

A Novel Information model for an Interactive beginner Learning system through mobile Apps

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Abstract: Mobile learning application is widely used in education systems in the present century due to the advancement of the technology and availability. Mobile Learning offers adequate support to the users from their own devices such as mobile phones, tablet computers, MP3 players, smart phones and mobile phones. The creative design and the customized mobile applications provide a positive sense of community to form virtual community of learning. Majority of the applications are designed based on the content and function that is manipulated to meet the teacher's and learner's specification. While designing this sophisticated modules quality control considered as major issue. The proposed research is used to determine the benefits of mobile application in the education environment and addresses the issues in selecting and designing of educational applications.

Key words: - *Mobile Learning, Mobile App Design, Programming, Virtual Learning Community (VLC)*

I. INTRODUCTION

The development of mobile technology and the unlimited mobile applications makes the learning process much ease than earlier traditional learning methods. The main advantage in the m learning or e learning includes user mobility and portability in the small hand held devices which has strong computing power and all time connectivity option. These advancement leads to excellent potential in the field of education for innovative teaching and learning experiences. The popularity in the mobile applications became popular at the time of smart phones is introduced. Based on the devices and the mobile easy to use applications researchers have more option to enlighten their skills by introducing more apps to the world. Smart phones and iPods gain popularity in these fields due to this applications availability and there are more than 10,000 applications is available in the Google play store and the IOS Apple App store for more than 30 categories. The main aim of these applications is to provide the user friendly simple access mechanism for all type of users for all ages and stages. Google offers an app inventor services to develop applications based on the individual needs and their creative ideas. Figure 1 illustrates the module for app inventor which related to the learning system. It has a design module for the desired applications and the app inventor provides the editor setup to finalize the applications. Design application emulator provides the final module of the developed application which is simple to use for the user and then it is available in the play store/App Store for the user download. In the figure 1 the learning system is illustrated by an interconnected blocks along with

the app inventor. The design journal refers the initial stages and the model LMS indicates the intermediate model and when the network site includes then it becomes a complete setup in the mobile application environment.

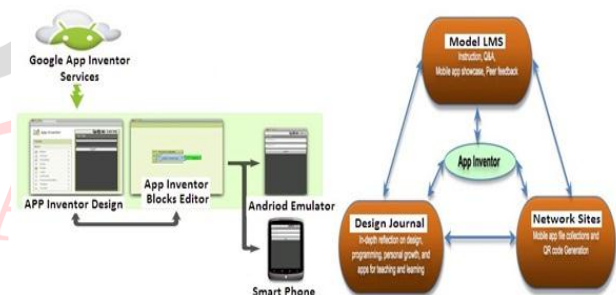


Figure 1 Illustration of mobile App Inventor and Integration of learning environments in the online course in mobile app design.

The usage of mobile applications has benefits such as

- Online and offline usage of applications
- Suitable for peoples looking information when they are in the move
- Much popular among all stages of age groups
- Just in time information access
- Better performance
- User friendly and less cost

Besides these benefits many others are available and it is not limited into few points as the advantages are more. The important role of mobile application and the e learning process is obtained based on the learning methods which is available in the present environment. This introduces the

application in the education sector in terms of simple fun games to brain storming applications. The small children mainly attracted to mobile learning application due to the play type learning application which teaches the content in terms of songs and musical oriented terms. Students using these kinds of apps realize the content much easier than the man to man teaching practices, the real time touch and learn experiences creates an innovation in their minds which makes them to understand the process in different perspective. The communication between the tutor and parent is much easier in the mobile learning model since both of them have the summary report that has the conclusion about the learning content of the children. So this helps a better parent teacher relation and it avoids queries from the parent side also it has the transparency on what they educate and what the children will learn in the study hours. Online study material and eBooks also includes in the m learning categories since the usage of hard paper books is now reduced and students of this generation are much attracted towards this type of learning.



