Investigation of Facilities for an M-learning Environment

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Abstract: The paper projected to study the field of m-learning focusing on investigating the facilities required to initiate an m-learning environment. Facilities and regular practices of conventional learning and e-learning was considered to find the potential facilities for m-learning environment. We used Integrated Tertiary Educational Supply Chain Model framework that stands on conventional education and illustrates the combined form of education supply chain and research supply chain model. Two surveys were conducted to collect data from students and teachers of higher education. The responses from both of the surveys have been presented and later compared with the findings from our studies of the existing learning environments. The significance of this research is in identifying the facilities for a learner and educator centric m-learning environment.

Index Terms: M-learning, Mobile Learning, Mobility, Ubiquitous, Self-Directed Learning, Informal Learning.

1. Introduction

Mobile learning is one of the major revolutions happening around us that demands a change in the philosophy of learning. It is considered as the third wave of learning where as traditional learning and e-learning are considered as the first and second respectively. In order to investigate for the facilities of an m-learning environment, we are required to discard and gain some of the fundamental ideas such as learner's attention, rhythm, learning style for these new dimensions of learning. The main purpose of this paper is to provide a better understanding of the existing facilities in different learning environments and consider them for improving m-learning framework. Two different surveys were undertaken in order to learn about the facilities that students and teachers feel comfortable with. We hope to distinguish the facilities from the survey data so that it opens further opportunities to establish more effective m-learning environment.

In this paper, we worked with a framework known as the ITESCM [1] (Integrated Tertiary Educational Supply Chain Management), which is based on conventional education and shows us the combined form of education supply chain and research supply chain model. We translated the framework to use in mobile learning. The framework is based on four factors and we worked with one of the factors which is facilities.

The main objective of our research was to investigate the facilities required to establish a mobile learning environment. In order to accomplish our main objective we had identified the requirements that both the students and the teachers need to use in a mobile learning environment. The main research question was what facilities are required to establish a mobile learning environment. To look for the answer of our main research question we had to find out what are the requirements that both the students and teachers need to use a mobile learning environment.

We organized the paper with a small introduction of mobile learning in section I. After that we described about traditional learning, e-learning and m-learning along with their facilities in the section II. In section III, we explained our research methodology. Then we presented the data obtained from our surveys in section IV. In section V, we provided a brief discussion over the survey data relating with our literature review. Finally we concluded the paper in section VI by summarizing our outcomes and an idea to conduct future researches.

2. Background Study

In traditional learning environment universities offer a wide range of modern facilities to their students including lecture halls, libraries and laboratories [1] to ensure students are at comfortable learning environment. Modern facilities in the university are represented by online database, e-journal, digital library etc. [2]. To ensure these facilities are also available in m-learning environments an online library can be implemented consisting of various modern books and journals. A complement of lecture hall can be an open chat room during scheduled class for students and faculty members. Universities also provide internet and computer facilities. Although computer labs are densely packed with desktop computers, most of them are usually unavailable for self-access as they are almost constantly reserved for teaching classes [3].

In time of class tests, quizzes and exams, guidelines with counseling, lecture sheets and maintaining a good relationship with faculty members and other students play a vital role [4]. Faculty members needs to provide necessary lecture sheets to students for better understanding of subject and guidelines for exams and students will be able to discuss their short comings with their faculty through audio-video chat.

The adoption of e-learning systems has been growing in academia. In 2004, the e-learning market was worth more than US $18 billion worldwide. In Middle East, e-learning projects were expected to exceed a compound average growth rate of 32% by 2008 [5].

According to [6], to offer e-learning, a country must have strong telecommunication system, strong and cheap internet service, Wi-Fi technology and expert teams for designing educative materials and resources. On a similar thought, paper [7] highlighted that an appropriately designed and structured content management system allows the students to browse and interact with the content of the courses. E-learning literatures also reveal that access to e-learning can be challenged by issues such as persistent supply of electricity, high cost of hardware like personal computers and laptops, technophobia systems in the country, poor attitude towards ICT by students, poor availability of e-learning software and instructors unwillingness to incorporate e-learning approach in teaching [8].

E-Quarium was designed by e-learning academy with the several social learning styles in mind like individual learning, active learning hub and chill-out zone. Individual learning style refers to a seating area where a student prefers to study on his own. Plenty of charging stations are available there. Active learning hub refers to when a student prefers to discuss educational contents in a larger group with media support and digital driven collaboration. A chill-out zone is another sort of seating area where a student prefers to engage in an academic discussion or reading a book.

The term m-learning is generally used to describe a learning environment where students and instructors can access a learning system over a wireless network using mobile devices [9]. It is a subset of e-learning [10]. It is a spontaneous learning environment [11] and referred as the mode of learning in which learners may move within different physical and virtual locations to participate and interact with other people, information, or systems anywhere, anytime [12].

