Schoology! Netbookology! Learning with Mobile Devices: A Case Study of EMU Undergraduate IT Students

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Abstract:

Nowadays, mobile learning is anticipated as an important instructional device that provides students with the opportunity of being involved in learning and teaching environments whenever and wherever they want. Thus, mobile learning will turn into being one of the most significant environments of distance instruction. The purpose of this study is to analyze perceptions of Eastern Mediterranean University (EMU) undergraduate IT students for mobile learning, particularly in terms of effectiveness and expectations. Furthermore, negative and positive perceptions of the students on how mobile learning is being used and whether it enhances learning are assessed through questionnaires. This study is designed as quantitative research. For this purpose, close-ended items are conducted as a data collection method. The

outcome of the study indicated that students are interested in new technology devices since it provides them with an adaptive and interactive instructional environment and gives them the opportunity to take the best use of their time and find their own learning style. Hence, it caters the theory that mobile learning could be a good alternative for learning and easy to use.

Keywords: Mobile learning, Instructional technology, Technology dependency

1. Introduction

Over the last decades, the initiation of mobile devices such as mobile computers, cell phones, tablets, and notebooks provides with it the capability to deliver knowledge to learners wherever and whenever they need [1,2]. The logic of carrying out a study on learners' perceptions towards the mobile instructional environment stemmed from the fast innovation of technological revolution, particularly in the telecommunication field. Mobile learning has mostly affected the younger generation, especially students that are spending most of their time using their beloved devices. Surveys have shown that the consumption of mobile devices among university students has been increased dramatically and it is also more outstanding in learners who achieve academic success[3]. Hence, mobile devices have enabled the educators to send educational messages in flexible ways. For instance, the instructors and students can make communication through voice and images as well as text. Furthermore, mobile device utilization has become a common instructional aim of learners' expectations[4]. For example, Valk, Rashid, and Elder[5] proved how mobile devices facilitate learning for students in developing countries and also increase the access to instructional services and materials, especially in the rural and remote regions. In addition, students have reported their request in order to get more options to make their instructional tools more convenient so that they will be able to study when and where they would like to. Naturally, the utilization of mobile devices gives students a learning ownership that would lead to positive learning language experiences[6]. Nevertheless, the innovation of the technology-based learning (referred to as Mobile Learning Language or MLL) carries on challenging learners in order to develop new teaching and learning approaches. Additionally, today, instructors and students resist change in educating and learning with new technologies due to not thinking of themselves as a part of a novel learning culture[7] . Besides, the resources and training of the oriented technology may not meet the requirements and needs of both instructors and learners in the understanding of

learning nature[8]. Stockwell[5] pointed out that the mobile learning survey results in the setting of the classroom will be different when students have a choice to utilize mobile devices. Furthermore, later on, Stockwell[9] argued that educational, psychological and technological issues or limitations, mostly barricade students from choosing mobile devices like smartphones for learning activities while they have a positive opinion of learning with mobile devices. Looking at it all from another angle, there are several key issues to consider when gradually moving from traditional ways of delivering knowledge to E-learning and mobile learning. After all, it might all look very exciting and astounding in the first place, but there are vital characteristics of learning environment that fade away while doing this from old school style to technological platforms. Learning is probably the most important skill that humans develop and undoubtedly interaction and communication play crucial roles in teaching-learning relationships. Replacing classrooms and teacher-learner interactions is inevitable when shifting to modern and technological methods and this could be a determining factor in the perceptions of learners. The assumption that whether learners and teachers enjoy mobile learning and/or find it practical and useful also depends partially on how well learners can benefit from technological tools. In another word, learners' capability and literacy of using technology can be a matter of consideration when they are asked to manage part of their learning independently and relying on mobile devices and the internet rather than a know-it-all teacher or instructor. It looks like a dual-edge knife. Self-confidence is one edge and literacy is the other edge.