Figure 2 Crucial Criteria for Learning Management Systems

The simple book search application or the available e-format of the content makes the student to read appropriately over the web. The added advantage in the mobile learning models is reduction of communication gap. When compared to the traditional teaching system the tutor cannot provide equal attention to the students and now it is possible to reach all the students at the same time which reduces the gap. If the school has simple communication application to the students and their parents so the process becomes much easier to impart the information to all the students like schedules, school activities and various other process/information to the parents. Mainly two ways is used in the mobile applications for learning process for primary learning process and the advanced learning process. In this primary learning is used for formal training to develop the short term applications for learning. The advanced learning

is used to develop applications includes formal training which has the option as online or offline. Figure 2 illustrates the crucial criteria available in the learning management systems in the mobile environment. Selecting the required application and the acceptance of the application only makes the learning model become success. Since availability of the applications in the app market is higher than the number of users in the one particular area so the success in the learning model depends on the total number of hours the app is used. Based on these criteria the success rate of the application is calculated. Depending on the relevance and the simple ease to use model applications are much popular among all of them in all the times.

II. RELATED WORK

A vast research survey has been made for summarize the various mobile learning application and the technologies used by the researchers all over the digital world. The M learning model is discussed in the research article [1] which highlights the advantages in the terms of classroom and students benefits. The availability of the technology and the values of m learning are discussed based on the classroom and student learning models. The impact of the mobile application and learning is tested in this research work by assigning a worksheet based activities and an interactive 3D based brain developing application. Based on these two models the students performance is measured and compared with tradition model. The pre-test performance and the post-test performance are measured separately by the researcher [1] to demonstrate the effective teaching and student learning model.

The highlights in the research work [2] investigate the teacher and the student perceptions for usage of smart devices for learning and teaching process. The real time survey work is applicable for teachers of 18 numbers and the students of 39 numbers in a secondary school. The impact of using smart devices in both categories is measured based on the performance in teaching and learning. After the process over an innovative teacher are observed to be teaching centered teacher to change their teaching perceptions based on the application as a learner. The activities by the researcher [3] investigate the use of game based learning application which is influenced in the student performance in their subjects. Multiple choice content based questions and personal mobile devices provides a post lecture and pre tutorial to the students. The usage of application and the academic achievements is calculated based on the measures and grades is provided in the research work. The research article [4] proposed the findings from the results the based on the application used in the National assistive technology research institute. A special education program is conducted by the researcher to complete the education program relates to planning, development, evaluation of models in the assistive technology. The use of applications is summarized based on

the research policies such as academic, social and functional performance of the students. Figure 3 illustrates the usage of applications by grade of students on various devices such as broadband access, mobile access, TV access and school based access.

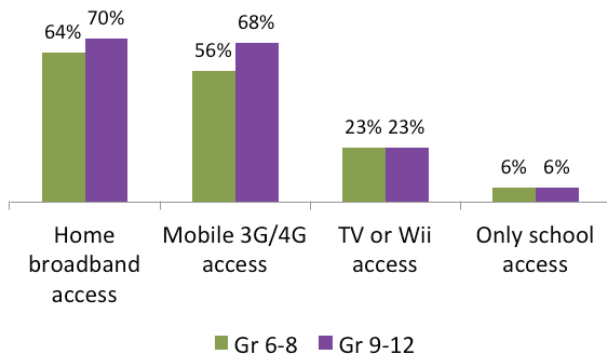


Figure 3 Student Access by Grade Level

The findings from article [5] describes about the potential of mobile applications to increase the talents of the children with disabilities, the barrier to the parent engagement is reduced due to this applications and the children will feel user friendly applications to engage themselves. Mobile technology and the interactive design based application makes the future for the students with disabilities [6]. Mobile learning is useful to the students needs but in case of message oriented services is available for all kinds of peoples then it is easy for them also to access. Continuous and situation based learning models supports the autism students which provide better learning experience and improves the levels of literacy among them. The research article [7] describes about the relationship between the mobile learning and special education applications in the smart environment created to the students. The performance of the students is increased while compared to the normal educated students. From all the above research work the observation made that the m learning application creates much awareness to the students to learn and understand the concepts easily when compared to the traditional model.

