ORIGINAL ARTICLE

The impact of mobile teaching on learning and retention of nursing students in teaching English

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Background: The emergence of electronic technologies has revolutionized teaching-learning process. One of these technologies is mobile learning. The purpose of this study was to evaluate the effect of education by mobile learning on learning and retention of nursing students in English teaching.

Methods: The research design for this study was a pretest-posttest with a control group. The study population included all nursing students (about 130 people) in the academic year 2014-2015 in Shahrekord Nursing faculty. Thirty people were selected through convenience sampling method and were randomly assigned into an experimental and a control group. The instruments used were learning test (pretest-posttest learning with face validity approved by teachers and reliability of Cronbach's Alpha 0.83) and retention test (with face validity approved by teachers and reliability of Cronbach's Alpha 0.79). The tests were based on English lessons' content.

Results: The obtained data were analyzed by independent t-test and SPSS software version 18. The results showed that training based on mobile teaching enhances learning and retention of nursing students' English language.

Conclusion: Considering the results, education policy makers are recommended to use mobile technologies in teaching English.

Keywords: Mobile Learning, Learning, Retention, Nursing Students

تأثير التدريس المتنقل على تعلم واستبقاء طلاب التمريض في تدريس اللغة الإنجليزية

خلفية: لقد أحدث ظهور التقنيات الإلكترونية ثورة في عملية التعليم والتعلم. واحدة من هذه التقنيات هو التعلم المتنقل. كان الغرض من هذه الدراسة هو تقييم تأثير التعليم عن طريق التعلم المتنقل على التعلم والإستبقاء على طلاب التمريض في تدريس اللغة الإنجليزية.

الطرق: تصميم هذه الدراسة كان على طريق الاختبار التمهيدي – الاختبار النهايى مع المجموعة الضابطة. شمل مجتمع الدراسة جميع طلاب التمريض (حوالي 130 شخص) في العام الدراسي 1396- 1395 شمسيا في كلية التمريض في مدينه شهركرد. تم اختيار ثلاثين شخصًا من خلال طريقة أخذ عينات الراحة وتم تعيينهم بشكل عشوائي في مجموعة تجريبية ومراقبة. كانت الأدوات المستخدمة عبارة عن اختبار التعلم (الاختبار التمهيدي – الاختبار النهايى مع صلاحية الوجه المعتمدة من قبل المعلمين والموثوقية المعتمده من آلفا كرونباخ 0.83) واختبار الاستبقاء (مع صلاحية الوجه المعتمدة من قبل المعلمين والموثوقية فى آلفا كرونباخ 0.79) من محتوى دروس اللغة الإنجليزية.

النتائج: تم تحليل البيانات المحصله عن طريق اختبار t مستقل وإصدار برنامج SPSS 18 . أظهرت النتائج أن التدريب القائم على التدريس المتنقل يعزز تعلم اللغة الإنجليزية لطلاب التمريض والاحتفاظ بها.

خاتمة: بالنظر إلى النتائج ، يُنصح صناع السياسة التعليمية باستخدام التقنيات المتنقله في تدريس اللغة الإنجليزية.

الكلمات المفتاحية: التعلم المتنقل ، التعلم ، الاستبقاء ، طلاب التمريض

نرسنگ اسٹوڈنٹ کو انگریزی سکھانے میں موبائل طریقہ تعلیم کے اثرات

بیک گراونڈ: الکٹرانیک ٹکنالوجیوں نے پڑھانے اور پڑھنے کے عمل میں انقلاب برپا کردیا ہے۔ تعلیم دینے اور تعلیم حاصل کرنے کا ایک طریقہ موبائل طریقہ ہے ۔ اس تحقیق کا ھدف نرسنگ اسٹوڈنٹس کو انگریزی پڑھانے موبائل طریقہ تعلیم کے اثرات کا جائزہ لینا ہے۔

