Revolution in E-Learning by the Modern Educational Model in Mobile Learning

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Abstract - education has stepped to an ultra-place and time in 21st century. We have entered to digital and wireless communication century which mobile technologies have changed the process of education and instruction. The application of these mobile technologies for creation of knowledge, attitude and skill in learners is called Mobile Learning. The effectiveness of mobile learning programs requires new communication skills and modern of educational models, this article is written to cover this subject. In this article, first, cover definition of mobile learning, it's place in distance education, elements, pubic rules, chances and challenges, performance research's and epitome of future of mobile learning.

In continue article, educational approaches will be interpreted and collaboration learning and teacher-center instruction will be inspected as sub collection of these approaches and at the end a modern educational model that has been derived from before approaches, will be suggested for mobile learning. This model is combination of best specifications of behaviorism and constructivism theories in macro level, and teacher-center instruction and collaboration learning in micro level.

Keywords - mobile learning, distance education, educational approaches, integration model, collaboration learning, teacher-center instruction.

1. INTRODUCTION

Education is started with creation of men.it means same time with existence of men and social life, education has been with him. But the figure and way of its presenting with passing time has been changed.It means education according with existence of every means or technology and industry, has been changed. In recent centuries that we pass from industrial century to communication and information century, education in compare with last times has been widely change quantitative and qualitative states and speed of presentation (Mehrmohammadi, 2004).We need to educate our children for their future, not our past. We have stepped to digital communication and wireless century (Mosaremezani, 2010). Today, education has been exited from traditional form and has gone to distance education, electronic instruction and recently m-learning. Mobile phones are one of the most successful technologies of the past two decades. More and more educators are using them as an educational tool (Hashemi and Ghasemi, 2011). M-learning is a kind of distance education that can be operated synchronous and asynchronous with applying an electronic tool such as telephone. This kind of learning leads to public education and available for all learners (Elyas, 2011). Today with using methods and learning theories, we can reach to technics of learning that solve the requirements of 21st century (Merjel, translation of Langroudi, 2003).

Learning theories analysis obtaining or unobtainingconditions (Shabani, 2007). With attention to learners and conditions, we can use from different learning theories. The three important learning theories are: behaviorism,

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cognitivism and constructivism. The base of behaviorism theory is visible changing in behavior, whereas the base of cognitivism approach is a thought that there is behind of a behavior. Constructivism is established on this theory that we make our world with own plan and experiences (Merjel, translation of Langroudi, 2003).Instructional designers and teachers need a solid theoretical foundation for m-learning in the context of distance education and more guidance about how to utilize emerging mobile technologies and integrate them into their teaching more effectively (Park, 2011).

In this article an integration educational model is suggested that m-learning integrate both traditional approach such as teacher-center instruction and modern approach such as collaboration learning with together. The teacher-center instruction is based on behaviorism approach, and collaboration learning is based on constructivism approach, so in this integration model the theories of behaviorism and constructivism learning are integrated with together. This integration model has been made on the base of the best qualifications of two previous approaches. Using this model will be result to meaningful, effective and lifelong learning.

2. Mobile Learning
2.1. What is M-Learning?

Define mobile devices as "...any device that is small, autonomous and unobtrusive enough to accompany us in every moment". Typically, m-learning is identified both by being available "anywhere, anytime" (Geddes, 2004) and by the tools used: M-learning can perhaps be defined as 'any educational provision where the sole or dominant technologies are handheld or palmtop devices' (Traxler, 2005).Then, m-learning refers to learning mediated via handheld devices and available anytime, anywhere. Such learning may be formal or informal (Hashemi and Ghasemi, 2011).Although the term m-learning or M-Learning was introduced at the beginning of the millennium when the mobile phone became one of the major communication devices, M-Learning is a relatively recent innovation, enabled through advances in operating system design, lower cost hardware, and the community acceptance of mobile phone technologies (Peters 2005). According to Peters (2005), a mobile technology device should meet three criteria: it must be capable of providing communication

and/or information functions, be small enough to be easily carried, and be used, at least part of the time, without a physical connection to a fixed power source or telecommunications services. Mobile, to most, means portable and movable. It also seems to imply personal as opposed to shared use. The terms mobile and personal are often used interchangeably, but a device may be one without necessarily being the other. (Naismith et al. 2004)

