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Mobile learning: It's factors and challenges: A literature review

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Abstract
The adoption of mobile learning has become a working area in research. The study aims to provide a better viewpoint of the concept, evolution, determinants and the issues of mobile learning adoption. In this study, researchers have used non-systematic review techniques. Through this literature review, the researchers identify those factors of M-Learning adoption that can be effective in education system, though these are indicate previously by many researchers. This study also focuses on different M-Learning adoption models (TAM, UTAUT, TPB) which help to determine the factors for accepting this trend learning. It indicates the challenges for its implementation which need further and future studies.

Keywords: Mobile learning, evolution, models, influential factors, challenges

Introductions
Presently, mobile technology has taken a pivotal role in helping humanity leading to the significant medium of interaction in the social world as well as teaching and learning. Mobile learning (M-Learning) system presents to be a very needful tool for learners. It can help easy obtain to study materials, knowledge and information anytime, anywhere for their daily life. The massive use of these mobile devices like headphones, I-pads, smartphones, tablets and PDAs is an international phenomenon (Goggin, 2006) [13]. It has provided a broad encouragement in different areas like schools, colleges as well as education system. Actually, mobile technology has been increasing in requirement and popularity and in modern era it has become a most common but essential phenomena. Naismith *et al*. (2004) [21, 22] stated that mobile learning would introduce to be a kind of 'highly situated, personal, collaborative and long term; in other words, truly learner centred learning).
On the other hand, the implementation of M-Learning still faces some challenges (Technical, Non-technical), inappropriate usage, adoption and acceptance by the students. Kumar and Chand (2018) [15] focused that problems of mobile learning were still present. This study talks about the concept of mobile learning and its evolution, adoption models and factors, and its challenges in implementing.

The concept of m-learning
An extension form of E-Learning is mobile learning, which may allow students to enrich their learning by using small, portable devices. Mobile technologies are being developed to afford electronic learning experiences. It gives the opportunities of 'Anytime, Anywhere' learning experiences (lee & Chan). Actually, teaching and learning do not need any specific location or time. Around the world, many institutions have already started their teaching learning process by using mobile technology, because of its self-evident and unavoidable services.
In the view of utilization of technology, Mussa (2020) [20] classified mobile learning into the followings:

1. 'Technology driven mobile learning – a particular mechanical advancements is sent to demonstrate specialized achievability and academic plausibility, may be the modern I-phone'.
2. 'Miniature but convenient e-learning – mobile, remote and portable devices are used to re-enact approaches and arrangements found in customary e-learning and possibly transfer innovation based on e-learning to multi-use devices'.
3. 'Classroom related learning used in classroom environment to enhance co-operative learning like graphing calculators, PDAs connected to intuitively white boards'.

4. 'Mobile training and performance support – this innovation are used to promote the productivity and effectiveness for their quick needs'.
5. 'Causal, customised, arranged learning – it provides instructive encounters for illustration causal context aware data in gallery spaces'.
6. 'Remove, rural and advancement mobile learning' – it can utilised for addressing natural, infrastructural barriers.

The concept of m-learning adoption

Bidin & Ziden (2012) [5] stated that today's young generation using mobile technology are identified as 'Digital natives', 'New millennium learners' (Pedro, 2006) [23], 'The net generation', 'The gamer generation', 'The generation M (Rideout, Robbert, Foehr, 2005) [27]. Because these young generations have grown up by technology surroundings (Bidin & Zuben, 2013) [5]. Adoption describes the user's intention for using the new system. Karl Rogers refers that behind' a successful adoption of a particular innovation' there are obvious some important factors. These are 'the technology must have advantage over older technology, it must be compatible with the user's needs and it should not be complex to use and difficult to learn' (Kumar & Chand, 2018) [15].

There are many reasons for the acceptance of M-learning. These are followings:

1. Its portable features for implementation of any place, any time study.
2. It can help to achieve the educational goal by enhancing student-centred learning.
3. It can facilitate an effective and collaborative communication system for learners and teachers both.
4. It can promote the learner's attention and motivation level in study.
5. It helps student easily to access the learning materials.

