Enhanced and Effective Learning through Mobile Learning An Insight into Students Perception of Mobile Learning at University Level

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ABSTRACT

The objective of this research study is to better understand and measure student's attitudes and perceptions towards the effectiveness of mobile learning in higher education settings. This paper reports on the results of a survey of fifteen hundred students from different departments at Abdul Wali Khan University about their attitude and perception of using mobile technology in education. We have asked questions related to the ownership of mobile and handheld devices, their battery backup time and electricity shortfall in hours in district Mardan, KPK, Pakistan and finally adding mobile learning to the currently available learning channels to enhance learning of students in the university. Based on the results of the survey; it is clearly indicated that majority of the students are using various mobile and handheld devices that support mobile learning with enough backup time to overcome the worst electricity crises in this region of the world. Moreover, students agreed that mobile learning will enhance their learning practices due to low back up time of their electronic learning devices. Furthermore, they show strong support for mobile learning implementation due to other advantages associated with this technology such as mobility, reachability and flexibility; with the aim of improving communication and enriching their learning experiences.

Keywords: Distance learning, conventional learning, electronic learning, mobile learning

I. INTRODUCTION

Recent trends in technological development have forced learning to follow its footsteps. In the fore said situation, educationists have made their focus towards new learning methodology i.e. m-learning. Because m-learning utilizes a variety of devices many of which are ubiquitous in the lives of students. It can therefore foster student engagement and offer opportunities to make learning integral to their daily life activities, thus making learning more situated, personal, collaborative and lifelong, whereas some authors even describe this as the beginning of the next social revolution [42].

M-learning can be defined as 'any educational provision where the sole or dominant technologies are handheld or palmtop devices' [1]. In other words, learning that is supported through any mobile device/s and is accessible from anywhere and anytime [2]. This technique of learning involves several technologies which includes mobile, network devices and computer devices, personal digital assistants (PDAs), palmtops, and mobile phones. These technologies are working with each other to support m-learning application. M-learning offers numerous advantages over other learning approaches such as flexibility, mobility, and reachability [45].

Currently, conventional and e-learning methods are practiced in Abdul Wali Khan University Mardan (AWKUM), Khyber Pakhtunkhwa, Pakistan. In order to give students accessibility, flexibility and freedom in the learning process, AWKUM may implement m-learning methodology because m-learning provides flexibility and accessibility in terms of time and place [8]. Furthermore, academic achievements of the students may be improved by m-learning since it provides

independent learning environment due to the mobile nature of mobile phone and the current electricity crises in Pakistan [15, 16]. In addition to that there are about ten thousand private students at AWKUM, who are unable to access the traditional learning system due to their location and various socio economic factors. Therefore this large number of students who have no access to formal educational channels may access learning materials from anywhere and anytime using their mobile phones. In [8], it is concluded that m-learning implementation can minimize literacy to its lowest level in developing nations. Particularly, in countries having large population of citizens, high penetration of mobile phones, poor economy and particularly low literacy rate; educational growth is very expensive due to huge investment in infrastructure development and learning facilities and salary payment to the staff members.

M-learning has a bright future due to the rapid increase in the number of mobile and handheld devices in use worldwide and particularly in Pakistan. The International Telecommunication Union in May 2014 estimated that there are nearly 7 billion mobile subscriptions worldwide; this is equivalent to 95.5 percent of the world population [9]. Similarly the Radicati group has forecasted that the worldwide business of mobile devices is projected to grow from 889 million in 2012, to over 1.4 billion by 2016. [14].

According to Pakistan Telecom Authority (PTA) Pakistan will have 139.20 million mobile phone users at the end of May 2014 [10]. The rapid growth in mobile and handheld devices demands us to implement and utilize mobile devices for learning activities. Likewise, Overall literacy rate of Pakistan was 69.70 % in 2014 [11] and stands at 160th in total countries of the world. Therefore, if the opportunity relationship is mapped between the low literacy rates against high mobile phone users, there exists a clear window of facilitation for the students accessing learning materials through mobile devices in Pakistan. Furthermore, the high penetration of mobile phones in Pakistan is auguring very well for success of a technology driven thrust in m-learning among the unreached, underdeveloped, illiterate mobile phone users and therefore having a future beyond the limits in AWKUM and Pakistan.

Our research sought to answer the following questions:

1. To determine what mobile devices do university students have for accessing and engaging with digital content? Their battery backup time, to perform feasibility study before mobile learning implementation?
2. To study that m-learning devices enhance current learning practices by providing more backup time as compared to e-learning devices tackling the worst electricity crises.
3. To determine the perception of mobile learning among students and the factors which influence their perception?

Hypothesis

H0. There is no significant impact of m-learning to enhance current learning practices.

H1: there is significant impact of m-learning to enhance current learning practices.

H0: there is no significant influence of mobile phone features on the perception of mobile learning among students.