M-learning offers a way to extend the support of learning outside the classroom, to the conversations and interactions of everyday life (Sharples 2005).The interactivity of mobile technologies creates new teaching and learning opportunities more suited to a constructivist approach where the device is a tool for information and direction, but the structure of the learning is created by the learner (Hashemi and Ghasemi, 2011).The mobility of modern learners provide a dynamic environment for learning: the mobile technology, while essential, is only one of the different types of technology and interaction employed. The learning experiences cross spatial, temporal and/or conceptual borders and involve interactions with fixed technologies as well as mobile devices. Weaving the interactions with mobile technology into the fabric of pedagogical interaction that develops around them becomes the focus of attention. (Kukulska-Hulme, 2009). Many scholars have tried to show how mobile technologies are concerned with traditional and innovative ways of teaching and learning, showing the applicability of m-learning across a wide spectrum of activity (Naismith et al.,2004; Kukulska-Hulme&Traxler, 2007) as well as highlighting the most important emerging issues (Sharples, 2006).

Different types of mobile technologies such as wireless laptop computers, IPods , portable MP3 players, Personal Digital Assistants (PDAs), and electronic dictionaries are available today , although mobile phones seem to have attracted more educators as well as the learners(Levy & Kennedy, 2005). This means that there is no need for the institution (or in many cases, the teacher) to provide learners with the hardware in order to incorporate am-learning component into their teaching context. Added to this is the fact that mobile phones are relatively inexpensive as compared with, for example, wireless laptop computers, and with functions such as Internet browsers that are available in current mobile phones, the range of possibilities of mobile

phones as tools for learning increases even further (Rosell-Aguilar, 2007). In contrast, most modern mobile phones have either e-mail or Short Message Service (SMS) functionality, which means that information, can be forwarded to and from mobile phones by teachers or students. Internet-capable mobile phones allow immediate connection to a server, which makes it possible for learners to retrieve updated or specific information as they require it, and for teachers to maintain detailed logs of access.

M-learning extends learners' capacity to communicate and access information by allowing them to carry "wireless, mobile, portable, and handheld devices" (Coole, 2010).Instructional designers and educators recognize the potential of mobile technologies as a learning tool for students and have incorporated them into the distance learning environment. As mobile devices are becoming increasingly ubiquitous, many researchers and practitioners have incorporated the technology into their teaching and learning environments (Hashemi and Ghasemi, 2011). Mobile devices can change the nature of the different and relatively stable environments to something more dynamic and alive. In situations such as at a museum or in a nature park they can work as an aid to collaborative knowledge building (Ahonen, 2003). Keegan (2003) believes that M-Learning will provide the future of learning.

It seems this definition is the most complete definition for m-learning:M-learning is obtaining any knowledge, attitude and skill with applying from mobile technologies in every time and place which results to changing in behavior.

2.2. Mobile Learning and Distance Education

Today, hand-held devices are now being used in language learning, literacy, medical training, music composition, and general education (Kukulska-Hulme&Traxler, 2007). These easy-to-carry tools allow more freedom to interact with others and to access a variety of multimedia information remotely using wireless networking capabilities (Ally, 2005).Mobile devices allow learners to more easily carry reference and communication tools with them into real-world environments.In several recent years, great improvements have been in information and communication technology. With increasing

use from modern communication technology, new words generated such as distance learning, electronic learning and m-learning. In this part of article, first, we will explain these three systems. The show their relation in figure (1).

Distance learning is a process that is accomplished different ways in distance learning environment in order to guiding learner (Mosaramezani, 2010). Distance learning is also a method that base on self-educational principle and we use from tools and educational devices and another helping educational tools such as radio, TV, internet and cellphone, (Razavi, 2011). E-learning is sub collection of distance learning. In fact, e-learning try to use communicational and informational technologies such as internet and multimedia systems and hypermedia to improve learning quality by facilities available to resources and education services and providing equipment's such as distance interaction and collaboration(Holmes and Gardner, 2006). Learning model in any time and place that is used to improve e-learning has realized with improving wireless technology and m-learning (Mason and Rennie, 2006).