1.1 Purpose of the study

The main purpose of this research is to assess the undergraduate students' perceptions towards mobile learning in their learning process. In order to reach the goals above, this study seeks to answer the questions listed below:

1. What are the students' perceptions towards using mobile devices for learning?

    a. Acceptance level of the students
    b. Understanding level of the students

2. How do students' perceptions of learning experiences differ from a traditional versus mobile learning approach?

2. Literature Review

Learning through mobile devices has taken many educators' imaginations, particularly in higher education due to allowing them to capitalize the embedded options and features in powerful mobile devices[10]. Stockwell[9] indicated in his study that as a part of the MOBIlearn project, "Mobile learning approach includes more interactive, contact, communication and collaboration with people and also comprises more 'bustle' ". He also established a model of task for mobile learning method[7]. Besides, some researchers such as Chase and Meghan[3] and Barkatsas[11] carried out studies to find out students' perceptions about mobile learning. They figured out that students approved to use mobile devices in the learning process. Their study results cheered investigators' interest in study approaches of catering information by using modern logical tools. Chase and Meghan[3] investigated the students' engagement with technology on campus at Slippery Rock University. Their research showed that their topics of research got more satisfaction with the utilization of mobile devices in the instructional process. In order to indicate the power of Mathematics and Technology, Barkastas[11] examined 350 students from 6 schools. Although research indicated that male students showed more confidence in technology rather than female students, all the students had an extensive range of attitude towards learning Mathematics by using technology. The year 2007 marked the important decision by the Australian government to fund secondary schools for further mobile devices to be used as tools of learning and teaching. Rudd, Smith, and Conroy[12] strongly believed that Australian students have to obtain more knowledge and skills in terms of using information and communication technology because digital education is key to getting prepared for future jobs. Kukulska-Hulme[13] carried out research in order to investigate the attitudes of students and understand the influences of mobile learning. The result of the research showed that most of the students advocate the idea that the wireless networks are so effective on the flexibility of having more access to the resources of learning. Hence, students are able to preserve their time, effort and money. Although with good funding and financial planning it is not a difficult thing to provide students with mobile devices and suitable infrastructure for accessing mobile learning environments, this cannot stand alone as the one and the only factor to guarantee that one-to-one programs and courses through mobile learning are completely effective and efficient. Another crucial aspect is how the materials are planned, designed and left to easy access to learners. The handling of a one-to-one course using mobile devices needs very careful planning, timing, and a scaffolding educational culture needs to be laid prior to implementation. Moreover, teachers need to go

through training and professional development as well as the fact that schools must also be supportive and patient with the ups and downs of the new system and provide the teachers with technical support, sufficient digital content and abundant instructional resources[14]. According to Hemabala & Suresh[15], there are different reasons for students to use their mobile devices in or outside the classrooms for learning purposes. The most dominant uses of mobile devices are doing research on the internet, creating presentations, writing essay papers in a word processor and doing a test or quiz. Further than this, Boehner et al.[16] in parallel with Pohio and Falloon[2] found out that using mobile devices boosts students' engagement and has a positive effect in the classroom. In another study, Barreh and Abas[17] found that student engagement rises drastically when access to educational content is enhanced by computing technology. Zhu et al[18] carried out research about students' acceptance of mobile learning. The aim of their study was to understand and enhance the students' acceptance of incorporation of mobile learning approach, inside and outside of the classroom, in the Technology Acceptance Model (TAM), at three universities in China. Through the study, the authors found out that students are positive about mobile learning approach, although they were not strongly willing to be adapted to this method. Hence, the proposed TAM model can enhance the students' stimulus by offering the factors which are effective for improving the perceptions and acceptance level of mobile learning approach. Kim et al[19] indicated the study about how students perceive the utilizing of mobile devices in order to make an individualized learning experience outside of the classroom. The participants comprised 53 graduate students who registered in TESOL classes. All the students accomplished five class projects which were designed to help them find experiences of mobile learning with their own devices, including technologies like YouTube and VoiceThread. This study showed that mobile learning method has the potential to cater novel learning experiences and also students are able to engage more in the activities of learning outside of the classroom. Hence, this method provides them with more opportunities for learning experiences through their studies. Furthermore, Lan and Huang[4] examined the study about the students' attitude and perceptions regarding the effectiveness of mobile learning. They applied the method of using mobile devices on 100 students from first degree and higher degree program at an academic institution. The result shows that utilization of mobile learning technology optimally enhanced the instructional practices in the Indian context. Moreover, another study by A. Barrah et al[17] is focused on how mobile learning via using Facebook and SMS can be effective for students' learning in the department of Mathematics and Computer Science class at the University of Djibouti. The outcome of the study presents that mobile learning