M-learning is an approach to e-learning that utilizes mobile devices [13]. In other words, m-learning means mobility of learning where mobility can be conceptualized in different ways such as mobility of the device, mobility of the user, mobility of the service [14]. Unlike desktop e-learning, m-learning has the benefits of mobility and its supporting platform, which can be summarized as ubiquitous, localized and personalized [15]. Mobile learning is ubiquitous in a sense that it can occur anytime, anywhere, anyplace. Localization is a specific strength of mobile devices as it can provide service according to user's location. Last of all, personalization means targeting learning materials as much as possible in a difficult navigation of a small mobile screen [15]. Mobile learning has also been defined as any sort of learning that happens when the learner is not at a fixed predetermined location or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technology [16]. It is any form of learning that happens when mediated through a mobile device [17].

Mobile learning refers to the ability to obtain or provide educational content on personal pocket devices such as smart phones, PDAs and mobile phones. Digital learning assets enable a learner to learn beyond typical learning environment. So, portions of life those were never considered accessible for learning due to lack of connectivity are now potential learning opportunities for the mobile learner [16]. M-learning is also cost-efficient and helps students to learn more without traditional restrictions [3]. In an m-learning environment, educational contents should be designed for minimum equipment in order to be feasible on most regular phones. Limited battery life, limited key and screen sizes on mobile devices and variable network coverage in some rural areas [10] may make it a tough to accommodate all the facilities.

One of the most promising features of m-learning is performing activities collaboratively [14]. According to [18] mobile learning environment should provide opportunities so that peers can discuss among themselves and recorded audio-video clips and other course contents are accessible. M-learning environment should also promote high level learning by enabling the students to collaborate on educational problems. Researchers in [19] found that justification of posts, clarification of ideas, critical discussion of contribution, suggesting solutions and periodic feedback from the instructors is highly valued among the students. Another research showed that students were interested in podcasts of

lectures as well as quick SMS notification to keep themselves updated about lecture times, assignment due dates and various university events [20].

In study [7] researchers found that social networking sites influenced students to suggest for features like receiving notifications when their queries get responded, easier way to create and respond to quires and flexible way to download content. The authors in [18] also noted that students can contact their course instructors whenever they need through mobile phone and using different social networking apps increases the connection and intimacy between them.

Digital revolution enables real-time assessment of student performance. As a result, students do not require receiving feedback regarding their skill mastery. Teachers can now embed pop-up quizzes in online and students can be evaluated on an on-going basis [21]. This leads us to conclude from this data that providing assessment marks for contributing to the discussion forum does have an impact on the participation of fully online students [19].

In [3] some challenges of m-learning were mentioned. It was said that m-learning environment might create a feeling of being isolated. Furthermore, as mobile technologies are upgrading at a rapid pace, lots of outdated resources are found. A virtual learning environment can be divided into four parts [22]: presentation, activities, communications and administration. Presentation refers to any functions related to new materials, activities refers to all kind of student's activities; communications refers to communication between students and teachers and administration functions refers to administrative works like enrolment, registration and payment [5].

Educational institutions often fail to achieve substantial results with their mobile learning initiatives [23]. Although the rapid proliferation of mobile applications has outpaced the traditional software applications, these applications cannot be applied directly in mobile devices because of different mobile platforms, different hardware makers [3] and lack of any well-established mobile user interface design guideline [24, 25]. As m-learning is a form of distant learning it may make it easier to cheat and preventing it has also been stated as a challenge [3]. A way to face this challenge is to make sure that the device is being always controlled by the user which is yet another challenge [5]. As Internet and computers become very important educational tools [3], there exist a few applications in the market to assist conducting educational activities. Again, different mobile hardware makers such as HTC, Google, Samsung, Nokia, Apple etc. uses different platforms such as android, windows, iOS, etc. So, it is a challenge to make all the facilities available for all of them [5].

Researchers behind m-learning technology have proposed that m-learning should be standardized to ensure that it operates smoothly within the existing IT infrastructure [26] of educational institutes. Developers also must take into account the environment in which the application will be used while developing mobile applications [27]. It is also suggested that academic institutions introducing m-learning should focus on system quality, content quality, and service quality [28]. Furthermore, mobile technology should be easy to use in the classroom and compatible with the way students use educational resources [29]. Lastly, being an informal and self-directed learning environment, a user should get the facility to configure the environment according to his preferences. In [7], students also suggested that clear and customized information can result in a better learning experience. Providing this facility is also a challenge of m-learning environment [5].

3. Research Methodology

In [1], researchers presented that to provide quality education, four factors are needed to be analyzed. They are: program establishment, university culture, faculty capabilities and facilities. Among these four factors we have investigated about facilities in our research. A university provides both direct and indirect facilities to its students for their academic studies and researches. Lecture hall, library, IT facilities, digital library and e-journal facilities are directly related with education whereas residence facilities and transport facilities are indirectly related with education. If proper facilities are not provided, students will not be able to receive proper education.

In our study we followed design based action research. An action research is a well-disciplined inquiry process which is conducted by and for the practitioners who are participating in the action [30]. Design based action research is a research methodology where the researchers have a vision on how the reality should be and collaboration is always made with people who would utilize the outcome of the research. Design based action research aims to develop educational practices through systematic and iterative analysis, design, development and implementation, based on collaboration between researchers and practitioners [31]. Researchers in [32] have argued that, practitioners and researchers collaborate together in design based research to bring out changes by drawing design constraints from not only the local context but also the researcher's agenda. They also mentioned that design based research can help to create and extend knowledge about developing, enacting, and sustaining innovative learning environments. It not only intends to inquire the nature of learning in a complex system but also to enhance theories of learning.