Brown (2003) describe m-learning: mobile technologies can form learning effectively when we use from e-learning environments. He suggest the following figure to show the location of m-learning in distance education field and the relation of three concepts, distance learning, e-learning and m-learning:
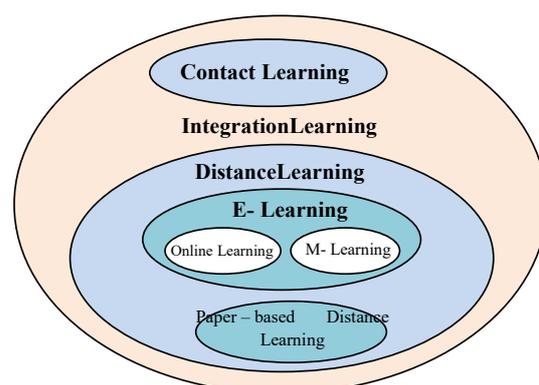

Figure.1 relation of Mobile Learning and Distance Education
Resource: Brown(2003)

2.3. The elements of M-Learning

Ryu and Parsons (2009) believe that the environments of m-learning contain three important elements: Engagement, Presence and

Flexibility. Engagement means engaging learner actively in m-learning environment. Engagement has three components: learner, instructor and technology.
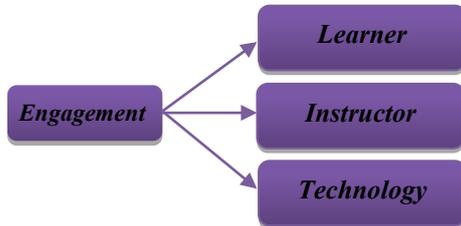

Figure.2 components of Engagement
Resource: Ryu and Parsons (2009)

Presence: presence referred to awareness and presence of learner and other people in m-learning environment at the same time. This element has three components: cognition, social and teaching. In cognition presence often student to content interaction, in social presence student to student interaction, and in teaching presence often student to teacher interaction is noticed:
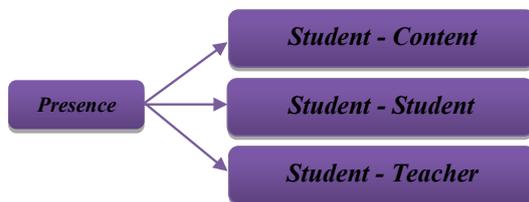

Figure.3 components of Presence
Resource: Ryu and Parsons (2009)

Flexibility: making the learning activities, teaching and assessment to be flexible that facilitate different forms of interaction between teacher and student:
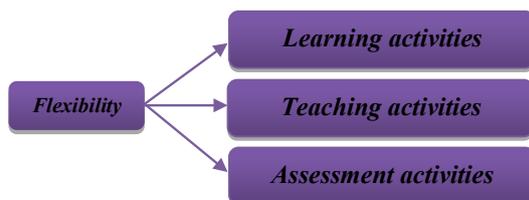

Figure.4 components of Flexibility
Resource: Ryu and Parsons (2009)

2.4. Public Rules of Mobile Learning

1. Portability: highly portable, so that they can be available wherever the user needs to learn.

2. Individual: adapting to the learner's abilities, knowledge and learning styles and designed to support personal learning, rather than general work or entertainment.

3. Unobtrusive: so that the learner can capture situations and retrieve knowledge without the technology obtruding on the situation.

4. Available anywhere, to enable communication with teachers, experts and peers.

5. Adaptable to the context of learning and the learner's evolving skills and knowledge.

6. Persistent:to manage learning throughout a lifetime, so that the learner's personal accumulation of resources and knowledge will be immediately accessible despite changes in technology.

