Investigating the Effects of EFL Learners' Vocabulary Gain and Retention Levels on their Choice of Memory and Compensation Strategies in an E-learning Project

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Abstract

Numerous forms of Internet-based communication tools are available with the advent of the Internet and mobile technologies. The present study investigated the effects of learners' vocabulary gain and retention levels on their choice of memory and compensation strategies in an E-learning context. One hundred and eighty participants took part in this study. A series of 120 audio podcasts plus still pictures as well as animated pictures were presented to the participants in the Telegram channel. Fifteen strategy items on a five-point Likert scale by means of a voting robot system on the main page of the channel was presented to the participants after the treatment. Moreover, an immediate and a delayed vocabulary posttest in the form of multiple-choice were administered, separately. Four one-way ANOVAs were run in order to answer the questions. The results revealed that the level of vocabulary gain and retention significantly affected the choice of memory and compensation strategies. This study shows that academic podcasts can be used as reliable materials in new learning paradigm through a series of innovative designs as well as collaborations among the participants in the academic world.

Keywords: E-learning, compensation strategy, memory strategy, vocabulary gain and retention, vocabulary podcasting tasks

Introduction

The advent of the Internet has offered new ways of teaching and learning in order to expand collaboration. The Internet provides tools to form, distribute and share knowledge among educators. In addition, educational resources such as articles, books as well as images can be digitized and distributed via the Internet. The usefulness and flexibility of social software (computer-mediated communication) that enables groups of people to collaborate via the Internet have added dimensions to online learning (Beldarrain, 2006).

Podcasts motivate learners outside their classrooms and learners' positive attitude was indicated by several research studies (Ducate & Lomicka, 2009; Lord, 2008; O'Bryan & Hegelheimer, 2007).At the same time, more attention is needed for further research in order to encourage learners to promote their lexical knowledge. Moreover, there has been a broad sense of interest in E-learning regarding the constraints of time and place. The growing availability of technology has led many researchers to improve technologies as a means of improving learners' second language vocabulary skills. The application of a software called Telegram is one example of a technology which could be used to teach foreign language vocabulary at a distance. This technology provides an innovative and exciting learning paradigm. Telegram also has the potential to be embraced by societal entities such as communities. Furthermore, learners are different and employ a variety of strategies depending on their consideration that which strategies will help them learn the best (Cotterall, 2000). Therefore, language learning strategies learners use in order to improve their learning in distance education programs have attracted many scholars' attention.

Teachers and instructors attempt to make best use of target language input based on students' proficiency levels and interests. Recently, podcasts have been efficiently incorporated in teaching and learning languages as technological tools. Many studies on podcasting (Ashton-Hay & Brookes, 2011; Istanto, 2011; Li 2010; Rosell-Aguilar, 2007) have claimed that the incorporation of podcasts in language learning can improve learners' academic performances, motivation as well as learning.

Although many studies have been conducted on language learning strategies (Naseri & Motallebzadeh, 2016; Rao, 2006; Yang, 2007), few studies have been done on learners' autonomy as well as language learning strategies regarding using podcasts in distance vocabulary instruction especially in Iranian EFL context.

Literature Review

Distance Language Education

Moore (1993) believed that distance language education "is not simply a geographical separation of learners and teachers, but, more importantly, is a pedagogical concept" which describes "the universe of teacher-learner relationships that exist when learners and instructors are separated by space and/or by time" (p. 22). Some individuals choose distance learning because they must or wish to continue working while simultaneously accomplishing their educational goals. However, distance language education developed gradually with more sophisticated use of methods and media occurring over time. The most important development in distance language education has been the improvement of interactive tele-communicative media such as the use of computer audio, audio-graphic, and video networks.

Picciano (2002) suggested that learners can cooperate without feeling the sense of belonging to the group although interaction may demonstrate presence. Technology facilitates collaboration as well as interaction. Collaborative technologies such as blogs, wikis, podcasts as well other as social software affect the role of the instructor. Distance education instructors can provide podcasts in order to support learning and teaching. The

instructor is more of a "partner in learning" than a facilitator (Beldarrain, 2006). Shahid and Ali (2017a) believed that the role of the teacher is vital in using podcasts in teaching.

Podcasts

The word podcast is a combination of words 'iPod' and 'broadcast' (Istanto, 2011). However, Podcasts can be played not just by iPods but also by MP3 players and other types of media players on the computers and mobile devices.

