The Impact of Mobile Learning Environment on EFL Students' Learning of English Idioms through Concept Cartoons

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Abstract
Today, the most important form of communication among teenagers is carried out through mobile devices. Mobile technologies have also various pedagogical practices and issues, which are conceptualised as mobile learning (m-learning). Definitions of m-learning have focused on access, mobility and support for learning in multiple locations without physical network connections. Considering these features of m-learning, it was supposed that exposing students to learning materials –such as idioms in English- at regular time intervals in an m-learning environment would facilitate learning. In addition, using concept cartoons as language learning materials and delivering them via m-learning can make these materials pedagogically valuable sources.

Thus, this study included English idioms to be taught by using concept cartoons via mobile phone's instant messages (IM). To this end, the following question stands out: "Are there any significant differences in students' learning of idioms via SMS vis-à-vis the other method of delivery, posters in classes?" During the study, thirty four 7th grade students (age 12-13) were recruited as experimental and control groups. The first group of participants were exposed to concept cartoons via IM in m-learning environment, and the second group was exposed to the same cartoons in the form of posters in the classroom. The findings revealed that the implemented treatment significantly increased English idiom comprehension levels of both experimental and control group students. However, no difference was observed in students' learning of idioms via IM vis-à-vis the other method of delivery- posters in classes.

Keywords: Mobile learning, Integrating Technology into Education, ESL, Concept cartoons

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Introduction

In this new digital era, it is clear that almost everybody even in developing countries has a mobile phone. Table 1 shows the growth in the ratio of subscriptions (per 100 inhabitants) for mobile-cellular telephones over the last decade (International Telecommunication Union (ITU), 2015a). It is estimated that, all over the world, mobile-cellular telephone subscriptions reached 95,5% in 2014 (ITU, 2015b).

Table 1. Statistical data about mobile-cellular telephone subscriptions

		2003	2013
Mobile-cellular telephone subscriptions per 100 inhabitants	Turkey	42,29%	92,96%
	Japan	68,49%	117,63%
	UK	90,88%	124,61%

Parallel to this trend, the most important form of communication among teenagers is carried out through mobile devices. In fact, depending on the statistics of 2013, for Turkish children between the ages 6 -15, age to start using mobile phones is ten, and the rate of mobile phone usage is 50,9% (Turkish Statistical Institute, 2013). These children use mobile phones for talking (92,8%), messaging (65,4%), and using the Internet (30,7%) (Turkish Statistical Institute, 2013). High usage of mobile technologies among children can be used as an opportunity to enable users to "re-interpret their everyday life contexts as potential resources for learning (Vavoula, Pachler & Kukulska-Hulme, 2009, p.5)."

Mobile digital tools, with their small size, ubiquity and functional convergence, enable new possibilities for learning. Owing to the range of connectivity functions, mobile devices offer the socio-cultural dimension of learning by enabling users to communicate readily with other users (Vavoula, Pachler & Kukulska-Hulme, 2009). O'Malley et al. (2005, p.7) have defined mobile learning as taking place when the learner is not at a stabilized location, or when the learner 'takes advantage of the learning opportunities offered by mobile technologies'. Mobile learning can be "spontaneous, portable, personal, situated; it can be informal, unobtrusive, ubiquitous and disruptive" (Kukulska-Hulme & Traxler, 2005, p.42). In other words, mobile learning is "the processes of coming to know through conversations across multiple contexts among people and personal interactive technologies" (Sharples, Taylor & Vavoula, 2007, p. 225). This definition emphasizes cognitive and social aspects over technical considerations along with aspects that allow content provision and transmission; in these cases the emphasis is on "contexts, context generation and context crossing" (Vavoula, Pachler, and Kukulska-Hulme, 2009, p.5).

Pachler asserts that, 'mobile learning is maturing as an academic discipline' (2009, p.1). Table 2 includes the number of article results for queries on education related to academic electronic databases with subject 'elementary' or 'higher education' in addition to the keyword 'mobile learning'. Only scholarly (peer reviewed) journals were included in the query.