7. Useful: suited to everyday needs for communication, reference, work and learning.

8. Easy to use by people with no previous experience of the technology (Hashemi and Ghasemi, 2011).

However, these requirements are not easy to meet. For instance, highly portable devices mean having devices that are light, easy to carry and are not restricted by network coverage. If a device is operated in a remote area, there should not be cases where learning cannot take place simply because the content cannot be downloaded. Although the issue of network coverage is real and serious in a developing country, ways should be sought to overcome technical problems of infrastructure (Nordin et al, 2010).

2.5. Chances and Challenges of Mobile Learning
2.5.1. Chances of Mobile Learning

• The learner is free what does he learn, how he learn and when and where does he learn (Sanberget al, 2011).
• The time of learning is decreased.
• Lead to performing public education (JavadiFard, 2011).
• It emphasizes on collaboration learning, creative and based on knowledge (Nili, 2007).
• It helps to physical and mental health by decreasing physical pressure that is imposed from carrying heavy school bags and changing environment.

- It needs to low costs because it doesn't require physical facilities and lesson classes (Mansouri et al, 2010).
- It provides open places for learning such as museums, galleries and open areas (Gharibi and Mohammadi, 2009).
- It results to expanding communications and interactions people with together (Brown et al, 2008).

2.5.2. Challenges of Mobile Learning

Challenges of m-learning are important for two reasons: Technological and educational-social:

☑*Technological challenges:*
- The lifelong of batteries is insufficient
- Limitedis Network speed and reliability.
- Physical attributes of mobile devices, such as small screen size, heavy weight, inadequate memory…
- Using of educational materials of e-learning periods for mobile learning course.
- Using different standards, showing screens in different size and different performing systems (Mansouri et al, 2010).
- Weak process able (Kinshuk, 2003).
- content and software application limitations, including a lack of built-in functions, the difficulty of adding applications, challenges in learning how to work with a mobile device, and differences between applications and circumstances of use(Park, 2011).

☑*Educational – socialchallenges:*
- Not supporting from learning process in different learning environments (Wikipedia, 2009).
- Not existence of suitable learning theory for m-learning (Pachler et al, 2010).
- Conceptual different between e-learning and m-learning and having similarities with together.
- Problems of security personal and private information.

2.6. Future of Mobile Learning

It is expected in near future designers have paid more attention to center-learner, using rich media, strategies of collaboration and flexible learning, the future of m-learning is ubiquitous learning. Ubiquitous learning in fact is a kind of e-learning that we use mobile tools for transforming education and it tries to establish a balance between education needs and technology facilities.

3. Approaches Learning

In fact, approaches analysis obtaining or unobtaining conditions (Shabani, 2007).with attention to learners and conditions, we can use from different learning theories. The three important learning theories are: behaviorism, cognitivism and constructivism.

3.1. Behaviorism

The base of behaviorism theory is visible changing in behavior. In this approach, the learner tries to adjust himself with environment and has a reactionary role in this process (Razavi, 2011). The teacher-center instruction is based on behaviorism.
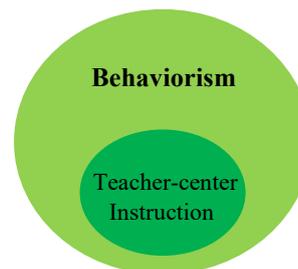

Figure.5 the relation of Behaviorism with Teacher-Center Instruction

3.2. Cognitivism

The base of this theory is a thought that there is behind a behavior. Cognitivists believe that we can learn in a time that creates relation learned materials with cognitive structure. In this case the teacher also has a role of presenting information.

