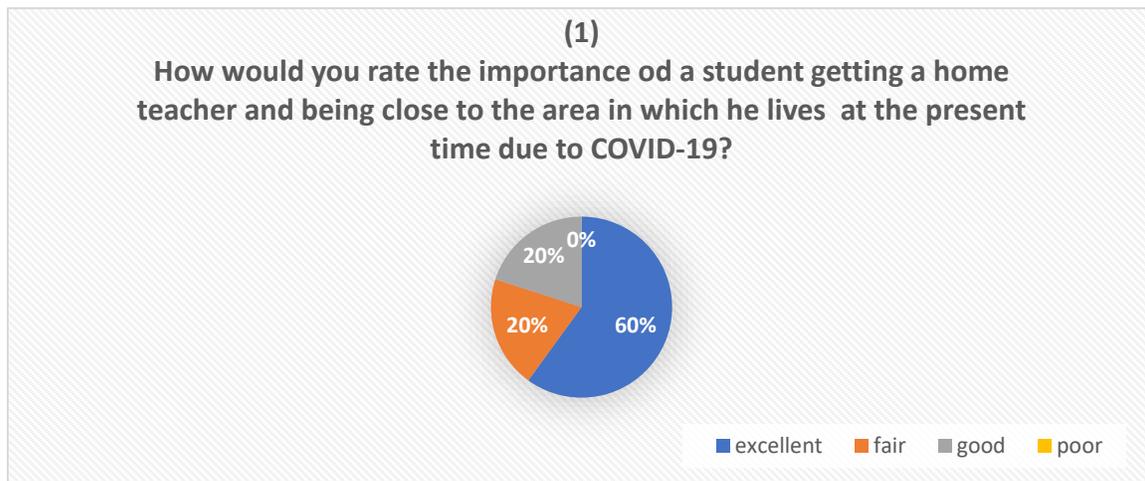


Figure 7. Question 1.

In Figure 8. it was found that the number of people who were already accustomed to the teacher my private home. 70% of the people said yes and 30% said no.

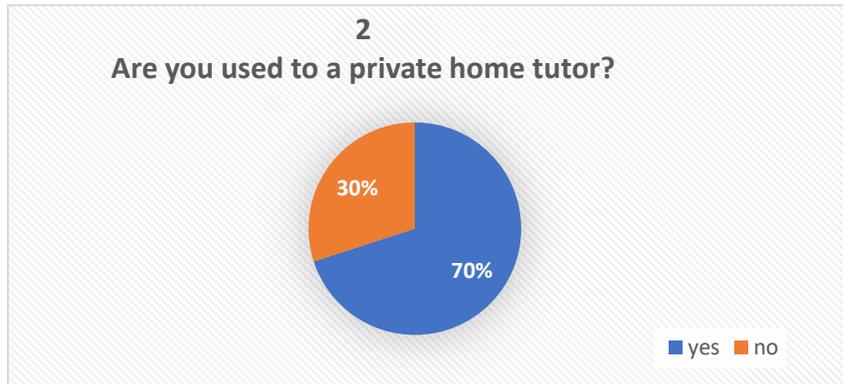


Figure 8. Question 2.

Figure 9 shows whether this current application helps to improve the student's level of study or not. 30% agree with the current implementation, 65% strongly agree, 3% disagree and 2% strongly oppose it. Where of the people agree that the application improves the level of the student in studying.

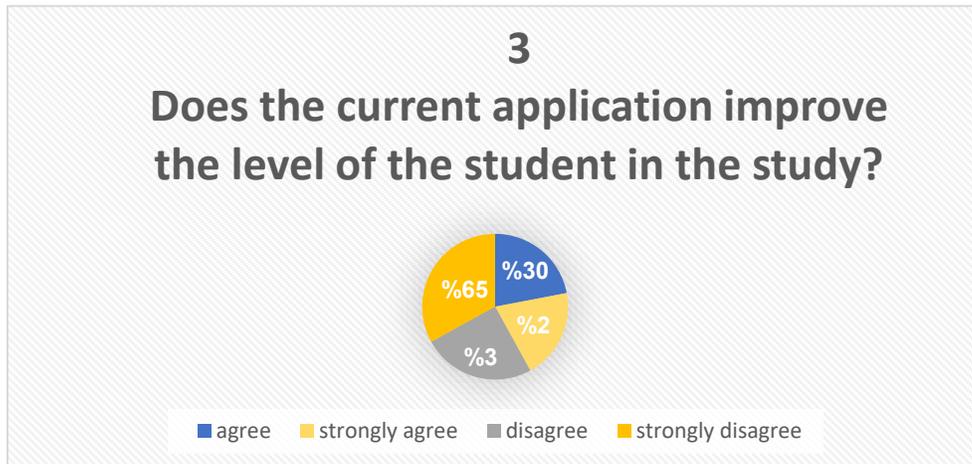


Figure 9. Question 3.

Figure 10 shows the opinion of people who use the application about the existence of difficulties when registering in the application and searching for a teacher or not. 60% chose No, and 40% chose yes.