In our research data was collected by survey to find out about the participants anticipation on different facilities of an m-learning environment. According to [33] survey is a mean of gathering information about the characteristics, actions, or opinions of a large group of people, referred to as a population. A major characteristic of surveys directed for research purposes is that information is usually composed about only a portion of the study population, but it is collected in such a way as to be capable to simplify the outcomes to the population [33].

We conducted the survey in "X" University. 100 students and 20 faculty members participated in the survey. The students were selected through a systematic random sampling procedure where we selected four courses from different years of study. All the students were studying for bachelor's level computing degrees. The survey questionnaire for faculty members were distributed to all the members of the faculty and 20 out of 32 participated. The survey questionnaire is attached in appendix A. We used different survey questionnaire for students and faculties so that we could justify the perspectives of both cases. We examined the raw data after clustering the questions into associated sections and also generated a graphical appearance of the data. After examining each cluster we composed a summary of the outcomes and derived a conclusion on how m-learning is being approached by both students and teachers.

4. Findings

We divided the questionnaire for students into seven categories. Category A has only one question (Q1) indicating willingness of using mobile devices, Category B has two questions (Q2, Q3) indicating state of internet access of the students' mobile devices, Category C has five questions (Q4 - Q8) representing significance of course materials in mobile and Comfort of using it, Category D has five questions (Q9 - Q13) representing tools that students want to use in mobile phone, Category E has two questions (Q14, Q15) indicating preferred form of education, Category F has two questions (Q16, Q17) highlighting the drawbacks and possible improvements and Category G has one question (Q18) reflecting the degree of success.

We also divided the questionnaire for teachers into five categories. Category A has three questions (Q1-Q3) indicating the usage of mobile phones in teaching procedure, Category B has four questions (Q4 – Q7) indicating willingness of using mobile phones for teaching, Category C has only one question (Q8) representing activities performed in mobile phones, Category D has four questions (Q9 - Q12) highlighting the drawbacks and possible improvements and Category E has four questions (Q13 – Q16) reflecting teacher's vision on M-learning.

Both of the survey responses have been presented below:

Table 1. Responses of student survey Q1 to Q5

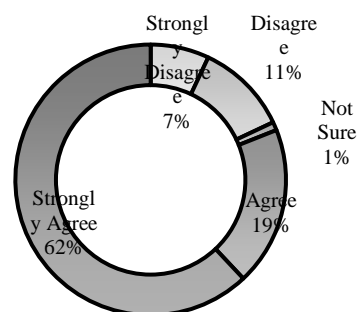| Questions	Responses	Response Rate
Q1	Yes	95%
	No	5%
Q2	Yes	88%
	No	12%
Q3	Yes	98%
	No	2%
Q4	Yes	44%
	No	56%
Q5	Yes	53%
	No	47%

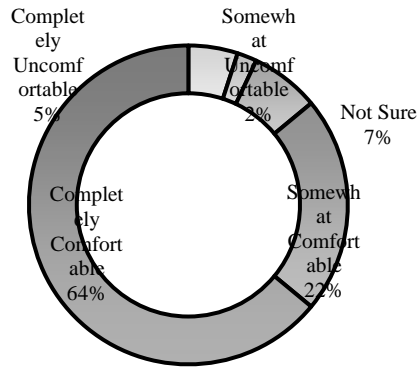
Fig.1. Response of Student Survey Q6
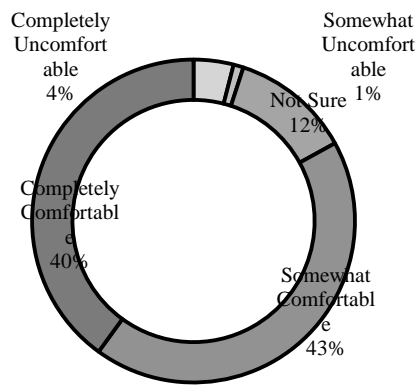
Fig.2. Response of Student Survey Q7