3.3. Constructivism

This approach looks to learning as an action process. It is established on the base of relativism philosophy. The relativists emphasis on the psychology or social and know this subject from understanding of environment (Heydari, 2010). It also emphasis on active role of learner in understanding of knowledge, and it often emphasis on thinking products (Seif, 2007). Constructivism approach is emphasized on collaboration learning and to be social environment.
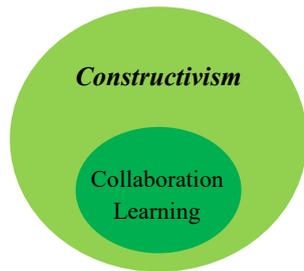
Figure.6 the relation of Constructivism with Collaboration Learning

Using education in small groups in a way which learners work with together to increase their learning is called collaboration learning. Baumberger(2005) names 5 elements for this kind of learning: positive dependence, social and individual skills, group feedback, face-to-face interaction and taking responsibility for group successfulness. This learning have advantages sample making collaboration knowledge, learning from peer, fostering positive attitude to learning and school, increase time for learning, improving relations between students,…(Nasrabadi and Noroozi, 2003).

4. Integration Model

Most of teachers aren't satisfied from positive environment, unreal conditions and atmosphere of their classes. They are looking for a method to creating enough motivation for learning and instruction (Haerizadeh et al, 2001).

This issue and other similar problems made us to suggest a modern educational model based on capability of m-learning and teacher-center instruction and collaboration learning. The suggested model in this article is made on the base of best qualifications of behaviorism and constructivism in macro level and teacher-center instruction and collaboration learning in micro level.
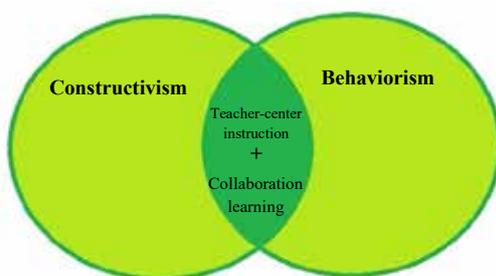

Figure.7 integration model on the base of Behaviorism and Constructivism

This integration model in the field of m-learning, integrate both traditional learning approach (teacher-center instruction), that is based on behaviorism and modern learning approach (collaboration learning), that is based on constructivism.
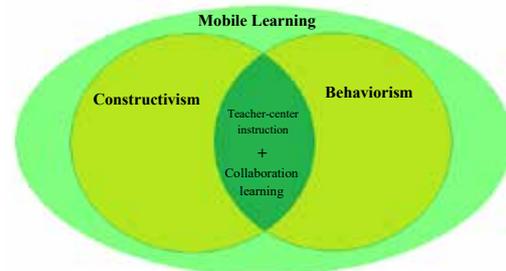

Figure.8 Modern Educational Model in Mobile Learning

This integration model in the field of m-learning, leads to active engagement, collaboration, meaningful and creative learning between students that are based on knowledge.

5. Conclusion

The popularity of computer and communication technologies has been changing the notation and the way of teaching and learning in the past decade. While many studies have demonstrated the benefits of applying these technologies to learning (Pena-Shaff& Nicholls, 2004; Tsai & Tsai, 2003).Mobile and wireless communication technologies not only enable anytime and anywhere learning, but also provide the opportunity to develop learning environments that combine real-world and digital world resources (Hwang et al, 2011).

Mobile learning is the type of learning which appeared as a conclusion of co-evaluation of mobile informatics and e-learning fields, providing the accession to e-learning content independent of a specific location, utilization of services created dynamically and communication with others. Mobile learning can be used to support traditional learning as well as distance learning. If we analyze mobile education in terms of its advantages, we can range them as follows;

- Life-long learning,
- learning inadvertently,
- learning in the time of need,
- Learning independent of time and location,
- Learning adjusted according to location and circumstances.

Educators must explore the affective and cognitive effects of this fragmentation on distance learners and look to m-learning as an opportunity not treat, and use from its abilities to create an effective learning. In this article, we suggested a modern model for m-learning and believe that applying from this model leads to performing learning for knowing, applying, living together, and improvement self-concept and summarized is a lifelong learning.

REFERENCES

[1] Ahonen, M. (2003) Mobility, Accessibility and Learning. Keynote Speech in Mlearn 2003 Conference. London.

[2] Ally, M . (2005) .Multimedia information design for mobile devices. In M. Pagani (Ed.), Encyclopedia of multimedia technology and networking. Hershey, PA: Idea Group Inc.