M-learning adoption models

Many researchers have developed technology adoption models to investigate the factors which can affect M-Learning and applied in different fields, such as education, finance, medical (Taherdoost, 2018) [29]. These models are Technology Acceptance Model (TAM), Unified Theory of Acceptance and use Technology (UTAUT), Theory of Planned Behaviour (TPB).

Charles Buabeng (2020) [6] tested the validity of the TAM model and explained the factors that lead students to accept mobile learning. This study stated that students attitude had a great contribution in accepting M-Learning than self-efficacy.

Almiah *et al.* (2016) [1, 2] explored eight external factors like 'learning content quality, content design quality, interactivity, functionality, user-interface design, accessibility, personalization and responsiveness' by testing TAM model in Jordon.

Almiah *et al.* (2019) [1, 2] in another study applied UTAUT model to identify the determinants of mobile learning adoption in higher education. This study revealed the prime motivators such as 'perceived information quality, perceived compatibility, perceived trust, perceived awareness and availability of resources, self-efficacy and perceived security.

In another study, Azizi and Khatony (2019) [4] investigated the factors which lead the medical students to mobile learning adoption based on TPB model. This study found many psychological issues like learner's readiness, intention, perception etc.

Determinants of m-learning adoption

In recent years, there are several researches conducted to identify the factors that influence mobile learning adoption. Many determinants can provide motivation to educators and learners both for accepting this trend. In this section, researchers analysed these factors. Bidin & Zidin (2013) [5] categorised these factors into three sections. These are devices features, the expectations of users and the pedagogical advantages.

The devices feature

Usability

The tools used in mobile learning are light weighted, handy and movable (Bidin & Ziden, 2013) [5]. These characteristics make learners easy learning in the classroom 'as there are bulky piles of books and other educational materials' (Mussa, 2020) [20]. It provides flexibility in time and place settings.

Functional

Mobile devices can supply accurate and spontaneous information (Canvas and Ibrahim, 2009 Cohen, 2010) [7-10]. There are certain times when learners want to get immediate data like 'quick answers to specific questions', definitions and equation formula. These important features motivated learners for M-Learning adoption (Lan & Sie 2010) [17].

The expectations of learners

Ownership

Naismith and Corlett (2006) [21, 22] analysed many different M-Learning projects from the year of 2002 to 2005. They stated five important success elements. One of those was ownership. For that the learner became more motivated, active in learning.

Self-directed learning

Researchers gave importance on learner's self-control over their learning. If they can get experience of an active role in their study, they will likely to happy (Kayali and Alaraj 2020) [14]. If learners engage in self-directed task, they want happily to improve the learning techniques that can play a dynamic role in achieving the educational goal.

Flexible learning

Now a days, movability and flexibility are the main factors of mobile learning. It opens the opportunity of adaptability in time and place which is absent in formal classroom situation. Learners can easily gain knowledge, information according to their own time, situation and capability.

Life-long learning

In the most countries lifelong education has become an essential goal, because of its present economic condition, social change and a difficult transition to the knowledge-based society. M-Learning has become an essential tool that can enrich the goals of lifelong education (Bidin and Ziden, 2013) [5].

Fun

Prensky (2007) [24, 25] located that fun can played a vital role

in learning. In formal classroom, learning can be boring as there are restricted environment. Mobile learning can arise the inner motivation level of students by enjoyment and fun.

Pedagogical advantages

Collaborative learning

In twenty first century, collaboration as an encouraging mode of human involvement has become an essential factor in teaching and learning situation. In collaborative learning. Learners can work co-operatively to fulfil a common goal. Portable mobile devices allow students for more active participation and social inclusion in successful learning. Many researchers proved that mobile learning can enhance learner's participation in learning procedure.