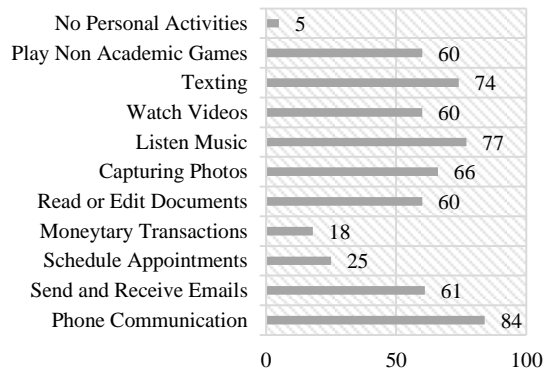Fig.3. Response of Student Survey Q8

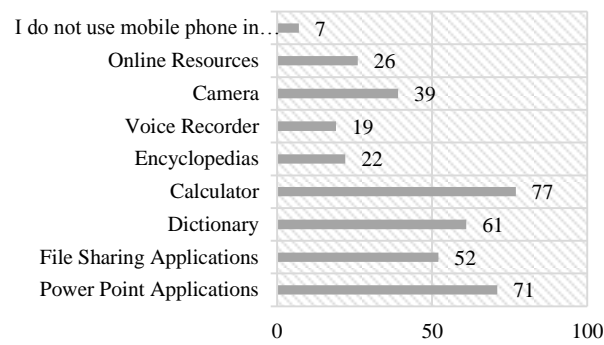
Fig.4. Response of Student Survey Q9

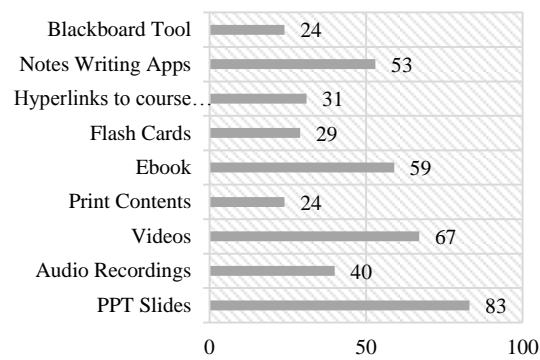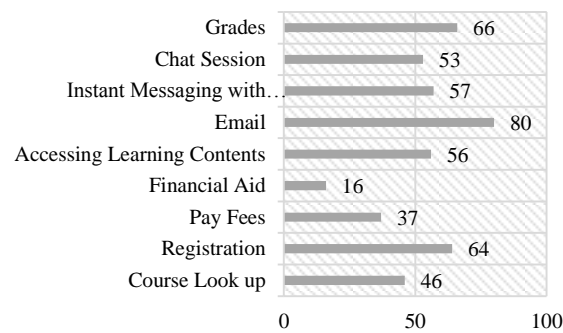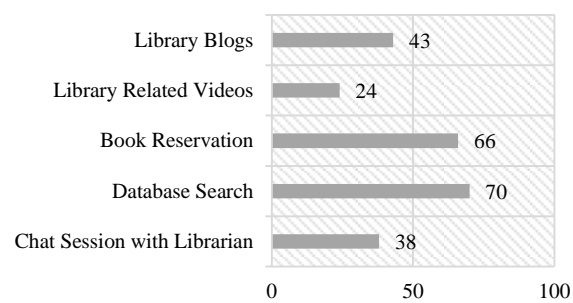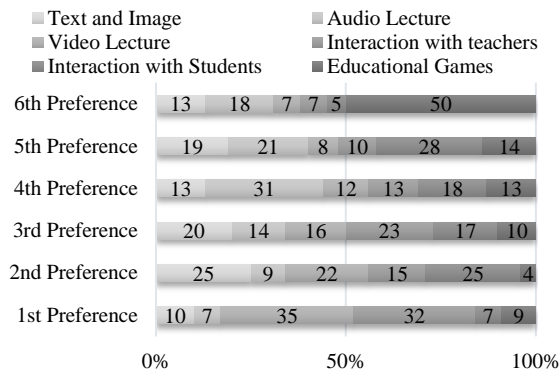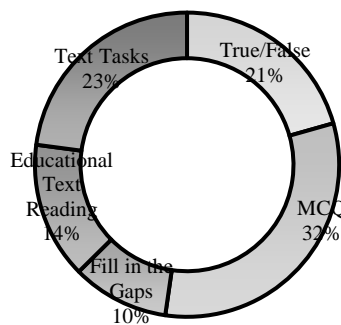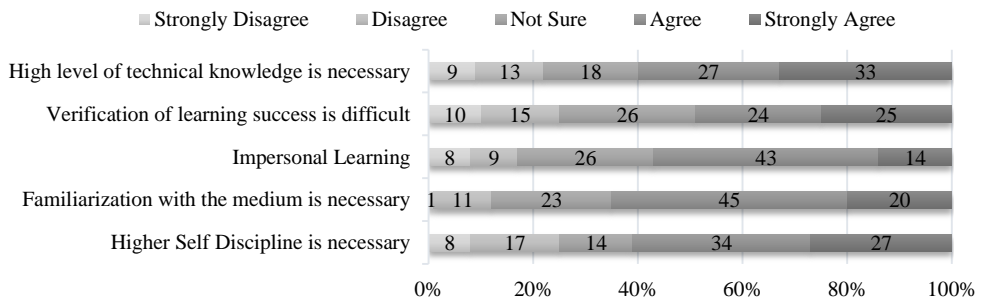Fig.5. Response of Student Survey Q10

Fig.6. Response of Student Survey Q11

Fig.7. Response of Student Survey Q12

Fig.8. Response of Student Survey Q13

Legend: Text and Image, Audio Lecture, Video Lecture, Interaction with teachers, Interaction with Students, Educational Games