روش: اس تحقیق میں ٹسٹ سے پہلے اور ٹسٹ کے بعد والی روش اپنائي گئي۔ اس تحقیق میں شہر کرد نرسنگ اسکول کے تمام اسٹوڈنٹس نے شرکت کی ۔ یہ تحقیق دوہزار پندرہ اور سولہ میں کرائي گئي ۔ ان میں سے تیس اسٹوڈنٹس کو پندرہ پندرہ کے دو گروپوں میں بانٹا گیا، ان طلباء کو اساتذہ کا بنایا ہوا اور کرونباخ ٹسٹ کے معیار پر سوالنامہ دیا گیا۔

نتیجے: ڈیٹا کا تجزیہ ٹی ٹسٹ اور ایس پی ایس ایس اٹھارہ سے کیا گیا ۔ تحقیق سے نتائج سے پتہ چلتا ہے کہ موبائل ماڈل کی ٹیچنگ سے انگریزی سیکھنے والے طلباء نے کافی پیشرفت کی ہے۔

کلیدی الفاظ: موبائل تعلیم ، نرسنگ اسٹوڈنٹس

تأثیر آموزش سیار بر یادگیری و یادداری دانشجویان پرستاری در آموزش زبان انگلیسی

زمینه و هدف: ظهور فناوری‌های الکترونیکی فرآیند یاددهی–یادگیری را متحول ساخته است. یکی از این فناوری‌ها یادگیری سیار است. هدف از این پژوهش بررسی تأثیر آموزش به شیوه یادگیری سیار بر یادگیری و یادداری دانشجویان پرستاری در آموزش زبان انگلیسی بود.

روش: طرح پژوهش حاضر، پیش‌آزمون–پس‌آزمون با گروه کنترل بود. جامعه آماری پژوهش شامل کلیه دانشجویان رشته پرستاری دانشکده پرستاری شهرکرد در سال تحصیلی 96–95 بود (حدود 130 نفر). از این جامعه‌آماری تعداد 30 نفر از طریق نمونه‌گیری در دسترس انتخاب و به تصادف در دو گروه کنترل و آزمایش گماشته شدند. ابزار مورد استفاده شامل آزمون یادگیری (پیش‌آزمون–پس‌آزمون یادگیری با تأیید روایی صوری توسط اساتید و پایایی کرونباخ 0/83) و یادداری (با تأیید روایی صوری توسط اساتید و پایایی کرونباخ 0/79) از محتوای درس زبان انگلیسی بود.

یافته ها: داده‌های بدست‌آمده با استفاده از آزمون آماری تی‌مستقل و با کمک نرم‌افزار SPSS نسخه 18 تحلیل شد. یافته‌های پژوهش نشان داد که آموزش به شیوه سیار موجب افزایش میزان یادگیری و یادداری دانشجویان پرستاری در زبان انگلیسی می‌شود.

نتیجه‌گیری: با توجه به نتایج پژوهش، به مجریان آموزش توصیه می‌شود که از فناوری‌های سیار در آموزش زبان انگلیسی استفاده نمایند.

واژه‌های کلیدی: یادگیری سیار، یادگیری، یادداری، دانشجویان پرستاری

INTRODUCTION

The teaching-learning process consists of complex stages having many criteria for its effectiveness. This process can be offered in different ways of in-person training, virtual training, and integrated training. In-person education, which is also called traditional education, is attending classes and receiving information provided by the teacher. One of the most important reasons for switching to virtual education can be: in-person training is time consuming and does not provide the learners with training in preferred place and time. One of the methods of providing virtual education is mobile education. In fact, considering the rise of communicationism in today's lives, there must be ways in which learning can be accepted by the learners; in fact, the traditional view of education that any individual needs to attend in-person education is no longer acceptable, rather a kind of education is demanded through which the matters of time and place are not considered.