technology by using SMS and Facebook could be utilized as a supplemental feature to enrich students' learning in order to achieve their learning goals. By having these related works, one can determine that mobile learning approach can be a helpful tool for learning or improving the teaching-learning process since it rises access. Furthermore, it is accessible anywhere, anytime. Like e-Learning, mobile learning approach can also be interfaced with many other media technologies like video, audio, the internet, and etc. Due to the usability of new technologies, there are two perspectives that must be measured: 'against it' and 'in support'. In case of mobile learning technologies, some users may find it not very conducive to learning (i.e., screen size; physical environment), whereas, for others, the profits of being able to learn are very convenient. So, clearly, students' perceptions of mobile learning do matter[20].

3. Methodology

The survey was conducted with undergraduate students in the IT department at EMU. The reason to choose the department of IT to apply the survey was that there is a noticeable number of courses offered to undergraduate students at this school with a lot of reference to Moodle and online sources and materials including supplementary pdf files, multimedia files, videos and online. These are part of the lessons and lectures which can be transmitted to the students and teachers via bluetooth in their free hours. The data of the study is collected by the quantitative research method. The questionnaire was a paraphrased version of the questionnaires designed and developed by Hembelala &Suresh[15] and Zhu et al[18]. The questionnaire of this research included a total of 23 close-ended items to collect data on the students' perceptions about mobile learning approach and also on what they think of the differences between traditional learning methods and mobile learning approach. The questionnaire consists of three sections; including an opening section for personal information (such as gender, age and nationality), followed by the next part which has 15 questions using a 'five-point' Likert scale, with the scale being set as Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). The questions are aimed at measuring the students' perception level of using mobile learning approach as part of their whole learning experience throughout a course. Section three, somehow similar to the previous section, also comprises 8 questions of five-level Likert scale. These queries were designed to measure the students' perceptions of mobile learning methods in comparison with the common traditional learning methods.

3.1 Participants

The study was applied to 200 undergraduate students, in IT department at EMU. Table.1 depicts a 75.4% of Male and 24.6% female participants from multicultural countries in the research.

Table 1. Demographic information of students

		Frequency	Percent
	Male	151	75.4
Gender	Female	49	24.6
	18-20	87	43.1
	21-25	94	46.2
Age	over 26	19	9.2

3.2 Data Analysis

SPSS program, version 23.0 was used to analyze the quantitative data previously collected via the questionnaires. Independent sample t-Test, ANOVA and Frequencies and Descriptive were used in order to determine the students' perceptions about mobile learning as a teaching method in higher-education instructional systems.

3.3 Validity and Reliability

Validity and reliability are very significant criteria in assessing a quantitative study. As Joppe[21] indicated, the validity of a research specifies whether the study accurately measures what it was proposed to measure or how truthful the study outcomes are. What is more, the reliability of the study shows how stable the result shows out to be over time. Hence, if the result of the study can be applied to another alike technology, it can be said that the mechanism of the study reliable. The reliability of this research is calculated on the basis of 23 items (n=23) and measured by Cronbach's alpha factor of 0.82. This is evaluated as quite a high level of internal consistency.

Table 2. General reliability

Cronbach's Alpha	N of Items
.820	23

4. Results and Discussions

The collected quantitative data were examined and analyzed to find out about students' perceptions towards the utilization of mobile devices as a new and modern learning approach in education. Table 3 displays general averages with the purpose of deriving students' perceptions on the use of mobile learning approach for study.

Table 3. Students' perceptions toward using Mobile learning approach

	N	X	Std. Deviation
Students' Perceptions towards Using mobile learning approach	200	54.13	6.32919

Table 3 above illustrates 15 items which were combined to inspect the students' answers towards using mobile learning approach. As it can be seen from this table, the majority of perceptions about using mobile learning approach in the study are quite positive, 84.6%, as the mean reads 168 and Std. Deviation is 6.32. As a result, most of the IT students showed a positive attitude towards using mobile learning approaches in their education experience.

