

Mobile Learning in the Workplace: Employee's Perspectives on Readiness, Acceptance, Benefits and Limitations of Training with Mobile Technology in Kuwait

Nada Alajmi^a, Mas Nida Md. Khambari^{b*}, Wong Su Luan^c, Nur Aira Ahd
Rahim^d, ^{a,b,c,d}Faculty of Educational Studies, Universiti Putra Malaysia,
Malaysia, Email: ^{b*}khamasnida@upm.edu.my

This study explored how mobile learning is utilised in workplaces for employee training in Kuwait. It sought to investigate an employee's perception of the use of mobile technology for their training activities. Special attention was given to gaining insight on employee's readiness and acceptance, as well as their opinion on the benefits and limitations of mobile learning. Adopting a qualitative approach, the study used interviews to elicit information from employees of government ministries in Kuwait. This study establishes that employees of the ministries been integrating mobile learning through their smartphones. Two specific themes emerging from the interview data were the advantages of mobile learning for employees training and the frustrations from training with mobile learning. Utilising Mobile learning encouraged more interactions, provided equal opportunities for training among employees, and allowed employee's to participate in their training needs assessment while encouraging feedback. The findings highlight the perception employee's had of their readiness in training courses.

Key words: *Mobile Learning, Workplace, Training*



Introduction

Over the past two decades, mobile technology has increasingly been introduced into educational and training contexts. For employees, the adoption of mobile technology has stimulated an increase in their ownership of mobile devices such as laptops, tablet and cell phones. The ubiquity of mobile technology devices offers the possibility of better employee development by incorporating its use for training purposes.

Not only does mobile technology promote traditional lecture-style teaching but, through appropriate information gathering and sharing, it can also support innovative teaching methods (Sung, Chang, & Liu, 2016). Innovative use of mobile technology is, therefore, adapted to support learning for government employees at training centres in Kuwait ministries.

Kuwait is one of the many countries globally to have experienced mobile device penetration. Many factors prevent the effective implementation of e-learning, particularly in employee training. Alkharang and Ghinea (2013) state that because e-learning is a comparatively new term and concept in Kuwait, only a few numbers of service providers are capable of delivering services on e-learning systems, which are presently used by the training centre of government ministries. As more training centres in government ministries employ the use of e-learning for training, more employees will be motivated to take advantage of the value it brings to their capacity building.

Considering that the adoption of mobile technology for staff in training centres in government ministries is a new phenomenon, there is a lack of research on the effects of its implementation, especially in Kuwait. This lack of information potentially hinders improvement (Aldhafeeri et al., 2006). Hence, there is a need to evaluate the perception of its beneficiaries on issues related to the adoption of mobile learning in government ministries in Kuwait.

Consequently, this study investigates employee perception toward the use of mobile technology in training, with a focus on understanding the readiness, acceptance, benefits, and limitations of e-learning when utilising mobile technology for training. In ascertaining employee perception on the implementation of mobile learning approaches, attention is given to their work positions in exploring this.

Literature Review

Scholarly perspectives of Mobile Learning

The concept of training with mobile technology devices has been explained in a variety of ways. All of them drew from the definitions of mobile learning. Hanbidge *et al.* (2016) and Mottiwalla (2007) defined mobile learning as being incorporated with individualised learning. It can be utilised at anytime and anywhere. Other researchers have defined mobile learning as learning and training facilitated by mobile technology devices (Sung *et al.*, 2016; Valk *et al.*, 2010; Herrington, & Herrington, 2007; MoLeNET, 2007). Quinn (2000) posits that mobile learning is a new form that is conducted using mobile technology.

Ozdamli & Cavus (2011) further define mobile learning as a form of learning that permit the learner to engage in learning materials anytime, anywhere, using mobile technology. Additionally, Kinash *et al.* (2012) shared that mobile learning is the act of using mobile technology for educational objectives (Kim & Kankanhalli, 2009). Sharples (2005) also postulates that mobile learning is an extension of e-learning. Likewise, Winters (2006) suggests that mobile learning is an aspect of e-learning.