Table 2. Query results on three different electronic databases with keyword "mobile learning" and "higher education" or "elementary education"

Databases	Keyword: Higher Education Result #	Oldest	Newest	Keyword: Elementary Education Results #	Oldest	Newest
Academic Search Complete	187	1997	Jul, 2015	19	2003	Feb, 2015
Education Source	566	1997	Jul, 2015	32	2003	Apr, 2015
ERIC	252	1997	Jan, 2015	56	2004	2014
Total	1005			107		

Query results in Table 2 show that the majority of research has been done with higher education students, however only 10% of the articles involved elementary school students. These numbers reveal the need for more research on mobile learning of elementary level students. In this study, considering the features of m-learning, it was supposed that exposing students to learning materials –such as idioms in English- at regular time intervals in an m-learning environment would facilitate learning.

Learning English Idioms using Concept Cartoons

Acquisition of conversational competence in a language requires an understanding of the use and meanings of idiomatic expressions (Sexton, Gervasoni, & Brandenburg, 2009). An idiom has an alternate, figurative meaning, which cannot be determined from the combination of the meanings of the individual words (Cronk & Schweigert, 1992). Idioms constitute a notably difficult area in foreign language learning and teaching. Idiomatic meanings are typically assigned to chunks of words that do not bear their individual meanings and their syntactic features (Levorato & Cacciari, 1992). For young learners, the comprehension of idiomatic expressions are facilitated by the help of contextual information (Cacciari & Levorato, 1989). Context helps suspend the literal interpretation of the idiom and provides the semantic information needed to make sense of the text and to understand the figurative sense of the idiom (Levorato & Cacciari, 1992). To present the idioms in a context, concept cartoons can be considered as a useful tool.

Cartoons have a significant role in education. They introduce notable and enjoyable activities for enhancing learning and student participation. A concept cartoon is a learning and a teaching tool which integrates written text in the form of dialogue accompanied with a visual stimulus (Chin, 2001). Although they do not employ humor or satire, concept cartoons have a cartoon-style design to demonstrate dialogues inside speech bubbles (Keogh & Naylor, 1999). Concept cartoons can facilitate both assessment and learning in a number of ways: i.they elicit students' misconceptions, ii. they promote questioning and reflective thinking in students,
iii.they stimulate talk and argumentation that help students to develop conceptual understanding (Chin & Teou, 2009).

Research Question

This study included English idioms to be taught by using concept cartoons via mobile phone's instant messages (IM). To this end, the following question stands out: "Are there any significant differences in students' learning of idioms via IM vis-à-vis the other method of delivery, posters in classes?"

Study Group

The study was carried out with 7th-grade classes at an elementary private school. The experimental group was chosen according to their possession of smart phones. In experimental group, each student has a smart phone. The students study German as their first foreign language and English as their second. The following table shows the distribution of students in control and experimental groups.

Table 3: Gender distribution in experimental and control groups

	Female		**Male**		**Total**	
	f	%	f	%	f	%
Experimental Group	8	50	8	50	16	47
Control Group	7	39	11	61	18	53
Total	15	44	19	56	34	100

Implementation Phases

Implementation phase -1: The idioms were selected on the basis of students' curriculum and on the themes they would be studying in the rest of the course. Idioms were extracted from various website sources, such as www.idiomsite.com.

Table 4: List of idioms in Arts and Sports categories

Theme	ARTS		SPORTS	
Weeks	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**
Idioms	culture vulture	break the ice	all ears (and eyes)	get out of town
	my cup of tea	ring a bell	get a head start	hit the bull's-eye
	an arm and a leg	bat a thousand	hit a snag	get a second wind
	on the same page	a Work of Art	out of question	on the ball
	far cry from	have a ball	hot shot (big shot)	change your tune
	have one's finger in the pie	show up	to be just the ticket	jump the
	in the nick of time	walk on	hot on something	lose your bottle
	look like a million dollars	It's raining cats and dogs!	take sides	neck and neck
	top flight	learn (something) by heart	kick the bucket	take place
	a piece of cake	tickled pink	time out	

Implementation phase -2: One week before the implementation, an achievement test was given as a pre-test to both groups in order to assess students' comprehension of idioms.
The achievement test was developed by the researchers. The test has 5 sections and consisted of 40 questions as seen in Table 5. It was a 20-min individual assessment for measuring the students' previous knowledge of idioms. Three experts from English faculty and classroom language teacher were consulted. A total of 40 idioms were identified. The content and construct validity of the test was evaluated by three experts from English faculty. Final version was presented to the classroom language teacher and head of English department for their approval. The final test was administered to all 7th grade students (n=47) in the school. The students' scores ranged between 6 and 31 with an average score of 15.19 (SD=5.384) with a normal distribution.