[3] Baumberger, H. M . (2005) .Cooperative Learning and case study: does the combination improve student perception of problem solving and decision making skill? , Nurse Education Today. pp. 238-247.

[4] Brown, Judy; Metcalf, David and Christian, Ria . (2008) .Mobile Learning Update, Elliot Masie's Learning Consortium Perspectives, : available:www.masie.com.

[5] Brown, T. (2003) .The Role of M-Learning in the future of e-learning in Africa, Presented at the 21st ICDE World Conference,2033, retrieved 14, January 2005 from: http://www.tml.hut.fi/opinnot/T-10.556/2006.

[6] Elias, Tanya . (2011) .Universal Instructional Design Principles for Mobile Learning, International Review of Research in open and distance elearning. VOL.12.2.

[7] Geddes, S.J . (2004) .Mobile learning in the 21st century: benefit to learners. Accessed 27th August 2007 from: http://knowledgetree.flexiblelearning.net.au/edition06/download/geddes.pdf.

[8] GharibiF, MohammadiA . (2009) .Learning through Mobile and education formal and informal, International Conference on Teaching and Learning; Tehran, Iran: 9-10 December.

[9] Haerizadeh, Kh. B; Ghasem Khan, S. and Mohammad Hossein, L . (2001) .Learning by Cooperative. Tehran: Ney.

[10] Hashemi, Masoud and Ghasemi, Babak . (2011) .Using Mobile Phones in Language Learning/Teaching, Procedia Social and Behavioral Sciences 15. pp. 2947–2951 Available online at www.sciencedirect.com

[11] Heidari, Jamshid . (2010) .Comparative efficacy of cognitive-oriented approaches and the integration of instructional design based on learning and retention of concepts, principles, and problem-solving skills students learn science third base in Asadabad city 2009-2010 years, [Dissertation]. [Tehran]: Faculty of Educational Sciences and Psychology, AllamehTabatabai University

[12] Holmes, Bryn; Gardner, John . (2006) .E-Learning (Conceps and practice), SAGE publications, London, Thousand, New Delhi.

[13] http://en.wikipedia.org/wiki/mobile – learning.2009.

[14] Hwang, Gwo-jen; wu,po-han and ruke, hui . (2011) .An interactive concept map approach to supporting mobile learning activities for natural science course, Computers & Education Journal, pp.2272 – 2280, available: www.sciencedirect.com.

[15] JavadiFardZ .(2011) . Comparative Study of Learning in Virtual University, England, Japan and Iran, [Dissertation]. [Tehran]: Faculty of Educational Sciences and Psychology, AllamehTabatabai University.

[16] Keegan, D . (2003) .The future of learning: from elearning to mlearning. Hagen: Fernstudienforchung, Germany. E-published version: http://learning.ericsson.net/leonardo/thebook/

[17] Kinshuk . (2003) .Adaptive Mobile Learning Technologies. Retrieved February,3,2005, from: http://www.globaled.com/articles/kinshuk2003.pdf.

[18] Koole, Marguerite; McQuilkin, Janice.L and Ally, Mohamed . (2010) .Mobile Learning in Distance Education: Utility or Futility?,Journal of distance education,VOL.24. PP.82- 59.

[19] Kukulska-Hulme, A . (2009) .Will mobile learning change language learning?ReCALL, 21(2), 157-165.

[20] Kukulska-Hulme, A. &Traxler, J . (2007) .Design for Mobile and Wireless Technologies .In H. Beetham& R. Sharpe (eds). Rethinking Pedagogy for the Digital Age London: Routledge.

[21] Levy, M., & Kennedy, C . (2005) .Learning Italian via mobile SMS. In A. Kukulska-Hulme, & J. Traxler (Eds.), Mobile learning: A handbook for educators and trainers (pp. 76–83).London: Taylor and Francis.

[22] Mansouri S, Kaghazi B, KhrmalyN . (2010) .The Study of students Attitude of Gonbad University to Mobile Learning. The first conference of value added mobile services in Iran; 23-24 February.