H1: there is significant influence of mobile phone features on the perception of mobile learning among students

II. RELATED WORK

Student's interest is one of the most questioned aspects of student perception of m-learning in recent studies. There is substantial number of previous studies related to the student's perception of m-learning in an academic environment. In fact, several studies found that m-learning spawned strong interest among the students [13,14,17,18,19,20,21,22]. Moreover, students reported having a strong, positive reaction in integrating m-learning into the classroom for the enhancement of learning [23, 24, 25,26,2, 28, 29, 30, 31]. In [32], it is also claimed that mobile devices may act as a good assessment tool for the student and enable students who communicate less in class to express themselves and their ideas in a manner that is more comfortable to them. Student's engagement in m-Learning appears to encourage independent and collaborative learning experiences [33,46,47,48,49,50].

Moreover in [41] examined Malaysian student's awareness and requirements of mobile learning services

in higher education. They have concluded that higher education settings have enough infrastructures to utilize mobile learning. Results from the same study indicate that students have enough knowledge and awareness to incorporate such technology in their education environment [43], surveyed three hundred (300) undergraduate students from various departments of southwest university to examine their usage satisfaction of mobile learning. Their study employed closed end questionnaire with the Likert-Scale five-point measure. Results from the survey concluded that most of these students were satisfied with mobile learning (76%) and will use mobile learning in future learning (84%) While majority of students have benefited from mobile learning, especially in quickly solving problems encountered in learning and making better use of their learning time

Similarly, [44] studied whether mobile learning improve and enhance learning in the six developing countries of Asia by exploring the results of m-learning pilot projects. These countries were Philippines, Mongolia, Thailand, India, and Bangladesh. Analysis of these projects indicates that while there is important evidence of mobile phones facilitating increased access, much less evidence exists as to how mobiles promote new learning. Another study conducted by [42] investigated satisfaction and usability level towards specific mobile learning applications i.e., Mobile System Analysis and Design (MOSAD) application. It was concluded that this specific tool is good and it could be a useful revision tool for the students of higher education. Moreover, in [34] author has concluded that m-learning removes formality from the learning experience. It helps learners remain focused and raises student confidence [35,36]. Consequently, it has become an operational imperative for universities to deliver appropriate learning requirements to interested stakeholders/ students [37, 38]. Several studies conducted by [15,16,17,18] has also concluded student's positive perceptions of m-learning.

III. METHODOLOGY

In this study we have used quantitative methodology in the form of questionnaire. We have chosen questionnaire due to the fact that it facilitates the collection of data within a short period of time from the majority of respondents [39]. Furthermore, Quantitative method is good for measuring how many and in what proportion. It

is appropriate for this kind of study due to the fact that it provides a quantitative description of attitudes [40].

The population for this survey includes 1500 students of various departments of AWKUM. A pilot study of the questions in the questionnaire was conducted to identify, notice and learn about any mistake. It also includes avoidance of doubts, errors, and inadequate answers or highlight any confusing questions to get the necessary feedback in the real environment. The objective of the questionnaire was to gather information related to mobile and handheld devices used by the students, demographic data, battery life of their handheld and e-learning devices and the electricity shortfalls in hours. Furthermore, students have also recorded their opinion/perception regarding current learning practices and adding mobile learning as additional channel at

AWKUM.

This study used frequency distribution.

Decide about the number of classes.

Number of classes= $C = 1 + 3.3\log(n)$

Or

$C = (n)(1/2)$

Where n is the total number of observations in the data.

Calculate the range of data

$Rang = Max - Min$

Width of class

$H = rang/ \text{ number of classes}$

The questionnaire was divided into two sections. In the first section, questions were related to the student mobile devices. Their capabilities, battery life and the shortcomings in the currently available learning methods available in AWKUM compared with mobile learning. The second section of the questionnaire was about student's perception of mobile learning, comparison of current learning practices with mobile learning and its implementation in AWKUM.

IV. RESULTS AND DISCUSSION

This section discusses the result of the questionnaire. In Fig.1, a graph is drawn for gender wise users of internet enabled mobiles compared with the non-internet enabled mobiles users from our sample. The first bar on x-axis represent the number of male (689) and females (246) students having internet enabled mobile phones. The second bar represent the number of male (327) and

female students (238) having non-internet enabled mobile phones while y-axis represent the total number of students data i-e 1500 students.

Results from the graph indicate that there are enough users having internet enabled mobile phone. Therefore we are confident that we have enough devices that support the implementation of mobile learning in AWKUM.
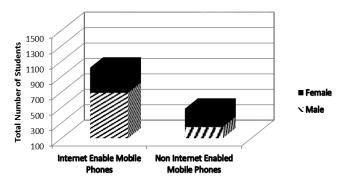

Figure 1 : Gender wise - Users of internet and non-internet enabled mobile phones.