Table 4. Questions for Students' Perceptions about Mobile Learning

Questions	M	SD
1. Video lessons are easy to understand and learn from	4.0462	.95902
2. Mobile learning is a popular or supplementary source of learning	3.6769	.77273
3. Mobile learning is a very good approach for self-study	3.8308	.87624
4. Mobile and wireless devices increase interest and motivation in	3.6769	.73117
5. Everyone can financially afford to have a mobile device these days	3.4000	1.04283
6. Mobile learning allows me to try different learning styles	3.5846	.86408
7. The traditional value system of learning can be harmed by mobile learning	3.0154	.90988
8. There is more privacy in learning via mobile devices	3.4308	.93490
9. Mobile learning makes it possible for learners to study and	3.7385	.90618

revise anywhere, anytime without limitations		
10. Mobile learning approach helps use traveling time (on bus, train...) efficiently	3.7692	.96451
11. Mobile devices make learners feel confident cause they can carry their data almost everywhere	3.9231	.90671
12. Mobile learning approach makes the whole learning process more flexible in terms of time and place	3.7846	.83838
13. It can be problematic to use mobile devices in an academic environment	2.9385	.91646
14. Mobile devices can promote creativity in learning	3.6000	.88034
15. Learners are allowed to use mobile devices or wireless handled devices inside classrooms	3.7231	1.09698

Putting aside items 7 and 13 (which hold a negative attitude towards the concept of mobile learning) the average of 'strongly disagree' and 'disagree' answers to the remaining 13 items turned out 9.46%. In addition, the mean of 'neutral' replies to the same items was 28.62%. These figures indicate that the biggest proportion of the students has a positive perception of learning via mobile devices. Item 2 mainly challenges learners' acceptance level of mobile learning as a good supplementary resource throughout their learning process, to which 36.9% of learners were neutral whereas a total of 58.4% agreed. Another important item which clarifies students' level of understanding towards mobile learning is item 11 which digs into how confident they feel having their mobile devices which allow them to browse the required data anywhere and anytime. The outcome shows a surprising amount of 73.9% agreed or strongly agreed. Only 16.9% replied to be neutral and 9.2% disagreed. There was 0% of strong disagreement to this particular item. The next challenging question in terms of assessing learners' understanding of the benefits of mobile learning was item12 which discussed the flexibility of learning process with time and place. 67.7% of the answers fell in the 'strongly agree' and 'agree' categories and 24.6% referred to those being neutral. Only 7.7% of learners disagreed and like the previous item no one held a 'strongly disagree' attitude. Items 7 and 13 focus on the negative impacts of mobile learning in that mobile learning harms traditional value systems of learning and makes problems for academic environments. To both items, less than 35% agreement was recorded. 32.3% and 44.6% were neutral and 33.5% and 23.1% of learners disagreed for the items respectively. Items 9, 10 and

15 discuss the usability and availability of mobile devices and its accessibility to learning through them. The accumulation of 'agree' and 'strongly agree' replies to the items were 58.5%, 63.1%, and 61.5% respectively. An average of 29.23% answered neutral and a negligible number disagreed. Table 5 below illustrates 8 items which determine the students' responses towards using mobile learning approach compared with traditional learning approaches. As it can be seen from this table, the majority of perceptions are quite positive in using mobile learning approach in the study rather than traditional learning.

Table 5. Students' perceptions towards traditional learning approach and mobile learning approach

Questions	M	SD	(Strongly) disagree	Neutral	(Strongly) agree
1. Mobile learning is more practical and dynamic	3.6000	.78661	6.2	35.4	58.4
2. Mobile devices are portable devices that provide flexible learning	4.0154	.73935	4.6	12.3	83.1
3. Mobile learning motivates daily learning	3.8923	.66434	1.5	23.1	75.4
4. Mobile learning makes better use of pieces of time	3.7538	.68536	1.5	33.8	64.6
5. Mobile learning is helpful in expanding knowledge	3.8000	.75416	0	40	60
6. Mobile learning is an engaging and attractive alternative way of learning	3.7538	.70779	3.1%	30.8%	66.1%
7. Mobile learning promotes effective studying	3.4923	.79300	10.8%	36.9%	52.3%
8. Mobile learning is popular alternative for studying	3.9692	.86547	4.6%	20.0%	75.4%