III. PROPOSED LEARNING MODEL

The proposed learning model is categories into host and the client. Further the clients are subdivided into mobile client and stationary clients. The access of information or upload/download data to the devices is based on the host performance and the client device performance. The technical base of the host system builds the specific implementation based on the necessary software. The main difference in the learning management system is to gather information from the students based on the two functionalities such as uploading the host name by the students and the integration of mobile applications through necessary software. The usage of ethnographic application is allowed to the learners for quick and easy understanding of the concepts. While in case of direct transfer to host a course specific template is included to ensure the content

access. Figure 4 illustrates the proposed Host based learning management model.

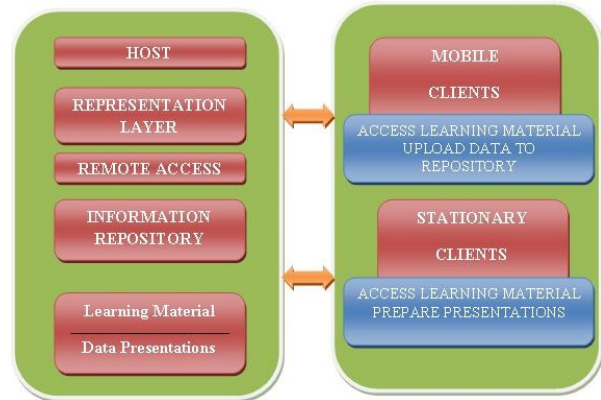


Figure 4 Proposed Learning model

The proposed learning model has enhanced annotation functionality for mobile devices for effectively utilization of graphical and textual notes. The annotations can be done directly after the capture process is over and also the integral part of the recordings is also available in the central library model for further course of access. The entire learning material is provided with a separate link to support various screen sized based on their picture display resolution needs. The information repository in the host unit has all the available functionalities and the course related information. Presentation, lecture videos and their related study materials, charts are stored in the host system. While in case of students side, if the students in field work then the mobile user have to upload the field work details from there to maser system. Host has the option of providing a backup option for the students data base access and summarize the feedbacks from students and also from the teachers. The host is used to respond the demonstrations in processing the data and also students also can download their data and others data to the desktop computer to prepare the final document of learning model.

IV. RESULT AND DISCUSSION

An evaluation is made based on the proposed model for the students of 25 numbers using the proposed m learning application and other 25 students are used to learn through the traditional teaching learning process. The course duration was 4 weeks and the mathematical, science oriented subjects are given as syllabus for them to learn from the resources available. The daily study time is 5 hours from 10 AM to 12PM and in the evening 5PM to 8PM including breaks. The student performance is observed by conducting online exams for the m learners and written exams for the traditional students. From the results it is observed that a success rate of 89% is achieved which is higher than the traditional method. The summary of the educator's response for the entire students is given in table 1.

Table 1 summary of educators’ responses

Description	Mean	SD
Mobile knowledge	3.11	0.54
Technical support	3.01	0.74
Wi-Fi facilities	2.77	1.13
Traditional teaching	3.02	1.00
M learning to truancy	2.89	1.34
M learning to uncoordinated learning	2.59	1.05

From the observation the mean and standard deviation is calculated for all the students and the response is much better than the other students. Figure 5 illustrates the snapshot of the proposed model used to test the student abilities.

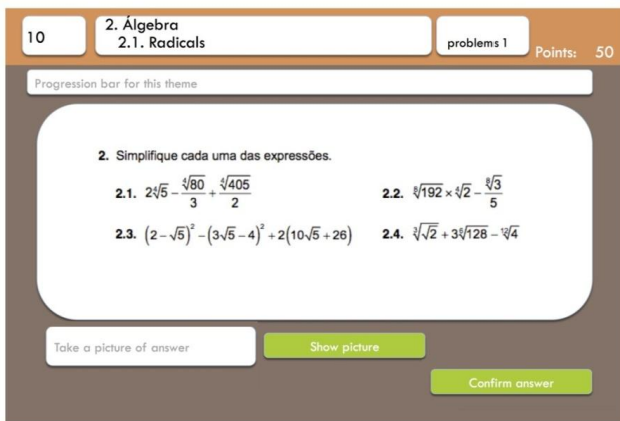


Figure 5 Screen Shot of Question Model Used For Observation Purpose

Figure 6 illustrates the graphical representation of the proposed model and the traditional model. The success rate is calculated based on the students initial condition of the students and the performance after the m-learning technology is availed by the student.

