

Muhadara: Smart Mobile Application to Connect Teachers and the Students during COVID -19 Pandemic

Aaisha Said Sulaiman AL Senani, Student, Department of Computing, Middle East College, Muscat, Oman
Aparna Agarwal, Faculty, Department of Computing, Middle East College, Muscat, Oman
Vikas Rao Naidu, Faculty, Department of Computing, Middle East College, Muscat, Oman

Online learning is a recent phenomenon that has evolved with technical advances, and with the spread of the new worldwide epidemic COVID 19, all educational institutions have initiated online learning to reduce the spread of the epidemic, and since the past one and a half year the education has been limited to distance education. This online learning setup has posed some difficulties for the students like online training might be boring at times, students encounter technical difficulties related to network, students are lacking peer interaction, practicing the lab work can be difficult, etc. All these reasons can account for the student's lack of understanding of subjects. This may result in their inability to perform well in the assessments, and difficulty in developing their skills in the course syllabus, and students may receive poor grades or fail subjects, considering the worst case. Through this application, students can communicate with teachers who are volunteering to help for the social cause and reserve an appointment with them in order to explain lessons and expectations of the activities, the student can participate in discussion forums, discussions from the previous classes, and pre-recorded explanations, etc, The student can follow the appropriate links and make a booking to take a class with the volunteer teacher. The volunteer teachers can register in the application and mention the details of their expertise and availability. This app will be very useful for high school students and will also be economical. The app will be a locus for institution of higher education students to ease the forfeiture of their scores. (Shivangi Dhawan_2020). The online survey was conducted with almost 50+ students to get an insight into the expectations of the students with this kind of application. The requirements will all be incorporated to address the need of students and work for a social cause and the community. The application will be developed using Android Studio as the front end and Firebase will be used as the back end.

Keywords – students, teachers, volunteers, online learning, mobile application.

Introduction

This application can play a great role in helping university students and college students achieve the highest level of education and the highest level of education, so that students play a major part in backing to building a nation: Education is the prime goal line that the state wants to achieve development for opulence and progress. During this period, a modern phenomenon appeared that developed with technological progress, as institutions moved to distance learning, in dainty of the extent of the Covid 19 epidemic, all educational institutions in the country were closed, including the Sultanate of Oman. To bind the extent of the epidemic, distance learning has turned out to be the most successful method now, as text, audio and video can be incorporated into websites and learners can intermingle in direct or indirect discussion sessions, but numerous students are convinced of the teacher's ideas and find it difficult to understand the lessons. Since the instructor and the learner are separated with a geographic distance, so there is no contact with the teacher, the purpose of this application is to support learners by making available numerous volunteer teachers having expertise in different fields and subjects. In addition to university offers at universities and colleges. To help students benefit from this app, have trouble understanding semesters and commitments, and overcome difficulties in downloading academic software, this app makes a reference for college students to prevent reduction in the loss of their grades. This application aims at raising the academic level of the learners and save their time, effort and money.

Methodology:

The investigators have used variegated investigation approaches in this study. Together the quantifiable and qualitative approaches have been used to acquire statistics about the work related to the topic. The quantitative technique was realised using online questionnaire as survey. This technique is preordained to frame the objectives and analyse the problem essentials. The qualitative investigation technique was used by guiding article analyses. This technique is intended to get supplementary evidence on the application of technology in this purview and recognizing the gaps in the before now obtainable applications of the matching nature.

Literature review:

According to (Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. R. (2020)), The concept of education has changed all over the world due to the global pandemic Covid-19, as educational institutions have become heavily dependent on online learning, so that communication between the student and the educational institution is via the Internet. Online educational platforms are distinguished in that it is possible to save lectures and lessons for students so that they are a reference for the student in the event that something has been forgotten from the class and he can attend the class asynchronously so that the lecture is recorded and uploaded on the Internet.