	Text and Image	Audio Lecture	Video Lecture	Interaction with teachers	Interaction with Students	Educational Games
6th Preference	13	18	7	7	5	50
5th Preference	19	21	8	10	28	14
4th Preference	13	31	12	13	18	13
3rd Preference	20	14	16	23	17	10
2nd Preference	25	9	22	15	25	4
1st Preference	10	7	35	32	7	9

Fig.9. Response of Student Survey Q14

Donut chart:
- True/False 21%
- MCQ 32%
- Fill in the Gaps 10%
- Educational Text Reading 14%
- Text Tasks 23%

Fig.10. Response of Student Survey Q15

Legend: Strongly Disagree, Disagree, Not Sure, Agree, Strongly Agree

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
High level of technical knowledge is necessary	9	13	18	27	33
Verification of learning success is difficult	10	15	26	24	25
Impersonal Learning	8	9	26	43	14
Familiarization with the medium is necessary	1	11	23	45	20
Higher Self Discipline is necessary	8	17	14	34	27

Fig.11. Response of Student Survey Q16

Legend: Larger Display, Lower Network Traffic, Larger Memory Capacity, Faster Data Transmission, Technology Unification

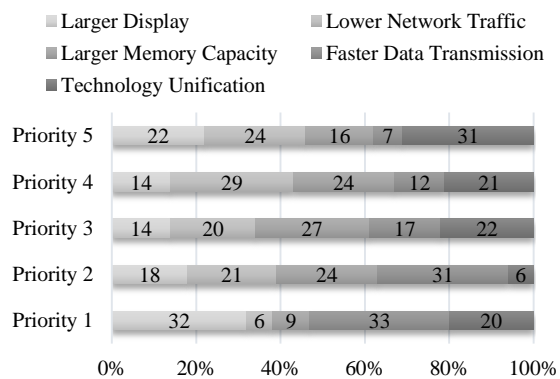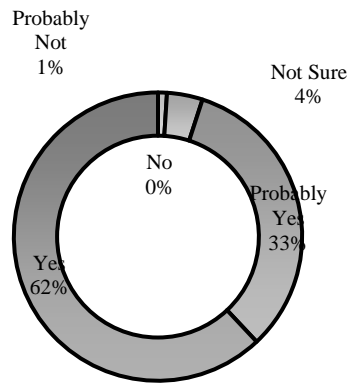|	Larger Display	Lower Network Traffic	Larger Memory Capacity	Faster Data Transmission	Technology Unification
Priority 5	22	24	16	7	31
Priority 4	14	29	24	12	21
Priority 3	14	20	27	17	22
Priority 2	18	21	24	31	6
Priority 1	32	6	9	33	20

Fig.12. Response of Student Survey Q17

Fig 13. Response of Student Survey Q18

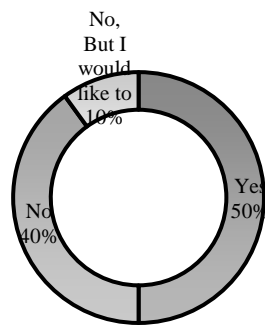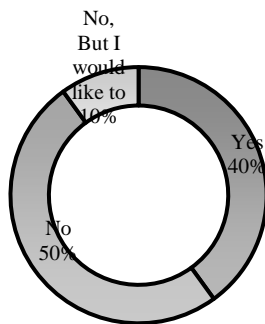

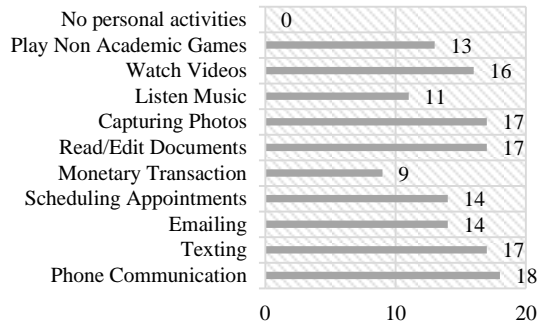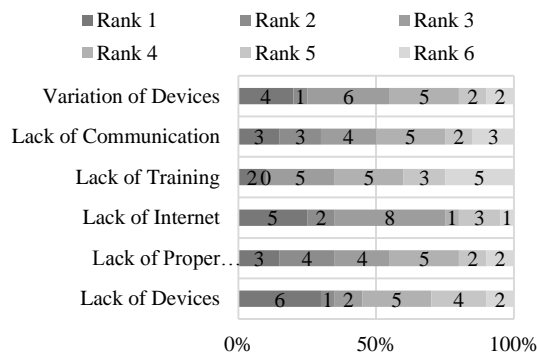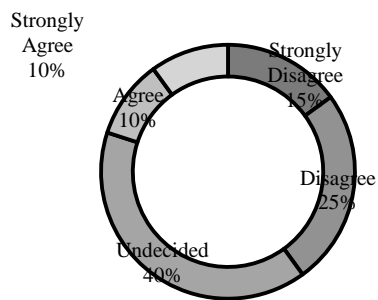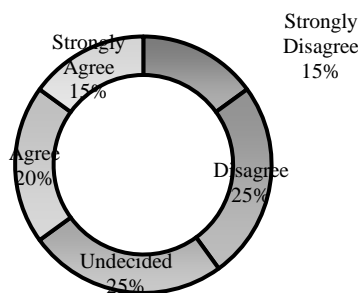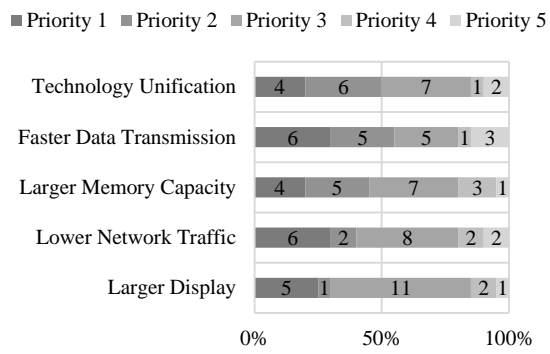Fig.14. Response of Teachers Survey Q1