Mobile Technology Adoption in Training

With the rapid enlargement of mobile technology and the increase of wireless mobile technology in daily life, mobile learning offers a solution to employee capacity buildings through training in Kuwait. Its utilisation has implications for both time and finance (Yusri and Goodwin, 2013). Mobile learning enables employees to obtain training materials anywhere and anytime using all type of wireless mobile technologies such as personal digital assistants (PDA), mobile phones, tablet, wireless laptops, and personal computers (PC).

The utilisation of the mobile learning method for training has been studied by Sampson (2006) and Tucker and Winchester (2009). These studies suggest that mobile learning is appropriate for delivering training as it offers the advantage of personalised training anytime and anywhere. Another study on mobile learning for training applied a Mobile Performance-centered Self-directed System (MPSS) for training in engineering education (Martin, Gil, Lopez, Oliva, Monteso, Martinez, & Peire, 2009). This study was conducted practically in an actual training environment. Feedback from participants establish that their satisfaction is related to the adoption of mobile learning.

Mobile Learning Network (MoLeNET) is the largest mobile learning initiative in Europe. Consistent with their goal, they have organised projects aimed at utilising mobile technologies for professional learning in areas such as heating ventilation, hair and beauty, wood machining and plumbing (Douch et al., 2010). Their projects have been useful and further highlight the

advantages of mobile learning for training. Such advantages include learner achievement, personalisation of learning, the flexibility of learning, and easy access to learning resources.

Adult learning

An important concept to consider in mobile learning, especially within the context of training in adult learning. This represents the ideology of lifelong learning, highlighting how people apply different methods of learning as they grow. LeNou *et al.* (2011) state that some adult learners may resist the use of new technologies. They may have lacked the skill to use the technology and lack of experience. Sung (2015) shares that in adult learning, there is the objective method of how learners gather information, as well as the subjective method. With the subjective method, the learner can internalise or personalise. In this method, it is no longer an issue of knowing, but rather an issue of expressing and understanding.

Training with Mobile Technology: Context-Aware and Authentic

Traxler (2010) stated that through mobile learning, the content might be context-aware, genuine, and located in surroundings where the training is more significant to the employees. Their study shared that learners can customise the way they communicate with the course content. They can also personalise the transfer and access of the information in order to build on their skills and knowledge and thereby fulfil their educational objectives (Sharples *et al.*, 2007) based on their abilities and needs. Mobile technology also allows for training to be located and context-aware, that is, to take place in meaningful environments outside the classroom, for example, or in the employee's surroundings at a time convenient for the employees (Mottiwalla, 2007). Traxler (2010) and Tella (2003), however, warn that training across contexts and at different times may create an incomplete schemata and fragmented knowledge.

Employees Readiness of Using Mobile Learning in Training

Parasuraman (2000) defined technology readiness as the propensity to adopt and employ new technologies for achieving goals at work. Educators play a significant role in supporting quality education through mobile technology (Attawel, 2005; Daniel, 2008; Ferry, 2009). On the adoption and performance of mobile learning, employee readiness and preparedness are a critical achievement factor (Yusof, Daniel, Low, & Aziz, 2011). Ferry (2009) suggests specialists need basic knowledge and skills for applying mobile technology in training to further enhance learning. Where technology readiness is achieved, mobile learning can simplify and improve interaction among training admin, administrators and employees.



Employees Acceptance of Using Mobile Learning in Training

Many studies have focused on the implementation of mobile learning (James, 2008), and have given attention to the environment used for mobile learning (Brown, & Parsons, 2006; Chao, & Chen, 2009; Liu & Jin, 2008; Virvou, & Alepis, 2005), and user acceptance (Liu & Li, 2009; Phuangthong & Malisawan, 2005). Various theories have been developed towards understanding user acceptance of the technology.