The platform of Noon Academy, is also for educational purposes. This one is for middle and high school levels. The lessons uploaded are for individuals and some are also meant for the groups to provide free training. The lessons are interactive so that the students do not feel bored. The platform was created in 2013. The purpose of this platform is to migrate the students from the traditional classroom teaching to self-learning environments. The lessons provided on this platform are direct, to enable quick learning for the students, visual and audio aid is provided along with the lessons to facilitate more understanding on the concepts as per the curriculum. Lessons are supported with questions that need direct interactions with the teachers. Some competitions are also arranged to motivate the students from time to time and to keep track of their activities and performance. The application proposed in this research work will be targeting the university level students (Moostafaa,2020).

Another application for learning English is “Cambly”. The application has the facility for the students to communicate with the teachers directly using chat, audio or video. The teachers listed in the application are all specialized in their areas. This is a good platform to learn English. Also the students can practice speaking with another native language speaker who is the teacher. The students have the choice of selecting the teacher. The meetings between the students and the teachers can be recorded and later can be used for review by the students at their own pace. Also the class can be fixed with the teacher as per the student’s convenience.

The global pandemic has made the world aware of the importance of using advanced methods of education and how to take advantage of applications and platforms to establish a culture of self-learning.

Problem definition:

Due to the current scenario of COVID-19 pandemic and its spread across the globe, the educational institutions have suspended the on campus classes and migrated to online classes or distance education. The proposed application in this research work would aid in providing solution to some of the problems that students are facing in this period of online learning. The application will be a reference for students in some disciplines and will help them understand the curriculum. Difficulty understanding the curriculum.

Among the problems that the student faces: Difficulty understanding some of the curriculum. Students also wait for a long time for teachers to answer their inquiries. Students are not alone in solving study assignments. Students hold themselves accountable to the educational institutions in which they study.

Data Collection and Analysis

Questionnaire:

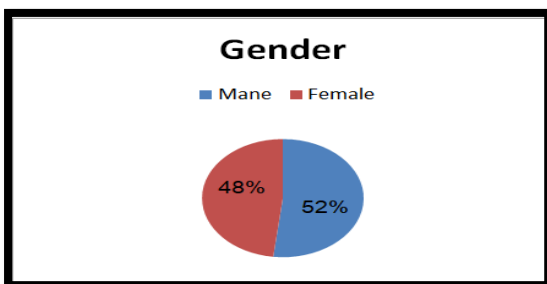


Figure 2 Q1 analysis

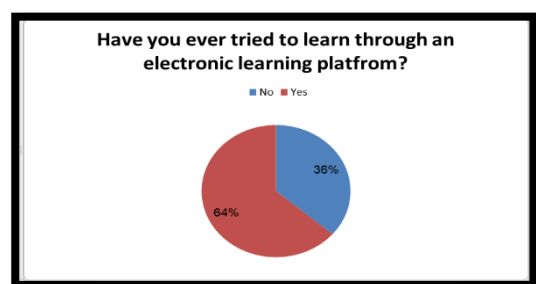


Figure 1 Q2 analysis

About 80 volunteers answered the questionnaire, 48% of them males versus 52% of them females. 36% of those who answered the questionnaire had not previously tried to learn online, while 63% had previously tried to learn through the internet platforms.

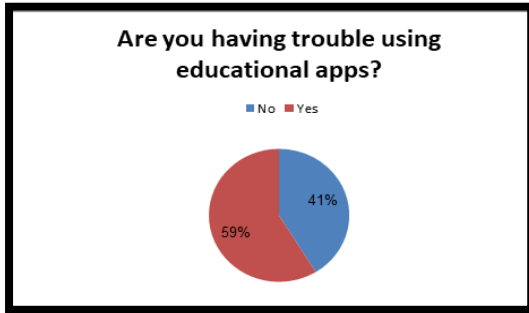


Figure 3 Q3 analysis

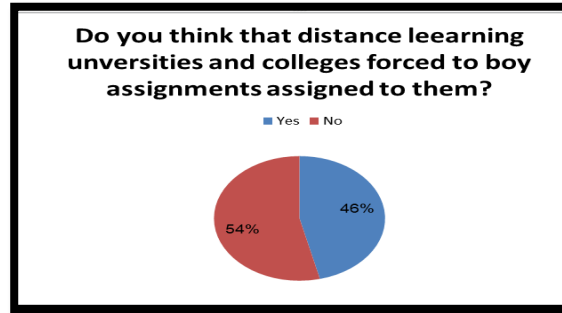


Figure 4 Q4 analysis

59% of the volunteers answered that they encountered any problems when using educational applications, compared to 41% that they did not encounter any problems. 54% believe that some students buying study assignments have no reason for distance learning. While 46% of respondents believed that online learning forced some students to buy their assignments.