Information technology has continuously brought new innovations to the mankind. The pace of these innovations has grown so fast in a way that a newer product with better features, greater convenience and lower costs comes around each day and removes previous innovations, although the process of using the previous innovations has not been completed yet. One of the areas that has been heavily effected by IT in recent years is education and learning (1). One of the most important ways of acquiring knowledge in the present era is through modern technology education including e-learning. This learning has become a reality with the development of mobile devices (2). The ability to learn at any time and place is a feature of e-learning which has become a reality with the development of wireless technology and mobile learning. Advances in information and communication technology and, consequently, the advent of wireless sensors and technology have changed e-learning to mobile learning. Mobile learning is actually a form of e-learning that is done through mobile technologies such as mobile phones, tablets, notebooks, audio players, e-books and more (3). Nowadays, English is recognized as an international and mainstream language due to advances in science and technology as well as continuous developments. Therefore, learning English as one of the most important communication tools for utilizing scientific and research resources and using advanced technologies is one of the most basic skills needed to live in the world today. Researchers believe that one of the most important factors affecting language learning is teaching-learning approaches (4).

Nowadays, many problems of in-person training system have led the specialists to develop a variety of teaching methods with the help of information and communication technologies (ICTs) that can be used to train a larger population of learners (5). One of these methods is mobile learning. Mobile learning refers to any educational interaction by mobile technology through which the learner would normally have access to educational content from any location (6).

Koole, Mcquilkin, and Ally believed that mobile learning extends and improves learners' ability to communicate and access information through mobile and wireless devices (7). Mobile learning is a new technology that allows learners to participate in learning activities without having to rely on a fixed location. Mobile learning equips users with easy and flexible access to learning resources at any time and place (8).

Mobile learning can create opportunities such as learner autonomy in learning, universal and lifelong learning, interactional learning, elimination of physical limitations, and learning from a wide variety of sources in the teaching-learning process (9-14).

Medical students can use mobile tools in learning activities. Things like medical imaging from rare cases, taking videos from examination, diagnosing a variety of illnesses, use of different medicines, medical simulations, educational and training games, providing slides or autopsies, taking pictures of autopsies in autopsies can be done with mobile devices which can facilitate the learning process of medical students (15). There has been some research on the application of mobile education in the teaching-learning process, some of which are discussed below;

Through conducting a research on the effect of mobile education on metacognitive self-regulation and attitude of paramedical students, Naderi et al., (2014) concluded that using a mobile phone has a significant effect on students' metacognitive self-regulation and attitude through learning by cellphones (16).

In a study done on the impact of e-learning on students' academic achievement (Isfahan University of Medical Sciences), Keshavarz et al., (2013) also found that e-learning has a positive effect on students 'academic achievement (17).

In another study done on the effect of teaching English by phone and e-mail on students' learning and motivation, Sarani et al. (2014) concluded that the method of mobile and e-mail learning on students' learning and motivation has had a positive effect (4).

In a study entitled mobility learning and its impact on learning, retention and motivation, Alikhani et al., (2015) found that the rate of learning and retention among people trained in mobile learning was higher than the traditional method (1).

Hwang et al. (2014) examined the effects of using mobile devices on students' listening and speaking skills in English. The results showed that mobile devices are effective on students' listening and speaking skills (18).

The goal of the current research is to find the possible effect of mobile learning on the learning and retention of nursing students in English language teaching. To do so, the following research hypotheses are put forward:

1. There is a difference between the level of English language learning of students who were trained by mobile learning and those who were trained in conventional ways.
2. There is a difference between the amount of English retention of students who were trained by mobile learning and those who were trained in conventional ways.

METHODS

The present study was a quasi-experimental study with a

pretest-posttest design and a control group. The population of the study included all students of Shahrekord Nursing School in the academic year 2016-2017. Thirty people were selected through available sampling and randomly assigned into two control and experimental groups. Initially, both groups took one learning pre-test from English language content. The English language teaching content was an English book on the nursing profession from Oxford Publications. Then, the control group was taught English language content in the conventional manner and the experimental group received the same content in a mobile manner during 5 half-hour sessions. For the experimental group, the educational content of the English nursing book was put together with the relevant instructor teaching on Google Drive, and a profile was formed for each member of the experimental group, and the content was shared. In fact, the only difference between the two groups was not in the content but in the time and place of access to educational information. After 5 sessions, both groups took a learning post-test. The retention test was taken from both groups after 2 weeks. Data were analyzed using independent t-test and SPSS 18 software. Two sets of tools were used in this study:

1) Learning test: including a pretest- posttest learning containing 20 objective questions of English language lesson content. The face validity of the test was confirmed by the relevant lecturers. Cronbach's alpha coefficient of test reliability was 0.83. The lowest score in the pre-test and post-test was 0 and the highest score was 20;

2) Retention test: This test also consisted of 20 objective questions from the English language course whose validity was confirmed by the relevant lecturers and its reliability was calculated by Cronbach's alpha as 0.79. It should be noted that the lowest score on the retention test was 0 and the highest score was 20.