The Technology Acceptance Model (TAM) proposed by Davis (1989) is the model most widely used to explain a possible user's behaviour when using technological innovation. Tsai & Su (2007), in their study, argued that the TAM had developed a robust research model for evaluating the factors of information technology acceptance and employment among users. Raaij & Schepers (2008) further states that TAM is a widely utilised theory among the many models found in the information method literature to demonstrate an individual's acceptance of information technology.

Benefits and Limitations of Using Mobile Learning in Training

Training by mobile learning platforms allows, to the benefit of employees, a variety of content to be more accessible. It is established that mobile learning motivates employees to collaborate on group projects through communication applications, interactive displays, videos, networking, and other methods (Murray & Olcese, 2011). It can replace the considerable resources taken up by traditional methods such as books and presentation devices (e.g. large screens, overhead projectors), as well as visual aids (e.g. papers, leaflets, posters, wipe boards) (Dahlstrom *et al.*, 2013).

Sharples (2006) clarified that Mobile technology has created new opportunities for learning that extends beyond traditional teaching in the classroom. However, there are some technical and pedagogical issues, as well as other problems that occur for ethical and cultural reasons. Mobile learning is a useful means of approaching learning for a massive number of students (Kahle-Piasecki *et al.*, 2012). This extends to employees as Mobile learning is increasingly used in the workplace.

Employees in the workplace can improve their skills through informal Mobile learning. This helps influence their performance on the job and increases their worth in the employment space (Horkoff & Kayes, 2007; Raftree & Martin, 2013). The flexibility of mobile learning is frequently cited as its main benefit considering that contents can be accessed anywhere at any time, and information can be shared instantly among those utilising the same content, which simplifies instant feedback, corrections and tips. Mobile learning is a highly effective procedure that has much utility when used in workplace learning activities. It can improve



time-management, communication, and sound data recording (Saylor, 2013; Kukulska-Hulme & Traxler, 2005).

Methodology

To explore the social world in which employees are utilising mobile learning is the purpose of this study. To obtain the perspective of employees on the experiences of implementing training through mobile technology, a qualitative approach was employed as it emphasises words and meaning. No relevant quantification in its collection or analysis of data was found. The qualitative method allowed for the description of reality through the lens of the individuals interviewed and enabled them to share their opinion and thoughts (Merriam, 1998). The multiple evaluations of interview transcripts helped in not only extracting themes from the data but also provided further insight into the meaning employees give to mobile learning (Yazan, 2015).

Sampling

As an interview-oriented research, an ample number of respondents was used to assist the researcher's close association with the participants, and ensure the validity of the fine-grained, in-depth inquiry (Crouch & McKenzie, 2006). A purposive sampling method was adopted to choose the respondent population from the employees of the Civil Service Commission who utilise mobile learning from different areas of practice. This includes a organisational development administrator, a organisational development assistant, a organisational development analyst, and a organisational development specialist. These respondents were chosen from diverse positions to ensure a robust representation of employee voices. Altogether, nine respondents were selected and were, at the time of the study, critical stakeholders in influencing professional development research for the government sector and in engagement with information and technology research among employees in the Civil Service Commission in Kuwait. The study used the application of Skype for the interview.

Data collection

A semi-structured interview guide was utilised to elicit information from respondents during interviews. Some pre-determined sets of open-ended questions were developed to stimulate discussion. The semi-structured interview protocol was adopted for the further exploration of ideas, themes or responses that emerged during the interview. The guiding questions reflected the issues under investigation on utilising mobile technologies in training, readiness, acceptance, and the benefits and limitations that promote or hinder mobile learning.