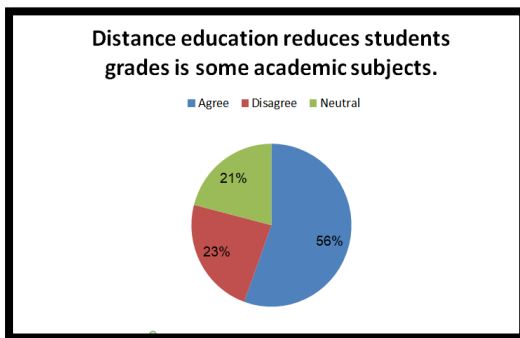


Figure 5 Q5 analysis

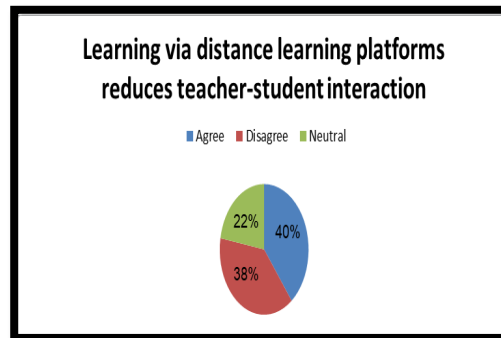


Figure 6 Q6 analysis

56% believe that distance education reduces students' grades in some of their subjects, while 23% of volunteers who answered questionnaires believe that distance education does not affect the student's achievement level. 21% of them were neutral on this question. 40% of volunteers agreed that education via online platforms may reduce engagement, 38% disagree, and 22% adhere to neutrality.

Design Diagrams:

The design diagrams have been made to depict the clarity of the proposed application. Based on the given design the implementation will be done.

Context Diagram: In the context diagram the external entities have been identified. The interaction of the entities with the application is depicted.