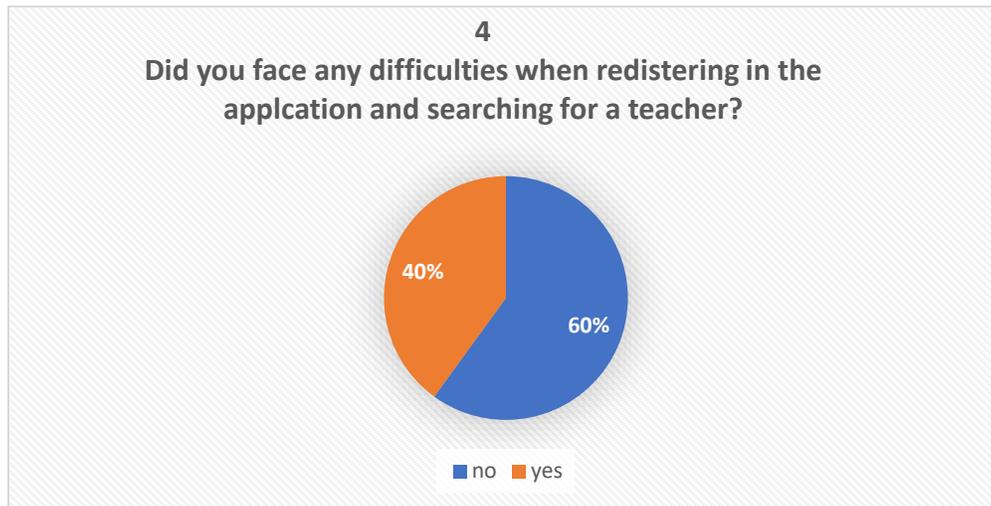


Figure 10. Question 4.

Figure 11. shows the number of people who prefer the private tutor to explain to them at home and not through the mobile app. 80% of the people said yes, and 20% of them said no.

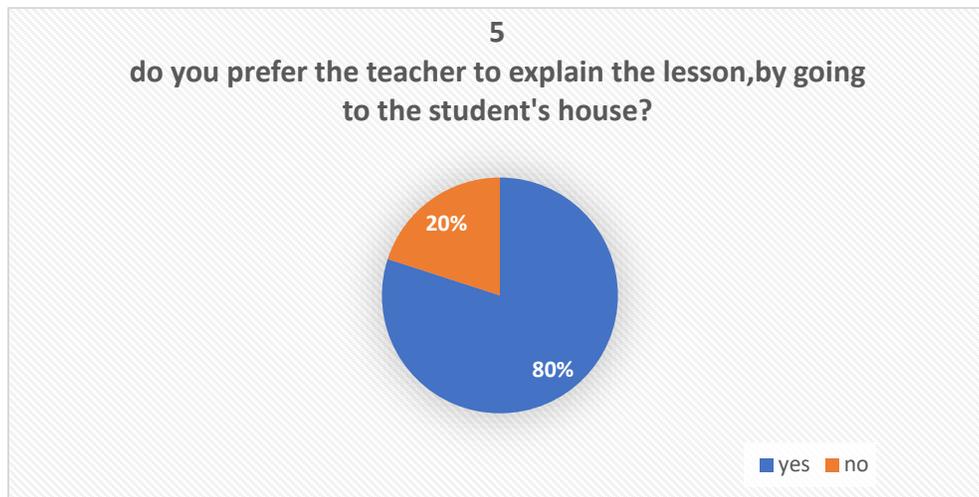


Figure 11 Question 5.

Through this questionnaire, we concluded that this application will be very popular and we also concluded that all students need this application, in addition to that, it is an easy application for them and they do not face any difficulty. So it is assumed that this application will succeed in the future due to the current situation.

Conclusion

In this pandemic era the life of individuals have changed significantly. Education is done mostly remotely and there is a need to find ways to disseminate knowledge more effectively and efficiently. This mobile application will help 1-1 knowledge transfer in the locality much easier enhancing the teaching and learning process and experience for the stakeholders. The application is in development phase, usability analysis needs to be carried out to find the effectiveness of the application. Keeping the stakeholders in loop to design the application more easy and accessible to users. Prototype needs to be enhanced further with vigorous inputs from the stakeholders using the Human Computer Interaction (HCI) principles keeping in mind.

The application will be useful to keep track of student interaction for using prediction and early warning utilizing datamining techniques. Different useful tools for interactivity and using learning management system can also increase the retention of the students(Raza Hasan et al., 2018)(GebreYohannes et al., 2017)(Naidu et al., 2017)(Raza Hasan & Mahmood, 2012)(Raza Hasan et al., 2015)(Raza Hasan, Palaniappan, Mahmood, Abbas, Sarker, et al., 2020)(Mahmood et al., 2019)(Siddiqui et al., 2012)(Raza Hasan et al., 2019)(Bhatti et al., 2017)(Sattar et al., 2020)(Hayat et al., 2018)(Mohammed et al., 2019)(Raza Hasan, Palaniappan, Mahmood, Abbas, & Sarker, 2020)(Raza Hasan, Palaniappan, Mahmood, Naidu, Agarwal, et al., 2020)(K.U. Sarker, Bin Deraman, Hasan, Mahmood, et al., 2019)(Mustafa et al., 2019)(R. Hasan et al., 2019)(Al Raisia et al., 2020)(Agarwal et al., 2021)(Al Amri et al., 2020)(Khalifa, 2019)(AL Hamdania et al., 2020)(Naidu et al., 2020).

Now, the application is limited to Muscat, Oman. For future extending to whole Sultanate of Oman and the targeting the global community of learners.

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