Guiding questions comprised of the following:



- Are you aware of any situations of training where mobile technology has been used? Can you tell us about these cases? What occurred? Why do you consider this happened?
- Do you think there is a place for mobile technology in employees training? Can you clarify why you believe in this view?
- What do you think would help create opportunities for training through mobile learning? What things do you think limited it?
- What is your readiness you might see that affect training by mobile learning?
- We are particularly interested in training through mobile learning which involves employees to share with other employees to stimulate professional development. What is your acceptance of this kind of technology?
- How might other employees be placed in?
- What advice would you give to training management in the government ministries about training by mobile learning?
- Are you aware of any benefits or limitations that might prevent or promote this type of activity by ministries?
- What is your view of these benefits or limitations?

The questions presented above targeted the key issues in this study. Interviews were conducted in a conversational manner by which both the interviewer and interviewee engaged in a dialogue comprised of thoughts, comments and their memories of the cases. The duration of each interview was generally between 40 and 90 minutes, and were conducted via Skype sessions.

Data Analysis

Recordings of the interviews were transcribed at the end of the sessions. Transcripts of the data were repeatedly read to aid the engagement of the researcher in the interpretation and analysis of data. The researcher elicited critical incidents recounted by respondents on their experience of mobile learning following their engagement in training with mobile technology at the Kuwait government ministry training centre. Through the process of coding, patterns of responses were therefore used to inform themes and categories generated in line with their relevance to the research questions. Where necessary, respondents were also contacted for clarification or to validate data.

Generally, the researcher analysed the data obtained from interviews by coding, memoing, and using the constant comparison method (Bogdan & Biklen 1992). The six main aspects reported in this paper concern: (1) training delivered and supported by mobile technology, (2) Adult learning, (3) Training context-aware and authentic, (4) Employees Readiness of using mobile learning in training, (5) Employees Acceptance of using mobile learning in training and (6)

Benefits and limitations of using mobile learning in training. Positions highlighted in presenting findings below indicates the remarks of the respondents.

Findings

Impacts of Mobile Technology

Data analysis revealed the emergence of themes that described the impact mobile technology had on employee training. These themes include (a) benefits of mobile technology for employees and (b) frustrations from training with mobile technology. The participating employees of the ministry described many benefits in which the mobile technology assisted in their training. These benefits are organised into (a) accessing knowledge quickly, (b) communication and content cooperation, (c) a variety of ways for training, and (d) situated training.

Accessing Knowledge Quickly

One benefit mobile technology afforded employees in their training was to enable the speedy access information. Because of the suitability of fixed connectivity, employees felt that mobile technologies allowed them to restore course content rapidly. The employees shared that the use of mobile technology was constant and within their reach. Mobile learning allowed them access and improve knowledge-regardless of their location with a device that employees are comfortable “carrying everywhere with them” and that they “regard as friendly and personal” (Traxler, 2007).

Communication and Content Cooperation

Another benefit available to employees that fixed connectivity was the ability to communicate with other employees and the admin. The participants believed communicating frequently and in small parts was more efficient and effective. Consistent with their opinion, existing research reports the advantage of this type of communication in expanding reflection (Hernández-Ramos, 2004; Hrastinski, 2008). However, the employees preferred the speed and suitability of tools they applied personally and professionally. Moreover, all of the respondents’ opinions amount to contrast between modes of communication other than those which were simple to use in achieving their mission.

Variety of Ways for Training

The analysis of data shows that employees may interact with course content in different ways using mobile technology. Some recorded voice memos or videos, which were then uploaded to the online course application and then debated by other employees. The employees’ way of



using mobile technology shows that they have a personal connection with the applications of the ministries through their day to day use of mobile technology. Training by mobile technology is thus found to be more suitable for their professional development.

Situated Training

Employees reported that the use of mobile technology also increased their interaction with fellow employees when understanding the course content in a highly situated way. Training is a social method situated in a particular context and established within a specific environment. Thus, informal training and situated knowledge are not mutually limited. Marsick and Watkins (2001) confirm the relationship between situated training and informal training, where individuals are often unconscious of their training and the way in which it happens through the activity.

Frustrations from Training with Mobile Technology

Data generated from the interview shows that although the employees considered mobile computing technology helpful, frustrations from training with mobile technology were evident. Some of their frustrations were conceptualised as (a) Anti-technology employees in ministries, (b) mobile technology challenges, and (c) mobile technology as a distraction.