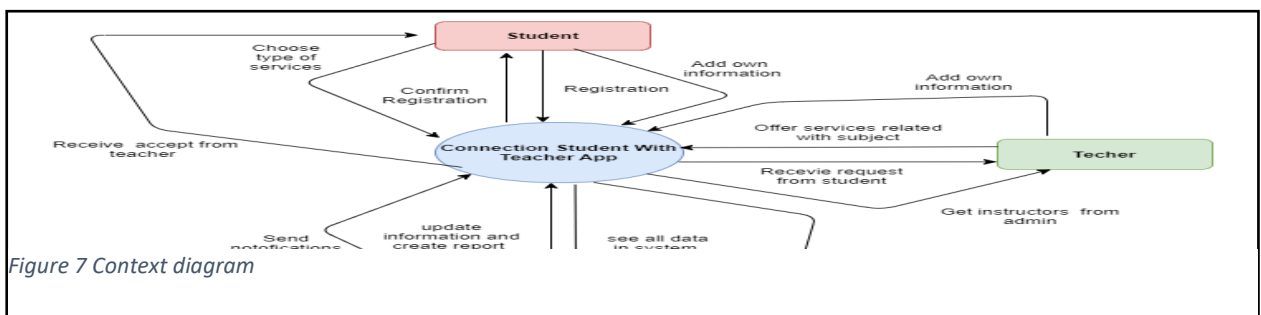


Figure 7 Context diagram

Use case Diagram

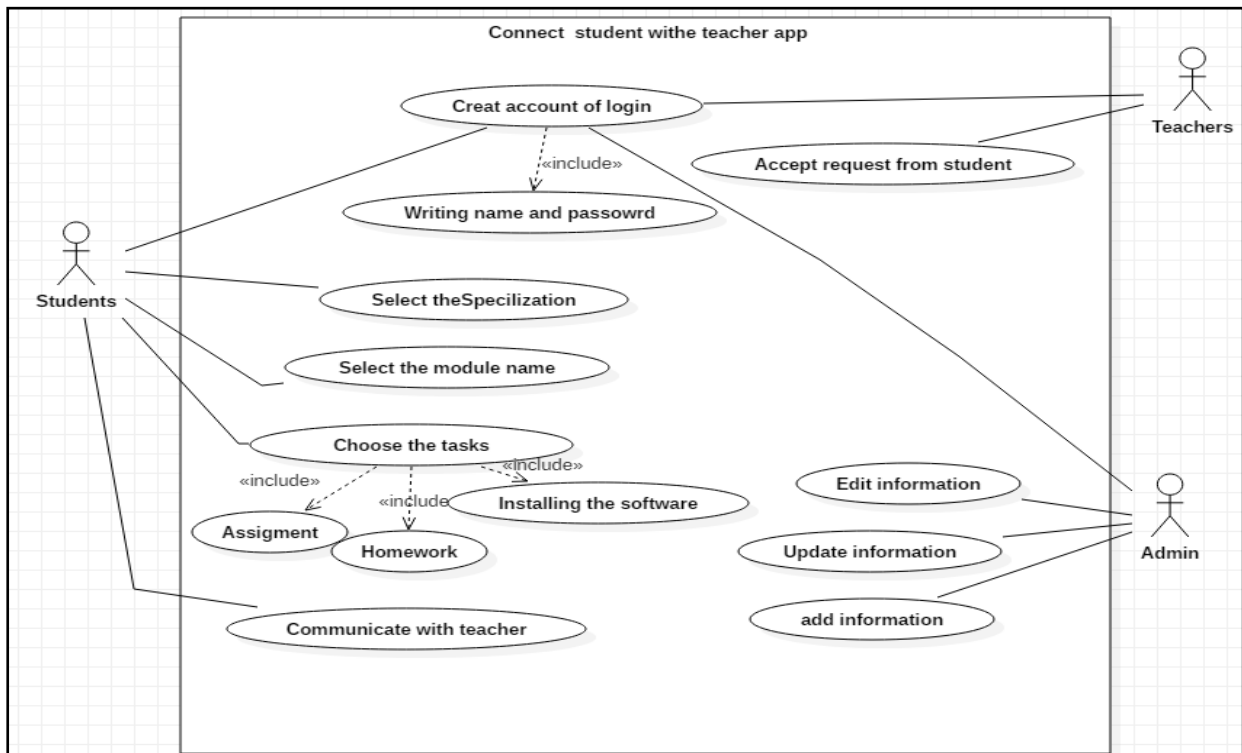


Figure 8 Use Case Diagram

In the use case diagram the actors have been well identified. The use cases associated with each actor has been explained in the diagram. The use cases will be implemented as features of the proposed application.

Entity Relationship Diagram

In the entity relationship diagram, the entities and their relationships with each other have been depicted with relationship names and appropriate cardinalities. This diagram makes it clear what are the requirements of the database.