Item 2 concerns the flexibility of learning through portable devices, i.e how mobile learning makes it possible to expand learning to more remote areas without learners needing to commute long distances to attend a traditional learning venue. Remarkable numbers of learners, 83.1% showed agreement and only 4.6% disagreed and 12.3% were neutral. Item 3 asks whether mobile learning motivates daily learning, to which 75.4% agreed and 23.1% reacted neutrally. A small number of students 1.5% disagreed. Item 5 holds a key difference by indicating that mobile learning is helpful in expanding knowledge of learners, the majority of students, 60%, agreed and the remain 40% responded neutrally. Items 8 focus on the popularity of mobile learning compared to traditional learning systems. As the outcome shows on Table.5, the majority of learners, 75.4%, were strongly positive about mobile learning compared to the traditional learning system. Finally, Table .3 provides the data related to the three items 6, 7 and 8 which focus on attraction, effectiveness, and popularity of mobile learning compared to traditional learning systems.

Gender Differences in Students' Comparisons of Traditional Learning Approach and Mobile Learning Approach

In order to test whether the students' perceptions about using mobile devices in education differ significantly among different age groups and nationality, ANOVA test was applied.

Table 6. Students' perception toward convenience of carrying mobile devices with them to almost all the places, depending on the age

		Sum of Squares	df	Mean Square	F	Sig.
The learner feels convenient to carry their devices with them to almost all the places.	Between age Groups (18-20,21-25,over 26)	11.320	3	3.773	5.574	.002
	Within Groups	41.295	82			
	Total	52.615	104			

Table 6 shows the students' perceptions toward carrying mobile devices to any place among different age groups. As a result, there is a considerable difference among students' perceptions since p= 0.002 <0.05. Hence this proofs that students of different age range do not have relational responses on their perceptions.

Table 7. Students' perceptions regarding traditional learning and mobile learning approach, depending on the age

		Sum of Squares	df	Mean Square	F	Sig.
I believe mobile learning approach by using portable devices is a more flexible method of learning than traditional learning.	Between age Groups (18-20,21-25,over 26)	4.773	3	1.591	3.212	.029
	Within Groups	30.212	82			
	Total	34.985	104			

Table 7 above demonstrates that students' perception toward flexibility of studying via mobile learning than traditional learning among different age groups. As a result, there is a significant difference among students' perceptions since p= 0.029 <0.05. Therefore, this proofs that students of different age range do not have relational responses on their perceptions.

Table 8. Students' perceptions toward traditional learning and mobile learning approach, depending on the nationality

		Sum of Squares	df	Mean Square	F	Sig.
I believe mobile learning approach provides a better alternative to study than traditional learning	Between age Groups (18-20,21-25,over 26)	.274	3	1.862	2.681	.055
	Within Groups	47.664	82			
	Total	47.938	104			

Table 8 illustrates that students' perception about mobile learning approaches provides a better and alternative way of study among different nationalities. Consequently, there is a substantial difference among students' perceptions as p= 0.029 <0.05. Accordingly, this proofs that students of different nationality do not have relational responses on their perceptions.

5. Conclusion

This research presented a survey on the awareness and perceptions of mobile learning approach performed on 65 undergraduate students in IT department of EMU. The results indicate that students are interested in new technology devices due to convenience and flexible usage and hold positive attitudes about learning anywhere, anytime, by any device, any network and a wide range of data and knowledge available to them. It provides students with an adaptive and interactive instructional environment which gives them the opportunity to take the best use of their time and find their own learning style. Hence, it caters the theory that mobile learning could be a good alternative for learning and easy to use. For the future study, the aim is to provide pre and post-test for a wider range of the population and make a comparison for the analysis of m-learning and traditional learning from the point of view of teachers, those who belong to the younger generation and those who are older and not easy to adapt.

References

[1] Johnson, L., Smith, R., Willis, H., Levine, A., Haywood, K., New Media, C., et al. (2011). The 2011 Horizon Report , The New Media Consortium.