Table 5: Achievement test sections and number of questions

Idiom-picture matching	**Idiom-meaning matching**	**Multiple choice**	**Gap completion**	**Identification of the appropriate idiom**	**Total**
8	8	8	8	8	40

Upon examining Shapiro-Wilk test results, it was seen that pre-test results were normally distributed. Consequently, the difference in pre-test scores between two groups was calculated. Independent t-test result is presented in Table 6.

Table 6: Independent t-test results comparing control and experimental groups' pre-test scores

Groups	N	$\bar{X}$	S	sd	t	p
Control	18	16,61	6,29	32	1,03	0,312
Experimental	16	14,69	4,30			

As seen in Table 6, there is not a significant difference in the scores of control group ($\bar{X}$=16,61, SD=6,29) and experimental group ($\bar{X}$ = 14,69, SD=4,30) conditions. ($t_{(32)}$=1,03, p=0.3). In addition, students' first term English scores were obtained and it was seen that the mean scores of both groups were normally distributed and there is no statistically significant difference between two groups [$t_{(32)}$= -.388]. By taking into consideration both their first term English grades and pre-test scores, it was assumed that control and experimental groups were equal and correspondingly experimental process continued.

Implementation phase -3: The implementation was conducted on the same day (the first day of the week) with both groups for four weeks. Ten idioms were taught each week. Every week, role-play texts were presented on the LMS "kidblog" used by school before each class so that they would read the texts and come to class prepared. The presentation stage involved dramatization of role plays by different students twice during the first or the last 10 minutes of the lesson. This step was then followed by explaining the meanings of idioms used in the texts.

Implementation phase - 4: Each week, two cartoons were created for each idiom which makes 2 x 10 cartoons per week. The first cartoon displayed the use of idiom in a context. The function of the second cartoon was to test students' understanding of the idioms. Two sample cartoons are presented in Figure 1 and Figure 2.



Figure 1: First and second delivered sample cartoons for idiom "an arm and a leg"

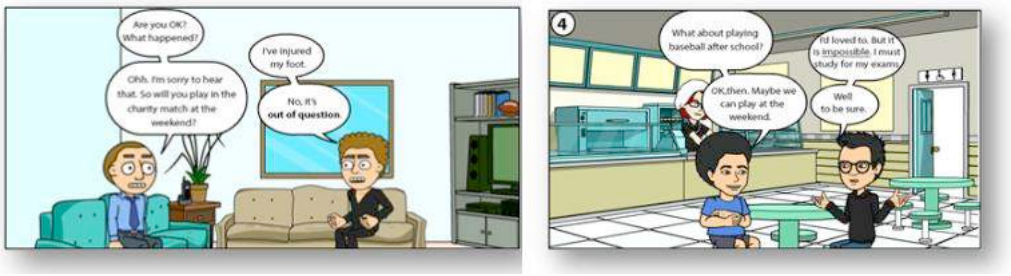


Figure 2: First and second delivered sample cartoons for idiom "out of question"

The cartoons were delivered in different ways to the students in experimental and control groups after being presented in the form of role-plays each week. For the experimental group, after role-play sessions each week, the first group of cartoons, which expressed the meaning of the idiom, were delivered to students between 5 p.m. and 9 p.m. on three consecutive days. Cartoons were passed over to students via WhatsApp groups that were created in order to encourage students to discuss the idioms and in order to create a social environment. In order to understand the experimental group's comprehension of idioms, the testing cartoons were sent to students via WhatsApp from Friday evening until Sunday evening and their answers were gathered individually.

For the control group, after role-play sessions each week, the posters of the cartoons were hung on the classroom wall where they can be easily viewed (see Figure 3) and they were kept there for three days until Friday. The cartoons that were prepared to elicit students' understanding of the idioms were hung on the wall while the previous cartoons were removed. In order to understand the control group's comprehension of idioms an "answer box" (see Figure 4) was prepared and the students were requested to write their answers and their names on notepads and insert them into the box.