Anti-Technology Employees in Ministries

Employees were frustrated with trainers who were resistant to effectively blend technology in their training courses and felt that those trainers were not prepared to assist the employees in interacting with, and engaging in the course content. Even though the employees were frustrated by this resistance they described in some trainers, they did offer potential causes as to why trainers may choose not to employ the technology available to them. This ranged from the trainers lacking knowledge on how to integrate the use the technology or even a generational gap in their use for training.

Mobile Technology Challenges

Data shows that employees expressed their disappointments with mobile technology. This included failure of some applications to work. Small mobile technology devices and their equally small keyboards created are not always work-friendly, as they make typing hard. Furthermore, even though some employees described themselves as technologically savvy, they express that some technology is challenging to use.



Mobile Technology as a Distraction

As to the concept of technology as a distraction, employees appeared to be conflicted. The conservative employees felt that technology could be distracting at times. However, they also felt that it was anything but challenging to replay an instant message that was received while completing a task and quickly returning back to work when utilising the tools for the training course. This showed that they could manage their time and attention well enough not to get distracted for a long while occupied with work. In contrast, some employees emphatically confirmed that the technologies were not distracting to them when evaluating the concept of technology as a distraction

Discussion

Scholarly works on mobile learning have mostly focused on the use of mobile technology in sharing information or in accessing knowledge resources. Traxler (2007); Traxler (2010); Sharples *et al.* (2007) in their study highlight the advantages of mobile technology in enabling quick access of course data, and in uploading and downloading course content anywhere. This is consistent with the opinion of the employees as they shared the benefits of using mobile technology in training and the overall importance of mobile learning. Employees ascribed their ability to communicate more with each other to their use of mobile technology.

Employee understanding of adult learning opportunities was elicited as they were able to situate their training in the context of the workplace environment. Ruta *et al.* (2010) highlight the benefits of using mobile learning in the workplace and support the concept of knowledge transfer across environments and contexts.

Consistent with Quinn (2011), the employees in this study also expressed their frustrations and challenges when they use mobile technology. Quinn (2011) supports this concern by also questioning the ability of people to integrate mobile learning. Mobile technology application strategies need to be carefully examined in this respect.

Emerging from this study is the fact that, while employees may drive the incorporation of technology, it is the trainer who must effectively devise ways of implementing technology in training. It is not sufficient to provide access to the device. As the employees in this research noted, training department members who they consider as an anti-technology were frustrating. While the employees appreciated the possibility for distraction with mobile technologies, they felt a disconnect between the training department's perspective on the differences in generational thinking and their own.



Considering this, training centres, especially in Kuwait, may be required to evaluate their training design and activities, with a focus on adult learning components (Ng et al., 2010). Employees in their training courses seemed to practice the strategies of adult learning. Trainers, therefore, need to use a specific training curriculum to integrate the technology into training by using adult learning methods.

Conclusion

This study focused on exploring the use of mobile learning in workplaces, specifically in training employees of Kuwait government ministries. It sought to investigate employee perception of the use of mobile technology for their training activities with specific attention to readiness, acceptance, benefits and limitation. Liu et al. (2009) acknowledged that the adoption of mobile learning has more potential to add value in training. Regardless of the limitations observed, the employees in this study recognised the progressive changes in their approach to training with the adoption of mobile technology for mobile learning purposes. However, the potential long-term effect mobile learning can have on the workplace environment is yet to be determined. This could serve as a research study interest in this sector.