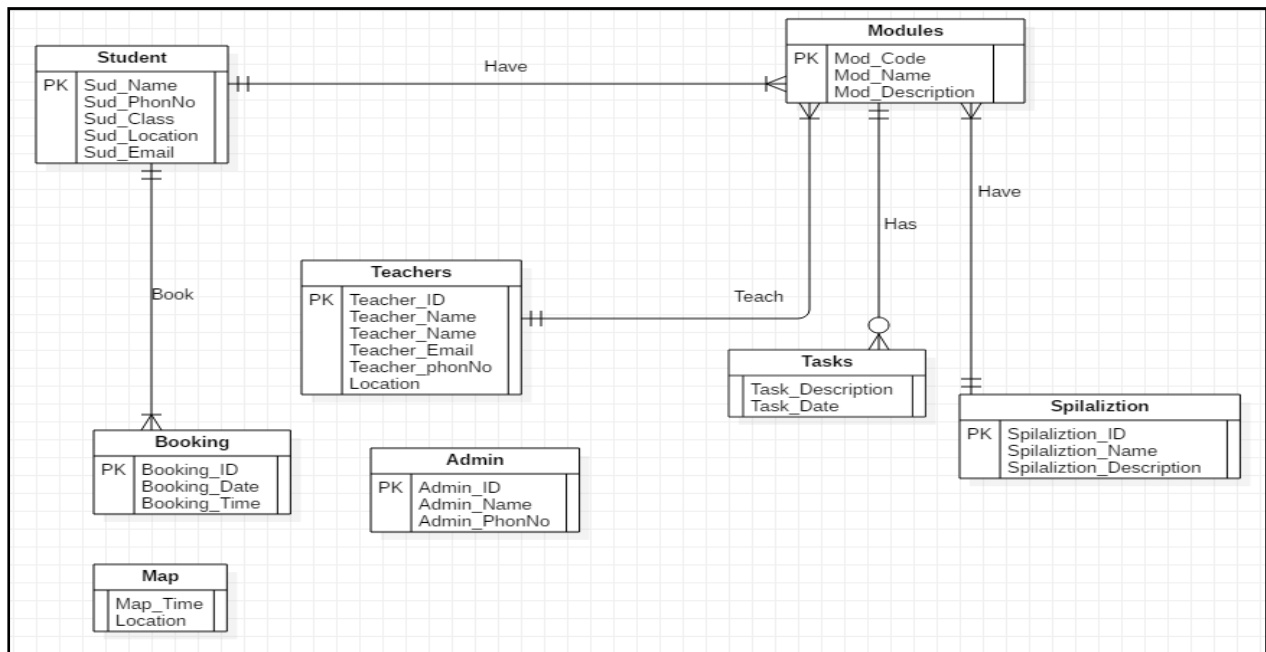


Figure 9 Entity Relationship Diagram

Class Diagram

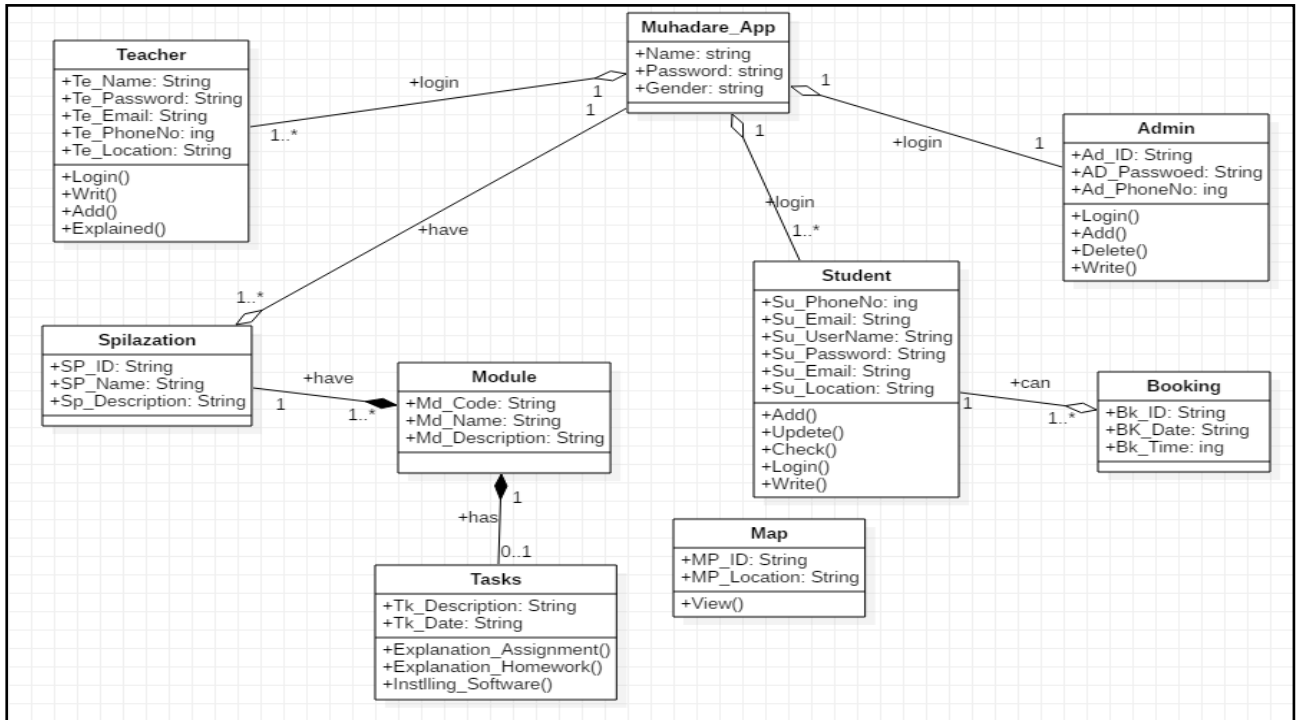


Figure 10 Class Diagram

In the class diagram the classes have been identified, the attributes and methods of the classes and the communication between the different classes are also depicted.