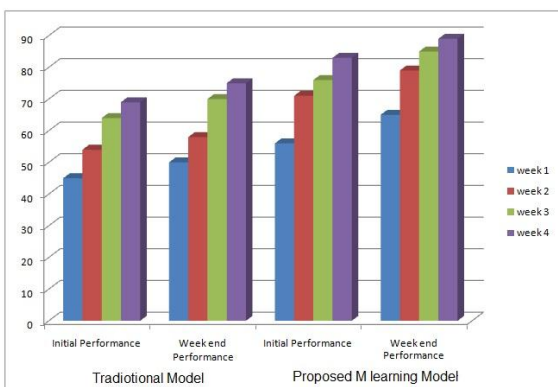


Figure 6 performance comparisons of proposed model and traditional model of teaching and learning

The initial performance of is summarized and compared to the later performance after the 4 weeks of program. Figure 6 illustrates the graphical representation of success rate for the students. The test was conducted for 4 sets of questions for every week and the performance is calculated based on the pre training and the post training results. A set of 50 questions is given in the starting of the week and after one week training again another set of 50 questions is given to the students to compare the performance for all the 4 weeks.

It is observed that the percentage of results increased gradually and attains 89% in the last week performance and in the case of traditional model the performance is 75% which is lesser than the proposed model.

Table 2 student performance Report

S.No	Students Performance- Average Summary					
	Traditional Method Of Learning (25 No's Of Students)			M Learning (25 No's Of Students)		
	Initial Performance (For a set of 50 Questions)	Week end Performance (For a set of 50 Questions)	Success Rate	Initial Performance (For a set of 50 Questions)	Week end Performance (For a set of 50 Questions)	Success Rate
1	45	50	5	56	65	9
2	54	58	4	71	79	8
3	64	70	6	76	85	9
4	69	75	6	83	89	10

V. CONCLUSION

The objective of the research is to provide the summary of mobile learning system to students enhances the performance in all activities such as studies and other social cultural activities. The feedback from the students is used to measure the performance of the model. Various points of learning models is given as a questions in the feedback forms to provide the accurate answers from the students so that the performance can be enhanced in the future work. The students of three levels of grades included for survey and research purpose and from the results it is observed that the students are much interested in mobile learning approaches than the traditional model. The success rate of the traditional learning students and the m learning students is varied and m learning students has much higher success rate. Based on this model if the student starts to learn the subjects then it is easy for them to build their own creative ideas.

REFERENCES

- [1] Macaluso K D, Hughes A (2016), “The use of mobile apps to enhance student society for the teaching of psychology, 43 (1): 48 – 52.
- [2] Montrieux, H., Vanderlinde, R., Schellens, T., & Marez, L. D. (2015). Teaching and Learning with Mobile Technology: A Qualitative Explorative Study about the Introduction of Tablet Devices in Secondary Education.

[3] Pechenkina, E., Laurence, D., Oates, G., Eldridge, D., & Hunter, D. (2017). Using a gamified mobile app to increase student engagement, retention and academic achievement. *International Journal of Educational Technology in Higher Education*, 14-31F. G. (2013). Young students using iPads: App design and content influences on their learning pathways. *Computers & Education.*, 68, 505-21.

[4] Bausch, M. E., Ault, M. J., & Hasselbring, T. S. (2015). Assistive Technology in Schools: Lessons Learned from the National Assistive Technology Research Institute. In *Efficacy of Assistive Technology Interventions* (pp. 13–50). Emerald Group Publishing Limited.

[5] Beecher, C., & Buzhardt, J. (2016). Mobile technology to increase parent engagement. *Interaction Design and Architecture(s) Journal - IxD&A*, 28(1), 49–68.

[6] Dunn, B., Constable, S., Martins, T., & Cammuso, K. (2016). Educating children with autism: Collaboration between parents, teachers, and medical specialists. *The Brown University Child and Adolescent Behavior Letter*, 32(7), 1–6.

[7] Gandolfi, E., Ferdig, R.E., Bedesem, P., & Lu, C.C. (2016). A call for a deeper understanding of the relationship between mobile learning and special education. *Interaction Design and Architecture(s) Journal – IxD&A*, 28, 3–7.