This study was approved by the Ethics Committee of Shahrekord University of Medical Sciences, by ethical approval code: 94535.

RESULTS

In descriptive statistics part, indices such as mean and standard deviation, and in inferential statistics, independent t-test were used to test the research hypotheses. At first, the normality of the data was confirmed by Kolmogorov-Smirnov test. The results are presented below:

Hypothesis 1: There is a difference between the rate of learning English by students who were trained by mobile learning and the students who were trained in conventional ways.

Based on the data presented in Table 2, the calculated independent t-test for comparing the scores mean difference in learning test of two groups was reported to be 3.38 which was significant ($p = 0.001$). Therefore, with the 95% confidence, the null hypothesis is rejected and the first assumption of the effect of mobile learning on students' learning in English language is accepted.

Hypothesis 2: There is a difference between the amount of English language retention of students who were trained by mobile learning and those who were trained in conventional ways.

As shown in Table 3, the mean of the control and experimental groups differed significantly in the amount of retention.

The value of independent t-test for the mean difference was 8.10 in the retention test for both control and experimental groups and its independent t-test was 4.18 which was significant at the $p = 0.001$ level. Therefore, hypothesis 2 of the research on the effect of mobile learning on students' memory in English language lessons is confirmed.

DISCUSSION

The purpose of this study was to investigate the effect of mobile learning on nursing students' learning and retention in English language teaching. Research findings related to the

Table 1. Descriptive statistics of subjects for the first research hypothesis

Mean and standard deviation	Number	Test	Group
6.38±3.33	15	Pre-test	control
8.70±3.37	15	Post-test	
6.50±3.46	15	Pre-test	experimental
16.30±3.23	15	Post-test	

Table 2. Results of independent t-test for the first hypothesis

p-value	Df	T	Mean difference	Number	Group
0.001	28	3.38	2.32	15	control
			9.80	15	experimental

Table 3. Descriptive statistics of the subjects related to the second research hypothesis

Mean and standard deviation	Number	Test	Group
12.30±2.39	15	Retention (post-test)	control
16.48±2.36	15	Retention (pre-test)	experimental

Table 4. Results of independent t-test for the second research hypothesis

p-value	Df	T	Mean difference	Number	Group
0.001	28	4.39	4.18	15	Control and experimental

first hypothesis of the study (there is a difference between the rate of English language learning of students who were trained by mobile education and the students who were trained in conventional way) showed that mobile learning increased the rate of nursing students learning in learning English. The findings of this section of the study are consistent with the findings of Naderi et al. (16), Keshavarz et al. (17), Sarani (4), Alikhani et al. (1), and Hwang et al., (18). Also, the results of the research related to the second research hypothesis (There is a difference between the students who received mobile education and those who received conventional education) showed that mobile education increased the retention of nursing students in English language teaching. The findings of this section of the study are also consistent with the results of Naderi et al. (16), Keshavarz et al. (17), Sarani (4), Alikhani et al. (1) and Hwang et al. (18). They all concluded that mobile learning can make the information better be remembered. Reasons for the effectiveness of this presentation can be attributed to the characteristics of this teaching style, including learners 'self-awareness during the teaching-learning process, flexibility, not being dependent on specific time and place, and learners' self-direction. In this case study, which was distinguished by research done before, the use of this method for greater involvement of the learner in the choice of time and place of instruction was, in fact, his/her own strategy. Because, learners in previous research, haven't been given the opportunity to participate to this extent. In fact, the willingness or inclination in the teaching-learning process, and especially in mobile learning, is one of the basic criteria for students' pursuit and continuity in this field.