Sequence Diagram

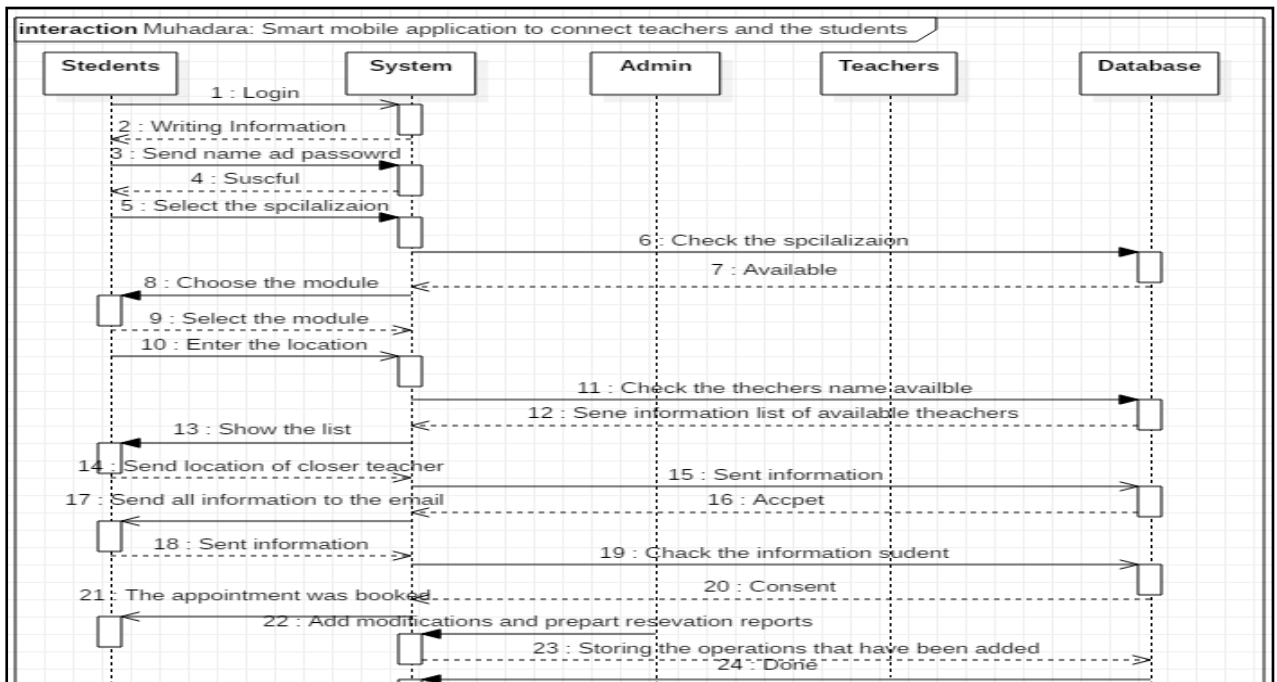


Figure 11 Sequence Diagram

In the sequence diagram, the flow of data, for a typical scenario has been given. The scenario considered here is booking of the appointment by the student, for the required subject and the selected teacher.