Figure 3: Sample cartoons on classroom wall



Figure 4: Sample answer boxes in the classroom

Implementation phase - 5: At the end of four weeks, the achievement test was given to both groups as a post-test. T-test, two related sample test (Wilcoxon), and two independent sample test (Mann-Whitney U Test) were used. The significance level was taken as 0.05.

Findings and Discussion

In order to answer to the research question, pre-test and post-test scores of control and experimental groups were analyzed. Descriptive statistics of pre-test and post-test scores are presented in Table 7.

Table 7: Descriptive statistics for pre-test and post-test scores for control and experimental groups

		N	Mean	Std. Dev.	Min	Max
Experimental Group	Pre-Test	16	14,69	4,301	8	22
	Post-Test	16	18,12	9,157	9	40
Control Group	Pre-Test	18	16,61	6,298	7	31
	Post-Test	18	20,50	8,361	11	37

On post-test scores of both groups, normal distribution was tested in order to understand the kind of statistical analyses that will be carried out. Since we had only 34 elements, the Shapiro-Wilk test was used. As non-normal distribution was observed, a Wilcoxon Signed-Ranks Test was conducted to determine if there is a significant difference in students' academic achievement scores between pre-test and post-test for each group. The results are presented in Table 8.

Table 8: Results of the Wilcoxon Signed-Ranks Test on the Pre-test and Post-test Score Levels of Students in the Experimental Group and Control Group

		N	Rank Average	Sum of Ranks	Z	p
Experimental Group	Negative Rank	3	6,83	20,50	2,01	.044
	Positive Rank	11	7,68	84,50		
	Equal	2				
Control Group	Negative Rank	3	7,67	23,00	2,33	.020
	Positive Rank	13	8,69	113,00		
	Equal	2				

On the basis of the results obtained, it could be argued that the treatment implemented significantly increased English idiom academic achievement levels of the experimental and control group students. In order to find the answer to the research question and to understand whether the increase in achievement level differs according to control and experimental groups, Mann Whitney U test was computed. The results are presented in Table 9.

Table 9: Mann Whitney U Test Results to Compare the Groups' Post-test Academic Achievement Scores

	N	Rank Average	Sum of Ranks	U	Z	p
Experimental Group	16	15,31	245,00	109,00	-2,212	.226
Control Group	18	19,44	350,00			

As seen in Table 9, there is no difference in students' learning of idioms via IM vis-à-vis the other method of delivery, posters in classes. This case is another new example to show that using technology in education will not always bring the most effective learning outcomes. Regardless of integration of technology, an effective instruction will ultimately lead to learning. Technology is not a guarantee of success in education and it is not always a panacea for all of our educational problems.

There is a consensus that technology has not had a significant impact on language and literacy teaching and learning in grades K-12 in the USA (e.g., Cuban 2001; Blok et al. 2002; Cheung and Slavin 2012). Therefore, there is a need to investigate the reasons why the students in the control group performed better than their counterparts.

This study does not focus on students' mobile technology usage habits during their classes. The practice of using smart phones was performed only throughout the course of this study to support instruction. Hence, the implemented mobile learning could not be a natural part of school climate. Indeed, Niemi, Kynäslahti, & Vahtivuori-Hänninen (2013) identify in their research that successful integration of ICT requires strategic planning, as part of school culture. On the other hand, the cartoons which were transmitted to students in the form of posters in the classroom environment might have succeeded in becoming a natural part of the natural classroom climate. Therefore, while similar technology integration and implementation procedures are carried out in classes, it is important that this process should be as natural as possible. In addition, for the purpose of testing the effectiveness of teaching, allowing a time period during which the students can indigenize and naturalize the process might be helpful. As another factor; this result might lead us to consider the time spent by students as a variable. Amer (2010), in his study on a mobile application (Idiomobile), found that the more time students spent using the program, the higher they achieved on the tests.

As cartoons were continuously displayed in the classroom, the students were exposed to these materials consciously or unconsciously all the time. On the contrary, students who received the cartoons as IM did not have such exposure. We do not know whether the students examined the cartoons sent to their smart phones once or more than once or how much time they spent on these materials. Thus, the time students spend on a specific material delivered to them within the scope of mobile learning can be considered as an important aspect to further investigate.

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