[2] Pohio, K., & Falloon, G. (2010). Deliberate acts of virtual communication: Cellphones as a tool to enhance student learning and engagement. Set: *Research Information for Teachers*, Wellington .

[3] Chase, E. M and Herrod, M. (2005). College Student Behaviors and Attitudes Towards Technology on Campus. Slippery Rock University, Slippery Rock, PA. (2007) Presented at the Broadcast Educators Association Conference, Las Vegas, NV. USA.

[4] Lan, Y.-F., & Huang, S.-M. (2012). Using mobile learning to improve the reflection: a case study of traffic violation. *Educational Technology & Society*, 15(2), 179–193.

[5] Valk, J., Rashid, A.T., & Elder L. (2010). Using mobile phones to improve educational outcomes: An analysis of evidence from Asia. *International Review of Research in Open and Distance Learning*, 11(1), 117–140.

[6] Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of the platform. *Language Learning & Technology*, 14(2), 95–110.

[7] Neerja, V. and V. S. N. (2014). Student's Perception on the Effectiveness of Mobile Learning in an Institutional Context. *Research Journal of ELT*, Vol 3. Issue 1. PP 26-36.

[8] Thornton, P., & Houser, C. (2002). M-learning: Learning in transit. In P. Lewis (Ed.), The changing face of CALL: A Japanese perspective (pp. 229–243). Lisse, The Netherlands: Swets & Zeitlinger

[9] Stockwell, G. (2008). Investigating Learner Preparedness for and Usage Patterns of Mobile Language Learning. *ReCALL*, 20(03), 253–270. doi:10.1017/S0958344008000232

[10] Maniar, N., Bennett, E., Hand, S., & Allan, G. (2008). The effect of mobile phone screen size on video based learning. *Journal of Software*, 3(4), 51–61.

[11] Barkastas-Tasos, A. & Malone, J. (2005). A typology of mathematics teachers' beliefs about teaching and learning mathematics and instructional practices. *Mathematics Education Research Journal*, 17(2), 69–90.

[12] Rudd, K., Smith, S., & Conroy, S. (2007). A Digital Education Revolution. Retrieved from http://www.pixel.com.au/documentation//products/netsupport/netsupport_school/labors_digital_educa tion_revolution_campaign_launch.pdf

[13] Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *European Association for Computer Assisted Language Learning*, 21(2), 157–165.

[14] Shapley, K.S., Sheehan, D., Maloney, C., & Caranikas-Walker, F. (2010). valuating the implementation fidelity of technology immersion and its relationship with student achievement. *Journal of Technology, Learning, and Assessment*, 9(4), 6-10(17)

[15] Hemabala, J. and Suresh, E. S. M. (2013). Mobile Learning for Undergraduate Engineering Students. *International Journal of Computer and Information Technology* (ISSN: 2279 – 0764)Volume 02– Issue 06

[16] Boehner, K., Gay, G., and Larkin, C. (2005). Drawing Evaluation into Design for Mobile Computing: A Case Study of the Renwick Gallery's Handheld Education Project. *Journal of Digital Libraries,* Special Issue on Digital Museums, 5(3), pp. 219-230.

[17] Barreh, K. A. and Abas, W. Z. , (2015). Students' Attitudes and Perceptions toward the Effectiveness of Mobile Learning in University of Djibouti. *International Journal of Education and Research*, Vol. 3.

[18] Zhu,Q.,Guo,W., and Hu,Y. (2012). Mobile Learning in Higher Education: Student Acceptance of Mobile Learning in Three Top Chinese University, Jönköping University.

[19] Kim, D. , Rueckert, D., Kim, D.J., Seo, D. (2013). Students' Perceptions and Experiences of Mobile Learning. *Language Learning & Technology*, V.17, (pp. 52–73).

[20] Stockwell, G. (2007). Vocabulary on the move: Investigating an intelligent mobile phone-based vocabulary tutor. *Computer Assisted Language Learning*, 20(4), 365–383. doi:

10.1080/09588220701745817

[21] Joppe, M. (2000). The Research Process. Retrieved from: http://www.ryerson.ca/~mjoppe/rp.htm, 10 Dec 2017.