Results Discussion:

A smart application that works on smart phones that connects scholars by means of the application with volunteer educators, the application comprises numerous subjects and numerous well-known educators to help scholars clear their paths with brilliance by allotting time to scholars as extra discourses. The application comprises an interactive map to discover the remoteness between the scholars and the obligatory educator if the scholar desires to see the educator in person.

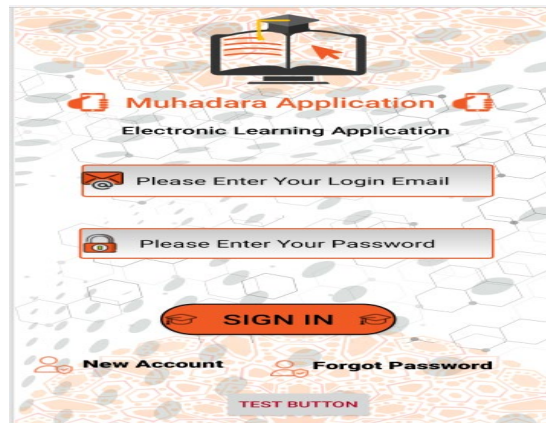


Figure 12 User Interface Design

Conclusion:

Based on the exceptional circumstances in Sultanate of Oman and all over the world, the idea was created by creating an application that works on smartphones in order to facilitate the educational process and serve as a teacher for students at the university level to be an addition to them in improving their academic level and developing the skills required to reach the highest levels of understanding lessons That may be difficult for some students and take advantage of the teacher expertise available in the application.

Acknowledgments:

I would like to thank everyone who supported me in making this project a success. And the people who gave me advice. I especially thank Aparna Agarwal for her project guidance consultants and for providing advice. She also thanks my family, her friends, and everyone who stood beside me.

References:

1. Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5-22. <https://doi.org/10.1177%2F0047239520934018>
2. Petretto, D. R., Masala, I., & Masala, C. (2020). Special educational needs, distance learning, inclusion and COVID-19. <https://doi.org/10.3390/educsci10060154>
3. Nugroho, K., Murdowo, S. and Muljono, M.(2019) 'Mobile Cloud Learning System Using Laravel Framework and Android Studio Web View' [online] 141 ,144. Available from [http://Mobile Cloud Learning System Using Laravel Framework and Android Studio Web View \(researchgate.net\)](http://Mobile Cloud Learning System Using Laravel Framework and Android Studio Web View (researchgate.net)) [2 January 2021].
4. B. Sasankar, A. and Chavan, D.(2011)' SWOT Analysis of Software Development Process Models. *Computer Science Issues*' [online] 8(1694-0814), 390-399. Available from http://file:///C:/Users/Hp/Downloads/SWOT_Analysis_of_Software_Development_Process_Mode. [8 January 2021].
5. Roy, S. and Mukherjee, M.(2017) 'Feasibility Studies and Important Aspect of Project Management. *Advanced Engineering and Management*' [online] 2, No. 4, 98-100. Available from <https://ijoem.org/00204-25> [28 November 2020].
6. Cohen, E., 2021. The Definitive Guide To Project Management Methodologies. [online] [Workamajig.com](https://www.workamajig.com/blog/project-management-methodologies). Available from <https://www.workamajig.com/blog/project-management-methodologies> [6 November 2020].