According to the results of the study, using mobile learning in English language teaching of nursing students will increase their learning and retention. Therefore, educators are recommended to use this technology more and more to teach English.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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REFERENCES

1. Alikhani F, Alikhani P, Eslampanah M. The effect of education via M-learning on learning, retention and progress motivation. Journal of Information and Communication Technology in Education Sciences 2015; 5(20): 19-33. Persian.
2. Asadpour K. Mobile applications need to teach learners. Journal Electronic (Science Communication). 2008; Pp 1-5. [Cited 2014 Jun 26]. Available from: http://www.irandoc.ac.ir/data/e_j/vol9/no4/asadpoor.pdf. Persian.
3. Zare M, Sarikhani R. A ubiquitous learning environment and the challenges facing it. National Congress of Psycho-Educational challenges of the contemporary systems of education. Malayer University, faculty of Psychology and Educational Sciences. 2012; P. 61. Persian.
4. Sarani H, Ayati M, Naderi F. The effects of teaching English language course via phone and email on learning and achievement's motivation. Quarterly Journal of Research and Planning in Higher Education. 2014; 20(3):141-59. Persian.
5. Yordanova K. Mobile learning and integration of advanced technologies in education. Proceedings of International conference on computer systems and technologies; 2007 June; Association for Computing Machinery, New York, United States' 2007. P. 1-6.
6. Vahidi H. Designing a domestic e-readiness assessment model for the deployment of mobile learning. Journal of Media. 2013;14(1): 1-10. Persian.
7. Koole M, Mcquilkin JL, Ally M. Mobile learning in distance education: Utility or Futility?. Journal of distance education. 2010; 24(2): 59-82.
8. Monahan T, Bertolotto M, Mcardle G. Usability testing of a collaborative and interactive university on a mobile device. International journal IM. 2009; 3(4): 21-32.
9. Sandberg J, Maris M, Geus K. The Mobile English learning: An evidence-based study with fifth graders. Computers & Education Journal [Internet]. 2011[Cited 2011 Nov 15]. Pp. 1334-1347. Available from: www.sciencedirect.com
10. JavadiFard Z. Comparative study of learning in virtual university, England, Japan and Iran, [Thesis]. Tehran: Faculty of Educational Sciences and Psychology, Allameh Tabatabai University; 2011. Persian.
11. Nili M. Educational Technology Conference Proceedings, Introduction part. Tehran: Allameh Tabatabai University. 2007. Persian.
12. Mansouri S, Kaghazi B, Khrmaly N. The study of student's attitude of Gonabad University to Mobile Learning. The first conference of value added mobile services in Iran. 2010 Feb 23-24; 2010. Persian.
13. Gharibi F, Mohammadi A. Learning through Mobile and education formal and informal. International Conference on Teaching and Learning. 2009; Dec 9-10; Iran: Tehran. Persian.
14. Horton W. Designing courseware for mobile devices mobile learning for expanding educational opportunities. Workshop report. 2005; May 16-20; Tokyo, japan. [Cited 2012 Feb 10]. Available from: http://unesdoc.unesco.org/images/0014/001436/143684e.pdf
15. Zamani, BE, Babri H, Ghorbani S. Strategies for the development of mobile learning through teaching - learning activities in Medical Education: Perspectives of Medical Students and IT Professionals in Isfahan University of Medical Sciences. Iranian Journal medical education. 2013;

13(2):87-97. Persian.
16. Naderi F, Ayati M, Zare Bidaki M, Akbari Bourang M. The effect of mobile learning on metacognitive self-regulation and attitudes of students of Allied Health Sciences. Iranian Journal of Medical Education. 2014; 13(12): 1001-1010. Persian.
17. Keshavarz M, Rahimi M, Esmaeili Z. The Effect of e-Learning on the Academic Development of University Students. Journal of Torbat Heydariyeh University of Medical Sciences. 2013; 1(2):13-21. Persian.
18. Hwang WY, Huang YM, Shadiev R, Wu SH, Chen SH. Effects of using mobile devices on English listening diversity and speaking for EFL elementary students. Australasian Journal of Educational Technology. 2014; 30(5): 503-16.