Fig.15. Response of Teachers Survey Q2

Table 2. Responses of teacher survey Q3 to Q7

Questions	Responses	Response Rate
Q3	Yes	30%
	No	70%
Q4	Yes	65%
	No	35%
Q5	Yes	20%
	No	80%
Q6	Yes	50%
	No	50%
Q7	Yes	50%
	No	50%

Activity	Value
No personal activities	0
Play Non Academic Games	13
Watch Videos	16
Listen Music	11
Capturing Photos	17
Read/Edit Documents	17
Monetary Transaction	9
Scheduling Appointments	14
Emailing	14
Texting	17
Phone Communication	18

Fig.16. Response of Teachers Survey Q8

■Rank 1   ■Rank 2   ■Rank 3
■Rank 4   ■Rank 5   ■Rank 6

Category	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6
Variation of Devices	4	1	6	5	2	2
Lack of Communication	3	3	4	5	2	3
Lack of Training	20	5	5	3	5	
Lack of Internet	5	2	8	1	3	1
Lack of Proper…	3	4	4	5	2	2
Lack of Devices	6	1	2	5	4	2

Fig.17. Response of Teachers Survey Q9

Strongly Agree 10%
Strongly Disagree 15%
Agree 10%
Disagree 25%
Undecided 40%

Fig.18. Response of Teachers Survey Q10

Strongly Agree 15%
Strongly Disagree 15%
Agree 20%
Disagree 25%
Undecided 25%

Fig.19. Response of Teachers Survey Q11

Priority 1 Priority 2 Priority 3 Priority 4 Priority 5

	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5
Technology Unification	4	6	7	1	2
Faster Data Transmission	6	5	5	1	3
Larger Memory Capacity	4	5	7	3	1
Lower Network Traffic	6	2	8	2	2
Larger Display	5	1	11	2	1

0%   50%   100%

Fig.20. Response of Teachers Survey Q12

Strongly Disagree 10%
Disagree 15%
Undecided 25%
Agree 30%
Strongly Agree 20%
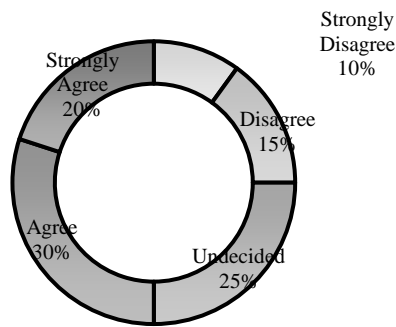
Fig.21. Response of Teachers Survey Q13

Strongly Disagree 10%
Disagree 30%
Undecided 20%
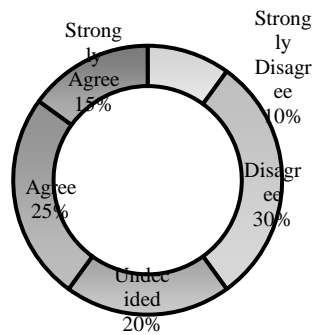Agree 25%
Strongly Agree 15%

Fig.22. Response of Teachers Survey Q14
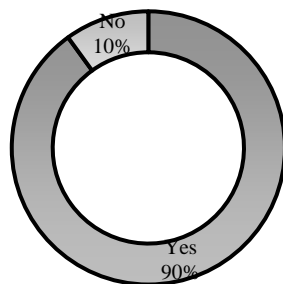
No 10%
Yes 90%