REFERENCES

- Attewell, J. (2005). Mobile technologies and learning: A technology update and m-learning project summary, Argyll Street, London, Learning and Skills Development Agency. Retrieved from
- Aldhafeeri, F., Almulla, M., and Alraqas, B. (2006). Teachers' expectations of the impact of E-learning on Kuwaiti's public education system. *Social Behavior and Personality: an international journal*, 34(6):711 {728. DOI:10.2224/sbp.2006.34.6.711.
- Alkharang, M. M. and Ghinea, G. (2013). E-learning in higher educational institutions in Kuwait: Experiences and challenges. *International Journal of Advanced Computer Science and Applications (IJACSA)*, 4(4):1-6.
- Bogdan, R.G., and S.K. Biklen, 1992. *Qualitative research for education*. 2nd edition. Boston, MA: Allyn & Bacon https://pure.uva.nl/ws/files/3710319/18824_100387y.pdf
- Brown, R., Ryu, H. & Parsons, D. (2006). Mobile helper for university students: a design for a mobile learning environment. *Proceedings of the 18th Australia conference on Computer-Human Interaction: Design: Activities, Artefacts and Environments*, New York, USA.
- Chao, P. Y., & Chen, G. D. (2009). Augmenting paper-based learning with mobile phones. *Interacting with Computers*, 21(3), 173-185.
- Crouch, M., & McKenzie, H. (2006). The logic of small samples in interview-based qualitative research. *Social science information*, 45(4), 483-499.
- Dahlstrom, E., Walker, J., and Dziuban, C. (2013). *Educause Center for Applied Research: a study of undergraduate students and information technology*.
- Daniel, E. G. S. (2008). An emergent Scaffolding Model of Tertiary M-learning: A case study of science teacher education. Paper presented at 2nd International Mobile Learning and Edutainment Conference, Kuala Lumpur, Malaysia.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Douch, R., Savill-Smith, C., Parker, G., & Attewell, J. (2010). Work-based and vocational mobile learning: Making IT work. Retrieved from <http://moblearn21.blogspot.com.au/2011/07/work-based-and-vocational-mobile.html>



- Ferry, B. (2009). Using mobile phones to enhance teacher learning in environmental education. In J. Herrington, A. Herrington, J. Mantei, I. Olney & B. Ferry (Eds.), *New technologies, new pedagogies: Mobile learning in higher education* (pp. 45-55). University of Wollongong. Retrieved from <http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1081&context=edupapers>
- Hanbidge A., Sanderson N., Renison T. (2016). INFORMATION LITERACY ON THE GO! ADDING MOBILE TO AN AGE-OLD CHALLENGE. Canada.12th International Conference Mobile Learning from https://ia600800.us.archive.org/19/items/ERIC_ED571443/ERIC_ED571443.pdf
- Hernández-Ramos, P. (2004). Web logs and online discussions as tools to promote reflective practice. *The Journal of Interactive Online Learning*, 3(1) Retrieved from ncolr.org/jiol/issues/pdf/3.1.4.pdf
- Herrington, A., & Herrington, J. (2007). Authentic mobile learning in higher education. Paper presented at Australian Association for Research in Education (Retrieved January 6, 2012, from <https://www.aare.edu.au/data/publications/2007/her07131.pdf>
- Hrastinski, S. (2008). A study of asynchronous and synchronous e-learning methods discovered that each supports different purposes. *EDUCAUSE Quarterly*, 31(4) (Retrieved from <http://www-cdn.educause.edu/library/EQM0848>
- James, P. T. (2008). The 5th Wave Challenges and Opportunities for Mobile-learning in Thailand. In *Fifth International Conference on eLearning for Knowledge-Based Society*, Bangkok, Thailand
- Horko, H. and Kayes, J. (2007). Language learning by iPod: An emerging model. Retrieved from <https://masie.com/Research-and-Articles/language-learning-by-ipod-an-emerging-model.html>.
- Kahle-Piasecki, L., Miao, C., and Ariss, S. (2012). Managers and the mobile device: M-learning and m-business-implications for the united states and China. *Journal of Marketing Development and Competitiveness*, 6(1):56.
- Keegan, D. The incorporation of mobile learning into mainstream education and training. Paper presented at mLearn 2005 — *4th World Conference on mLearning*. South Africa: Cape Town. Retrieved from <https://quality4digitallearning.org/wp-content/uploads/2016/03/keegan1.pdf>