7. Alshamrani, A. and Bahattab, A.(2015) 'A Comparison Between Three SDLC Models Waterfall Model, Spiral Model, and Incremental/Iterative Model. Computer Science Issues' [online] 12.106-111. Available from <https://www.ijcsi.org/papers/IJCSI-12-1-1-106-111.pdf> [2 December 2020].
8. Yaghoubi Shahir, H., Daneshpajouh, S. and Ramsin, R.(2021) ' Improvement Strategies for Agile Processes: A SWOT Analysis Approach' [online] 221-228. Available from http://sharif.edu/~ramsin/index_files/Publications_PDF/Shahir_Daneshpajouh_Ramsin_SERA_2008_Improvement_Agile_SWOT.pdf [15 November 2020].
9. Bajaj, G.(2021)How To Create A Gantt Chart Template In Powerpoint [online] PowerPoint Notes. Available from <https://notes.indezine.com/2019/12/how-to-create-a-gantt-chart-template-in-powerpoint.html> [21 December 2020].
10. Bhatia, M.(2021) Questionnaire. [online] Tutorials Point (India) Ltd. Available from <https://www.youtube.com/watch?reload=9&v=fPBMzaI2gs4> [18 December 2020].
11. Base, K. and review, H.(2021). The Literature Review | A Complete Step-By-Step Guide. [online] Scribbr. Available from <https://www.scribbr.com/dissertation/literature-review/> [7 November 2020].
12. Simplilearn.com. (2021) Understanding Types Of Feasibility Study, And Its Importance. [online] Available from <https://www.simplilearn.com/feasibility-study-article> [11 January 2021].
13. GCFLearnFree.org.(2018)Computer Science Basics: Hardware And Software. [online] Available from https://www.youtube.com/watch?v=vG_qmtdBPTU[12 October 2020].
14. Phil Jauncey. (2018) Aims, Goals And Objectives [online] Available from https://www.youtube.com/watch?v=aourF_9zWaQ[16 October 2020].
15. Carter, S. and Little, M.(2007) 'Justifying Knowledge,Justifying Method,Taking Action:Epistemologies,Methodologies,and Methods in Qualitative Research' [online] Available from https://www.academia.edu/715434/Justifying_knowledge_justifying_method_taking_action_Epistemologies_methodologies_and_methods_in_qualitative_research[12 November 2020].
16. ThePrefectBA .(2018) Use Case Diagram Tutorial : Draw Using Just. [online] Available from <https://www.youtube.com/watch?v=oesoKbn0yeA> [3 January 2021].
17. Littlebit Programmer(2018). Sequence Diagram Tutorial | Easy Tutorial. [online] Available from <https://www.youtube.com/watch?v=5pSDLEa7v9w> [4 January 2021].
18. Lucidchart.(2021)What Is An Entity Relationship Diagram (ERD)? [online] Available from <https://www.lucidchart.com/pages/er-diagrams> [4 January 2021].
19. Dr. Daniel Soper. (2019) Creating Entity Relationship Diagrams Using Draw.Io. [online] Available from <https://www.youtube.com/watch?v=IAtCySGDD48> [5 January 2021].
20. SmartDraw.(2018) Data Flow Diagrams - What Is DFD? Data Flow Diagram Symbols And More [online] Available from <https://www.youtube.com/watch?v=6VGTvgaJIIM> [6 January 2021].
21. Lucidchart. (2017) UML Class Diagram Tutorial [online] Available from <https://www.youtube.com/watch?v=Ui6lqhovhic> [8 January 2021].
22. Agarwal, A., Naidu, V. R., & Al Mamari, R. (2019). a Framework To Enhance Learning Experience in Flipped Classroom Based on Student Accountability Towards Active Participation. *EDULEARN19 Proceedings, 1*(July), 1569–1577. <https://doi.org/10.21125/edulearn.2019.0464>
23. Al Badai, N., Al Ajmi, Z., & Naidu, V. R. (2017). Effectiveness of Open Educational Resources for Enhanced Learning in Flipped Classroom. *ICERI2017 Proceedings, 1*(November), 8657–8661. <https://doi.org/10.21125/iceri.2017.2358>
24. Al Raisia, J., Al Mahfudhi, J., Naidu, V. R., Hasan, R., Jesrani, K., & Al Farei, K. (2020). Role of Interactive Multimedia to support MOOC for Enhanced E-learning in the Higher Education Sector in Oman. *Journal of Student Research*. <https://doi.org/10.47611/jsr.vi.958>