In Fig.2, x-axis represent the number of students in percent while y-axis represent electricity shortfalls in hours. In this graph, total sample data is for 1500 students. Out of these, 10 % students were facing approximately 4 hours, 17% students 6 hours, 39% students 8 hours and 34% students 12 hours a day electricity shortfalls respectively. This indicates the severity of electricity shortfalls among students and a strong notion in support of mobile learning.
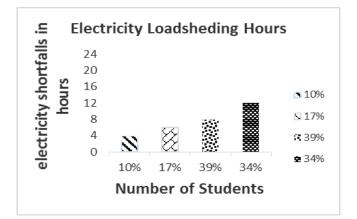

Figure 2. Number of students versus hours of electricity shortfalls

In Fig.3, x-axis represents various e-learning devices such as PC's and laptops, while on y-axis battery backup time of these devices is shown in hours.
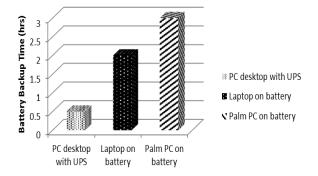

Figure 3. various eLearning devices and battery time in hours is shown respectively.

In Fig.4, x-axis of the graph represents various handheld and mobile devices used for m-learning such as mobile phone, mobile tablet, android phone and iPhone while on y-axis their battery backup time in hours is shown respectively. Thus we can conclude from Fig.3 and Fig.4, that devices used for e-learning have far less backup time than devices used for E learning, which is best suited to overcome the worst electricity crises; a huge obstacle in to the current learning approaches [15, 16].
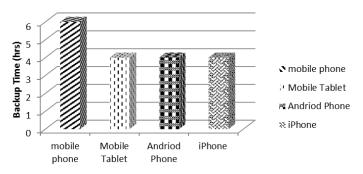

Figure 4. showing various m-learning devices and their average battery backup time.

In Table 1 questions are related the student's perception about current learning practices and adding m-learning to it. It is observed that considerably a good margin of students favour m-learning than that of e-learning. Furthermore, Fig.3,4 depicted that devices used for e-learning have far less backup time as compared to mobile learning devices. The main reason is that m-learning provides independent learning environment due to the mobile nature of mobile phone and the current electricity crises in Pakistan [15, 16]. In the result, majority of the students favour mobile technology for learning as compared to e-learning at AWKUM.

From the results given in Table 1, it is concluded that majority of students have m-learning devices that supports the implementation of this mode of education in AWKUM. Moreover, survey on the opinion/s of the current learning practices and m-learning utilization in existing learning system showing a strong support for the implementation of m-learning in the university. Students may access educational materials at any place, manner and time. An additional benefit associated with the implementation of m-learning is that it gets rid of certain formalities from the learning experience. It encourages and motivates independent study. Thus implementing m-learning, learners can lessen the dependencies on the formal class period and lecturers. Students are free to choose the way they study; Thus resulting in an increase in self-esteem and confidence of the students [13].

Table.1 student's perception of using m-learning and e- learning approaches at AWKUM.

Questions	Current Learning Practices in AWKUM	Implementing Mobile Learning in AWKUM
Give me flexibility in learning activities by gaining access to learning materials regardless of time and location.	23%	77%
Give me the opportunity to continue my studies during electricity load-shedding hours.	11%	89%
Encourage independent studies	29%	71%
Mobile learning will Enhance my learning activities	8%	92%

On one hand m-learning removes some of the short comings of traditional learning approach such as (i) instructor will come to the class for the delivery of the course contents (ii) an agreed time period for both the students and instructor (iii) both the number of student and lecture contents are limited [8]. On the other hand, in e-learning, where user/s need a laptop and internet connection and are tied to a specific point, while m-learning on the other hand only needs a mobile phone providing educational material to the students in an accessible and affordable manner. m-learning can be used to increase access to effective teaching and learning which could be used at a time convenient to teachers and students. Such as, when they are preparing lesson plans or while travelling to schools [6,7]. Therefore, these students will no longer wait for a certain time to learn or go to a certain place to learn; with the aim of improving communication and enriching their learning experiences.

V. CONCLUSION

M-learning application provides new and effective way of learning to the students and instructors. Based on the results of the survey conducted, students indicated positive perceptions of m-learning. It is a hope for all who have thirst for education but have no access to formal channels of education. M-learning is the best solution to overcome the limitation of conventional and e-Learning approaches and the challenging problem of electricity crises and can be applied to a range of fields [51,52,53,54,55,56,57]. It enhances the learning environment of students and a practical step towards fulfilling the objective of AWKUM slogan 'education at door step'. In future we are planning to design and conduct experimental research to study and measure various dimensions related to the effectiveness of m-learning from the lens of establish theories and models in AWKUM in particular and in Pakistan in general [58,59,60,61,62,63].

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