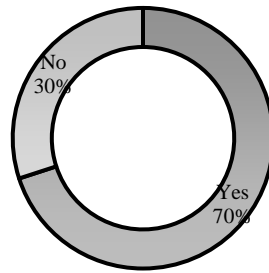Fig 23. Response of Teachers Survey Q15

Fig 24. Response of Teachers Survey Q16

5. Discussion

Table 3. Discussion based on survey data of students

Category	Summary of student's survey data
Willingness of using mobile devices	According to the authors of [20] students were interested in receiving lectures, assignments and notices regarding different class activities through mobile phone. Our research has also found that 95% students wanted to use mobile devices for learning purpose.
State of internet access of the students' mobile devices	In [6] it was mentioned that strong telecommunication and internet infrastructures are required for e-learning. As, m-learning is a subset of e-learning [10], the same thing is also required for m-learning. Paper [34] also mentioned that stable internet connectivity is required to extract maximum benefit of m-learning. From our literature review and our survey responses, we found that 88% of students use cellular data connections and 98% of students can access Wi-Fi network from their mobile phone. It enables them to access learning materials through internet.
Significance of course materials in mobile and Comfort of using them	From our survey responses we found that 56% of students do not feel comfortable reading books as books are large reading materials and it is difficult to do a lot of reading in a device with small display. We also found in [10] that small screen size of a mobile phone may make it harder to facilitate all the facilities. Paper [15] mentioned that m-learning can occur anytime and anyplace. 53% students expressed that they will be comfortable in attending exams through mobile phones as they do not need to confine themselves in a particular place for it. From our literature review we learned that students were interested to have course materials on their phones [20]. Our survey responses indicated that students agreed on the fact that having course materials in their mobile phone would be beneficial for their study process. It will help the students to access course materials on the go. Furthermore, these materials should be distributed in different formats like audio, video, pdf, ppt or even html. According to [21], students receive real time assessments of their performances and a major portion of the students mentioned that they would be comfortable in receiving grades in their mobile phone. They also expressed that they would be comfortable if the teachers contact them and guide them through mobile devices. The students consider it to be an assurance that their teachers will be available to assist them whenever they need. We have also found the same from [4, 20].
Tools that students want to use in mobile phone	Our survey responses illustrates that students not only use mobile phones for communication and entertainment purposes but also they use it for capturing photos and reading/editing documents A majority of the students expressed that they use the calculator, power point applications, file sharing applications and camera applications in their phone. A few students also said that they use online resources through their phones. Students also expressed that they would be interested in accessing power point slides, videos, notes writing applications and e-books in their mobile phone. Some of them also mentioned about accessing audio recordings, flash cards and hyperlinks to course materials. In another question, the students responded that they would be interested in accessing their emails, grades, course registrations, chat/instant messages and learning contents through their mobile phones. Many students also mentioned that they will be interested in searching book database and reserving a book from the library through their mobile phones. We have found similar records in [5, 22].
Preferred form of education	In our survey, the students have preferred video lectures and interaction with teachers as their most preferred form of education where as they chose educational games as their least preferred form of education. They also mentioned that MCQ is the most feasible evaluation method and True/False questions are the second most feasible evaluation method whereas Fill in the Gaps is the least feasible evaluation method. Paper [20] mentioned that students have interest in video lectures and [35] mentioned about video conferencing. Paper [36] mentioned that the average time that a student can focus on a topic is 10 to 15 minutes and suggested to divide a long lecture into several small lectures. Their study also found that students support taking short assessments like MCQs regularly for better learning. According to [34] students also preferred doing their assignments collaboratively.
Drawbacks and possible improvements	Students have agreed that the lack of technical knowledge is one of the major drawback of m-learning. They also identified that the verification of learning success is difficult. Furthermore, they have agreed that higher self-discipline and is also necessary for m-learning. According to the students, faster data transmission and larger display devices can make mobile learning achieve a broader acceptance whereas unifying technologies is not a major concern for the mobile learning acceptance rate. We have found similar records in [6, 10].
Degree of success	In our literature review, we found that m-learning removes the restrictions of traditional learning [3] and enables a learner to learn beyond traditional learning environments. In our survey, students have also responded positively that they think a mobile learning software will be helpful for them to improve their learning success.

Table 4. Discussion based on survey data of teachers

Category	Summary of teacher's survey data
Usage of mobile phones in teaching procedure	Exactly half of the teachers responding the survey, have used mobile device to improve their teaching skills and methods. More than half of the teachers never used a mobile device as a teaching or learning tool with the students. Furthermore, most of the teachers never shared any learning materials with the students through their phones. In [8], authors have expressed their concern mentioning the same.
Willingness of mobile phones for teaching	In our literature review, we found that m-learning can be challenging as a result of unwillingness of the teachers [8]. In our survey, a major portion (65%) of the teachers expressed that they would like their students to be able to use their mobile phones for learning purpose inside classroom. We have learned from [3] that is easier to cheat in exams and agreeing with the same, almost all the teachers answered that they will not like to take exams through mobile phones. The teachers were divided in exactly halves in terms of providing instructions or notices through mobile phones and about participating in a live chat rooms with students for discussing subject matters.
Activities performed in mobile phones	Our survey found that teachers usually use mobile devices for communication, capturing photos, reading or editing documents and watching videos. Less than half of the teachers also use mobile phone for monetary transactions. A concern about proper security existed for rest of the teachers who do not use mobile phone for transaction purpose. Authors of [34] also found security concern like data and privacy loss among teachers.
Drawbacks and possible improvements	30% of the teachers have ranked Lack of Devices as 1st and another 25% of the teachers have ranked Lack of Internet as 2nd biggest obstacle of using mobile devices for teaching purpose. On the other hand, 25% of teachers expressed that Lack of Training is the smallest obstacle to apply m-learning indicating they are already properly skilled and trained. According to [37], teachers also face issues with internet connectivity during online classes and teachers also felt that they required more training for conducting classes online. Authors of [6] have expressed the same concern about internet accessibility and network infrastructures whereas authors of [10] expressed the same concern about display size. In response to another question a 40% of the teachers could not decide whether m-learning would be more stressful than face to face teaching or not but another 40% of teachers expressed that m-learning will not be more stressful. Teachers also think that m-learning will not make them to depend on internet over thinking creatively for practical work. Teachers also responded that faster data transmission, lower network traffic and larger display are necessary for m-learning to achieve a broader common acceptance. They also expressed that larger memory capacity is not a major necessity for the purpose. Paper [38] expressed concern about performance based on memory capacity and bandwidth limitation.
Teacher's vision on M-learning	Our survey responses highlighted that half of the teachers expressed that the acceptance of m-learning among the students in higher education will be high. A major portion of the teachers agreed that m-learning can bring massive opportunities for the universities to empower informal learning. Authors of [17] also stated that m-learning has added a new dimension to learning by enabling a learner to go beyond traditional learning experiences. Teachers expressed that m-learning will play an important role in the future of learning. They also positively think to adopt and integrate m-learning technology for their teaching methodology. Authors of [3] mentioned that m-learning is cost efficient and increases the opportunity of learning.