Blended learning

Blended learning is an education style in which learners can learn through electronic and online media as well as face-to-face learning. Mobile learning. Mobile learning can increase an extend the success of formal classroom learning. After classroom learning learners may carry out their task, project and assignment through the versatile devices.

Interactive learning

Mobile devices support the interactive and joyful learning procedure. These portable devices play a vital role that can modify the interaction level with technology enhancement.

Experiential learning

The movable features of mobile devices can free students from forced strict learning environment. Mobile devices create a connection into school and the other regular activities (Sharples, 2003) [22, 28]. It gives an idea that learning can go beyond classroom situation and relevant 'things for learning itself' may be entered into the classroom (Bidin and Ziden, 2013) [5].

Problem-based learning

Knowmobile project in Norway is an example which proved that M-Learning advocated problem-based learning. Actually mobile devices helps the learners to effective discover and effort with content material in problem based learning. They can decide what factors would be essential for solving their problems, given by their instructo (Bidin and Ziden, 2013. Mussa, 2020) [5, 20].

Problems in mobile learning adoption

There are undoubtedly many problems and challenges in mobile learning adoption defined by many researchers in previous studies. In this study, researchers analysed those problems as follows:

- Learning by using mobile devices faced various difficulties for reading the learning content properly as its poor screen display and small screen size (Kulska-Hulme, Traxler 2005) [31, 32].
- Pozzi (2007) [26] stated that mobile learning still is an occasionally and supplemental way for teachers and educational system.
- Maniar and Bennet (2007) [19] argued about eight reasons as the difficulties in mobile learning acceptance. These are followings:

1. Small and poor screen size
2. Incapability of data input capacity
3. Small data storage
4. Low battery
5. Short bandwidth
6. Narrow speed processor
7. Low standardization
8. Software problems and inter-operability.

- Almalah *et al*. (2019) found that lack of proper awareness of students and teachers on technological skills became a difficult factor for mobile learning adoption.
- Chatterjee *et al*. (2019) [12] studied that cost value of mobile devices is one of the most important issue that influenced the mobile learning acceptance among the rural girls students in India.
- Bidin and Zidin (2013) [5] identified some problems and categorised them into three sections, such as technical, social, cultural and learner centered problems which made a barrier in M-Learning.
- Atkin *et al*. (2017) [3] and Kumar & Chand (2018) [15] found some barriers such as 'lock of leadership and support for innovation, time to make changes, understanding and ability to implement, social implication, collaboration communication style, current processes or procedures budgetary priorities, training requirement, cost, reliability, users performance'.

Conclusion

Recently, mobile phones are glued to our life for everyday everything using. There is no secret that today's generation are using the new way of continuous access of learning materials. It has become an essential learning instrument for learners and teachers both. Various studies have found to state the factors and challenges of mobile learning acceptance. Researchers analysed those influential factors and issues in a comprehensive way. The issues are very important which should be solved in an urgent way. As we know that learning can be seen successful by its outcome. So, how can we measure the outcome of mobile learning? John Taxler as cited Bidin and Ziden (2013) [5] stated that 'just because you can measure changes in attributes or behaviour does not mean they are educationally meaningful or remotely life changing'.

The overall outlook of the present review study in mobile learning adoption suggests that there should give a serious attention in solving the major issues in implementation of mobile learning. If researchers give some focus on future study on technology acceptance model, that can play an important role for mobile learning.

References

1. Almiah MA, Alamri MM, Al-Rahmi W. Applying the UTAUT Model to explain the students acceptance of Mobile learning system in higher education 2019;7.
2. Almiah MA, Jalil MA, Man M. Extending the TAM to examine the effects of quality features on mobile learning acceptance, J Computer Education 2016;3(4): 453-485.
3. Atkin D, Chaudhury A, Chaudhury S, Khandelwal AK, Verhoogen E. Organizational barriers to technology adoption: Evidence from soccer-ball producers in Pakistan, The Quarterly Journal of Economics 2017;132(3):1101-1164.
4. Azizi SM, Khatony A. Investigation factors affecting on medical sciences students intention to adopt mobile learning 2019.