- Kim, H., Kankanhalli, A., (2009). Investigating user resistance to information systems implementation: a status quo bias perspective. *MIS Quart.* 33(3), 567–582
- Kinash, S., Brand, J., Mathie, T., (2012). Challenging mobile learning discourse through research: students perceptions of blackboard mobile learn and iPads. *Australian Journal of Educational Technology.* 28(4), 639–655.
- Kukulska-Hulme, A. and Traxler, J. (2005). *Mobile learning: a handbook for educators and trainers.* Routledge: New York.
- Kwak, H., Lee, C., Park, H., & Moon, S. (2010). What is Twitter, a social network or a news media. Proceedings of the 19th International World Wide Web Conference. NC: Raleigh. Retrieved from <http://ecaminos.com/archivos/download/2010-www-twitterlh49129.pdf>
- LeNoue, Hall, Eighmy (2011): Adult Education and the Social Media Revolution. *Adult Learning,* 22, 4-12
- Liu, Y., Hu, F., & Li, H. (2009). Understanding learners' perspectives on m-learning: results from a survey. In *Proceedings of the 2009 Euro American Conference on Telematics and Information Systems: New Opportunities to increase Digital Citizenship,* New York, USA
- Liu, Z., Zhao, G., Zheng, W., & Jin, J. (2008). The Research and Exploration of Mobile-Learning Based on Web2. 0. Knowledge Acquisition and Modeling, *International Symposium,* 520-524.
- Martin, S., Gil, R., Lopez, E., Oliva, N., Monteso, S., Martinez, S. & Peire, J. (2009). Work in progress-a mobile performance support system for vocational education and training. In *Frontiers in Education Conference, 2009. FIE'09.*
- Mottiwalla, L. F. (2007). Mobile learning: A framework and evaluation. *Computers in Education,* 49(3), 581–596
- Murray, O. T. & Olcese, N. R. (2011). Teaching and learning with ipads, ready or not? *TechTrends,* 55(6):42-48.
- Ng, W., Howard, N., Loke, S., & Torabi, T. (2010). *Designing effective pedagogical systems for teaching and learning with mobile and ubiquitous devices. Multiplatform e-learning systems and technologies: Mobile devices for ubiquitous ICT-based education.* Hershey, PA: IGI Global Publishing.



- Ozdamli, F. & Cavus, N. (2011). Basic elements and characteristics of mobile learning. *Social Behavioral Science*, 28, 937–942
- Parasuraman, A. (2000). Technology Readiness Index (Tri): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies. *Journal of Service Research*, 2(4), 307-320.
- Phuangthong, D., & Malisawan, S. (2005). A study of behavioural intention for 3G mobile Internet technology: Preliminary research on mobile learning. *Proceedings of the Second International Conference on eLearning for Knowledge-Based Society*, Bangkok, Thailand.
- Quinn, C. (2000). *mLearning: Mobile, Wireless, In-Your-Pocket Learning*. LiNE Zine.
- Quinn, C. N. (2011). *Designing mLearning*. San Francisco, CA: Pfeiffer.
- Richardson, J., & Lenarcic, J. (2008). Text messaging as a catalyst for mobile student administration: The “trigger” experience. *International Journal of Emerging Technologies and Society*, 6(2), 140–155.
- Raaij, E. M. V., & Schepers, J. J. L. (2008). The acceptance and use of a virtual learning environment in China. *Computers and Education*, 50(3), 838-852.
- Raftree, L. and Martin, N. (2013). Youth unemployment: can mobile technology improve employability? Retrieved from <http://www.theguardian.com/global-development-professionals-network/2013/feb/26/mobile-education-mobile-phones>.
- Ruta, M., Scioscia, F., Colucci, S., Di Sciascio, E., Di Noia, T., & Pinto, A. (2010). A knowledge-based framework for e-learning in heterogeneous pervasive environments. In T. T. Goh (Ed.), *Multiplatform e-learning systems and technologies: Mobile devices for ubiquitous ICT-based education*, 20–41).
- Saylor, M. (2013). *The mobile wave: how mobile intelligence will change everything*. Vanguard Press.
- Sharples, M., (2005). *Learning as Conversation: Transforming Education in the Mobile Age*. United Kingdom:
- Sharples, M. (2006). Big issues in mobile learning. Report of a workshop by the Kaleidoscope Network of Excellence Mobile Learning Initiative. University of Nottingham.