In any learning environment, students and teachers are the major stakeholders. Our survey questionnaires focused on the facilities of an m-learning environment from the perspective of these two major stakeholders. As a result, the findings discussed in this paper will help researchers to learn about the facilities that are required for both students and teachers for acting in a mobile learning environment.

6. Conclusion

Our paper observed utilization of mobile phones by students and teacher of higher education in regular learning and how m-learning is being approached by them. Survey data was compared with existing literature and it was found that students are expected to be self-directed learners who independently locate resources to supplement their learning. Using mobile devices for learning outside the classroom can also be a motivating factor for them. Furthermore, we found that students are not only interested in receiving course contents but also in interacting among themselves and with the course teacher through mobile phone. It was also found that teachers are ready to adapt mobile learning and they believe that mobile learning will play a significant role in the future of learning.

Although our paper studied positive roles with respect to mobiles as a tool from the perspective of students and teachers to either access learning resources or provide more learner-centered curriculum. Future researches can investigate whether using mobile device has an impact on academic performance of the students.

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Appendix A

Student survey questionnaire:

Q1. Do you use or want to use mobile devices in learning regularly?
Q2. Do you have internet access through a cellular network on your mobile phone?
Q3. Do you have internet access through a Wi-Fi connection on your mobile phone?
Q4. Do you feel comfortable to read books in your phone?
Q5. Would you feel comfortable to give online test through mobile phone?
Q6. Would you agree that having course materials such as slides, lecture notes, and practice quizzes available on your mobile phone would be beneficial to your study process?
Q7. Would you feel comfortable receiving grades through mobile phone?
Q8. Would you be comfortable if your professor contacts and guides you through mobile devices?
Q9. Which of the following personal activities do you currently engage in on your handheld mobile device?
Q10. What mobile tools do you use in class?
Q11. Which learning resources would you be interested in accessing on a mobile phone?
Q12. Which information technology services would you be interested in accessing on a mobile device.
Q13. Which library services would you be interested in accessing on a handheld mobile device?
Q14. Which form of education is preferable to you? (Assign Priority from 1 to 6: 1= most Preferable, 6= Least Preferable)
Q15. Which form of evaluation do you find feasible for the mobile phone?
Q16.Which of the disadvantages of mobile learning do you agree with?
Q17. What do mobile learning need to achieve broader acceptance?
Q18. Do you feel that the use of some kind of mobile learning software would improve your overall success in your learning?

Teacher survey questionnaire:

Q1. Have you ever used a mobile device to develop your own teaching methods?
Q2. Have you ever used a mobile device as a teaching or learning tool with students?
Q3. Have you ever shared learning materials with your students through mobile phones?
Q4. Would you like your students to have and to be able to use mobile devices in your class for learning purpose?
Q5. Would you like to take exams through mobile phone?
Q6. Do you feel comfortable to provide instructions, notices through mobile phone to your students?
Q7. Do you like to participate in a live chat room with your students to broadcast instructions or discuss subject matters?
Q8. Which of the following personal activities do you currently engage in on your handheld mobile device?
Q9. What do you see as the biggest obstacle to use mobile learning in your teaching? (Assign Rank from 1 to 6: 1= Biggest Obstacle, 6= Smallest Obstacle)
Q10. Do you agree that Mobile-Learning is too stressful compared to face-to-face teaching?
Q11. Do you agree that Mobile Learning can make teachers to depend on internet without thinking creatively for practical work in the classroom?
Q12.What would be needed for mobile learning so that it can achieve broader common acceptance? (Assign Priority from 1 to 5: Most Needed = 1, Least Needed = 5)
Q13. Student acceptance of Mobile Learning in higher education would be high.
Q14. Mobile Learning can bring enormous opportunities into universities to further empower informal learning.
Q15. Do you think mobile learning would play an important role in the future of learning?
Q16. Do you think with just the right amount of training, teachers may wish to adopt and integrate M-Learning technology for their teaching methodology?

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