5. Bidin S, Ziden AA. Adoption and Application of mobile learning in the education Industry 2013.
6. Buabeng-Andoh C. Exploring university students intention to use mobile learning: A research model approach, Education information technology 2021;26(1):241-256.
7. Canvas N, Al-mamoni MM. Mobile system for flexible education, Procedia computer science 3 2011, P1475-1479.
8. Canvas N, Ibrahim D. M-Learning: an experiment in using SMS to support learning new English language word, British Journal of Educational Technology 2009;40(1):78-91.
9. Canvas N, Uzunboylu H. Improving critical thinking skills in mobile learning, procedia-social and behavioral science 2009;1(1):434-438.
10. Canvas N, Uzunboylu H, Ercag E. Computers and Education 2009;52(2):381-389.
11. Cohen A. Characteristics of effective learning 2010. http://www.brainscape.com
12. Chatterjee S, Majumdar D, Misra S, Damasevicius R. Adoption of mobile application for teaching learning process in rural girls schools in India: an empirical study, Education and information technologies 2019;25:4057-4076.
13. Goggin G. Cellphone culture: mobile technology in everyday life, Routledge, New York 2006.
14. Kayali M, Alaaraj S. Adoption of cloud based E learning in Developing countries: A combination of DOI, TAM and UTAUT, International Journal of contemporary management information technology 2020;1(1):1-7.
15. Kumar BA, Chand SS. Mobile learning adoption: A systematic Review, Education and Information technologies 2018.
16. Kulkulsa-Hulme A, Trailer J. Mobile learning, A handbook for educators and trainees, Open and flexible learning series, Routledge, London 2005.
17. Lan YF, Sie YS. Using RSS to support mobile learning based on media richness theory, Computer and Education 2010;55(2):723-732.
18. Lee MJ, Chan A. Pervasive life style integrated mobile learning for distance learners: an analysis and unexpected results from a podcasting study, open learning 2007;22(3):201-218.
19. Maniar N, Bennett E. Media influence on m learning, Proceedings of video funet conference Tampere, Finland 2007.
20. Mussa HI. Mobile learning adoption in middle East: limitation, challenges and features of the mobile devices 2020;1(1).
21. Naismith L, Corlett D. Reflections on success: A retrospective of the m learn conference series 2002-2005, Banff, Canada 2006.
22. Naismith L, Peter L, Giasemi V, Sharples M. Literature review in mobile technologies and learning, Future lab, Bristol 2004.
23. Pedro F. The new millennium learners: challenging our views on ICT and Learning, Paris, OECD-CERI 2006.
24. Prensky M. Digital natives, digital immigration, On the Horizon 2001;9(5):1-6.
25. Prensky M. How to teach with technology: keeping both teachers and students comfortable in an era of exponential change, Emerge technology learn 2007;1(4):44-46.
26. Pozzi F. The impact of m-Learning in school context an inclusive perspective atvstephanidis, c. (Ed), Universal access in HCI HCII, LNCS 4556 2007.
27. Rideout V, Robert D, Foehr U. Generation m: media in the lives of 8 - 18 years old, Menlopark, CA: Henry Kayser Family Foundation 2005.
28. Sharples M. Disruptive devices: mobile technology for conversational learning, International Journal of continuing Engineering Education and lifelong learning 2003;12(5/6):504-520.
29. Taherdoost H. A review of technology acceptance and adoption models and theories, Procedia manufacturing 2018;22:960-967.
30. Tapscott D. Growing up digital: the rise of the net generation, Mc Graw-hill, New York 1999.
31. Traxler J. Current state of mobile learning, Mobile learning transformation delivery education and training 2009;5(2).
32. Traxler J. Learning in a mobile age, International journal of mobile and blended learning (IJIJMBL) 2009;1(1):1-12.