- Sharples, M., Taylor, J., & Vavoula, G. (2007). A theory of learning for the mobile age. In R. Andrews & C. Haythornthwaite (Eds.), *The Sage handbook of Elearning research* (pp. 221–247). London: Sage.
- Sung, M. (2015). A study of adults' perception and needs for smart learning. *Procedia-Social and Behavioral Sciences*, 191, 115-120.
- Sung, Y. T., Chang, K. E., & Liu, T. C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, 94, 252-275 from https://ac.els-cdn.com/S0360131515300804/1-s2.0-S0360131515300804-main.pdf?_tid=a98f7b68-3367-48ff-8582-cfa14d4d60b3&acdnat=1523192432_5e0be0b6f8694878118f3235585a3bb2
- Sharples, M., Taylor, J., & Vavoula, G. (2007). A theory of learning for the mobile age. In R. Andrews & C. Haythornthwaite (Eds.), *The Sage handbook of Elearning research* (pp. 221–247). London: Sage.
- Tsai, M., & Su, W. (2007). The impact of cognitive fit and consensus on acceptance of collaborative information systems. *Business Review*, 8(2), 184-190.
- Tella, S. (2003). M-learning- Cybertextual travelling or a herald of post-modern, education. In H. Lahti & P. Seppälä (Eds.), *Mobile learning* (pp. 7–21). Helsinki, Finland: IT Press.
- Traxler, J. (2007). Defining, discussing and evaluating mobile learning: The moving finger writes and having writ. *The International Review of Research in Open and Distance Learning*, 8(2).
- Traxler, J. (2010). Distance education and mobile learning: Catching up, taking stock. *Distance Education*, 31(2), 129–138.
- Tucker, T. G., & Winchester III, W. W. (2009). Mobile learning for just-in-time applications. In *Proceedings of the 47th Annual Southeast Regional Conference* (p. 17). ACM.
- Virvou, M., & Alepis, E. (2005). Mobile educational features in authoring tools for personalised tutoring. *Computers & Education*, 44(1), 53-68.
- 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
- Watkins, M. (2001). In Practice: Principles of Persuasion. *Negotiation Journal*, 17(2), 115-137.



- Winters, N., (2006). What is mobile learning? In: Sharples, M. (Ed.), Big Issues in Mobile Learning. Kaleidoscope Network of Excellence, *Mobile Learning Initiative*, Nottingham, pp. 5–9.
- Yazan, B. (2015). Three Approaches to Case Study Methods in Education: Yin, Merriam, and Stake. *The Qualitative Report*, 20(2), 134-152. Retrieved from <https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=2102&context=tqr>
- Yusri, I. K., & Goodwin, R. (2013). Mobile Learning for ICT Training: Enhancing ICT Skill of Teachers in Indonesia. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 3(4), 293-296.
- Yusof, A. M., Aziz b, K. A., Daniel E. G. S., Lowd, W. Y., & Paule, A. (2011). Teachers' Perception on Mobile Learning for Special Needs Learner: A Malaysian case study. Paper Presented at the APAC M- Learning Conference, Bandung Indonesia.
- Zhao, D., & Rosson, M. B. (2009). How and why people Twitter: The role that microblogging plays in informal communication at work. *Proceedings of the Association for Computing Machinery (ACM) 2009 International Conference on Supporting Group Work*, New York.