[23] Mason, Robin and Rennie, Frank . (2006) .E-Learning(the key concepts),Routledge, London and New York.

[24] MehrMohammadi ,Mahmoud . (2004) .rethinking the concept signified educational revolution in information and communications, Tehran: Ayij.

[25] Merjl, Brenda . (2003) .Instructional Design and Learning Theory (translated by JalilShaheriLangarodi), Proceedings of the Human Sciences, Islamic Azad University south. Office VI. Pp. 77-21.

[26] Mosaramezani, S . (2010) .The effect of using instructional Method (multimedia and Lecture) on learning, retention and achievement motivation of Arabic lesson, students distance instruction centersin Tehran [Dissertation]. [Tehran]: Faculty of Educational Sciences and Psychology, AllamehTabatabai University.

[27] Naismith, L., Lonsdale, P., Vavoula, G. &Sharples, M . (2004) .Literature Review in Mobile Technologies and Learning. Future Lab Report 11. Accessed 27th August 2007 from:http://www.futurelab.org.uk/resources/documents/

lit_reviews/Mobile_Review.pdf.

[28] Nasr Abadi, H. A and Norouzi, R. A . (2003) .New educational strategies in the Third Millennium, Qom Sama Press.

[29] NiliM . (2007) .Educational Technology Conference Proceedings[Introduction]. Tehran: AllamehTabatabai University.

[30] Nordin, Norazah; Embi, Mohamed Amin and Yunus, MelorMd . (2011) .Mobile Learning Framework for Lifelong Learning. pp.130 – 138, Retrieved may 18, 2011. available: www.sciencedirect.com.

[31] Pachler, Norbert; Bachmair, Ben and Cook, John . (2010) .Mobile learning (Structure, Agency,Practice),Springer New York Dordrecht Heidelberg Lodon.

[32] Park, Yeon. Jeong . (2011) .A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies into Four Types, International Review of Research in Open and Distance Learning , Vol. 12.2 ,pp.102 – 79.

[33] Pena-Shaff, J. B., & Nicholls, C. (2004). Analyzing student interactions and meaning construction in computer bulletin board discussions. Computers & Education, 42(3), 243–265.

[34] Peters, K. (2005). Learning on the move: Mobile technologies in business and education. Canberra: Commonwealth of Australia.

[35] Razavi, Abbas . (2011) .Modern Issues in Educational Technology, Ahvaz, Chamran University Press.

[36] Rossell-Aguilar, F. (2007) . Top of the pods-in search of podcasting "pedagogy" for language learning. Computer Assisted Language Learning, 20(5), 471-492.

[37] Ryu, Hok.yong and Parsons, David . (2009) .Innovative Mobile Learning(Techniques and Technologies). Published in the united states of America by Information Science reference.

[38] Saif, Ali Akbar . (2007) .New Educational Psychology: Psychology of learning and teach. Tehran: Doran.

[39] Sandberg, Jacobijn; Maris, Marinus and Geus, Kaspar de . (2011) . Mobile English learning: An evidence-based study with fifth graders, Computers & Education Journal, pp.1334-1347, available: www.sciencedirect.com.

[40] Shabani, Hasan . (2007) .Skills Education: Teaching Methods and Techniques (Volume I). Tehran: Samt.

[41] Sharples, M . (2005) .Towards a theory of mobile learning. Retrieved August 3, 2007, from: http://www. mlearn.org.za/CD/papers/Sharples-%20Theory%20of%20 Mobile.pdf.

[42] Sharples, M . (2006) .Big Issues in Mobile Learning: Report of a Workshop by the Kaleidoscope Network of Excellence Mobile Learning Initiative. Nottingham: Learning Sciences Research Institute.

[43] Traxler, J . (2005) . Defining, discussing, and evaluating mobile learning: The moving finger writes and having written... International Review of Research in Open and Distance Learning, 8(2), 1-12.

[44] Tsai, M. J., & Tsai, C. C . (2003) . Information searching strategies in web-based science learning: the role of Internet self-efficacy. Innovations in Education and Teaching International, 40(1), 43–50.