Sze (2006) has defined podcasts as "audio (sometimes video) programs on the web which are usually at regular intervals" (p. 116). Episodes can be downloaded and listened to on an MP3 player, iPod or a computer. What makes podcasting special is the capacity they have for "subscription". This means that listeners can subscribe to their favorite podcasts through an RSS (Really Simple Syndication) feed. In addition, their computers as well as mobile phones will receive 'alerts" whenever new episodes have been posted. Moreover, when the program is opened, podcatcher software programs such as iTunes will download the new episodes automatically.

Podcasts assist distance education learners in accessing lessons, tasks and assignments in the form of audio or video. Evans (2008) believed that learners are more interested in learning in the form of podcasts than in the form of textbooks or traditionally conducted lectures for the reason that they are more familiar with these technologies especially podcasts. "Podcasting is one of the powerful, emergent technological media that has been used in education for many years" (Hasan & Hoon, 2013, p. 128), which proposes models of authentic materials as well as real language for learners (Li, 2010; Thorne & Payne, 2005). Therefore, it is strongly connected with the socio-cognitive view of language learning which focuses on real language use in an authentic context.

Vocabulary Knowledge

Vocabulary knowledge is fundamental to learners' comprehension and production in the four skills. As Schmitt and Meara (1997) have maintained, "there has been a growing realization that total language proficiency consists of much more than just grammatical competence" (p. 18). Hai-peng and Li-jing (2007) believed that "without adequate vocabulary knowledge, a second language learner's conversational fluency and reading comprehension will meet difficulties" (p.55). They suggest that vocabulary teaching in a multimedia environment is an impressive technique to develop learners' vocabulary as well as English level.

Read and Chapelle (2001) suggested that positive washback on the teaching and learning process should be generated through vocabulary assessment. According to Kim and Gilman (2008) and Schuetze and Weimer-Stuckmann (2010), a number of steps are included in learning process such as the diagnosis of new words, the comprehension of form as well as meaning, the stabilization of this knowledge in learners' memories and the stimulation of vocabulary production.

Learners use various means and strategies to incorporate meanings as well as forms of vocabulary items. However, as Blachowics and Fisher (2000) and Graves (2000) have remarked, both direct as well as indirect methods of instruction are needed for learners regarding learning vocabulary, it can be said that there is no single best method for vocabulary learning. Pearson, Heibert, and Kamil (2007) believed that "after a nearly

fifteen-year absence from center stage, vocabulary has returned to a prominent place in discussion of reading, and it is alive and well in reading instruction and reading research" (p.282). Moreover, Isazadeh, Makui and Ansarian (2016) were certain that technology has a positive influence on vocabulary learning. Mayer (2005) pinpointed that learning from words and pictures is more intense than from words alone. Moreover, Mayer and Moreno (2003) agreed that information that processing and storing information that was received through two channels were better than processing information that received from just one channel.

Language Learning Strategies

Chamot (2004) stated language learning strategies are "the conscious thoughts and actions that learners take in order to achieve a learning goal" (p. 14). Ehrman, Leaver and Oxford (2003) believed that there are three significant elements that make strategies useful. These three elements are "(a) the strategy relates well to the L2 task at hand, (b) the strategy fits the particular student's learning style preferences to one degree or another, and (c) the student employs the strategy effectively and links it with other relevant strategies" (p.315).

Language learning strategies, as Oxford and Crookall (1989) remarked, comprise memory, compensation, cognitive, meta-cognitive, communication, social and affective strategies. Memory strategies are related to methods in order to collect as well as retrieve new information. Compensation strategies are behaviors that help compensate for missing knowledge. Cognitive strategies are those skills that directly influence and transform the language. On the other hand, meta-cognitive strategies are those behaviors that help focus, organize, plan as well as assess one's learning. Generally, communication strategies are compensation strategies that are used in speaking. However, they can be used in listening, reading and writing as well. Social strategies are related to actions that involve other people in learning a language. Moreover, affective strategies are strategies that are related to methods in order to increase control over emotions, motivations as well as attitudes regarding learning a language.

Ashton-Hay and Brookes (2011) examined the language learning strategies students utilized when listening to podcasts as part of an action research study. The podcasts were uploaded to a web page on the Queensland University of Technology Blackboard Learning Management System. It was reported that language learning strategies simplified language learning. For instance, 'Khalid', a Saudi student used cognitive strategy to pay more attention to grammar, vocabulary, statements as well as arguments which were presented and improved his writing within several weeks.

Chun and Plass (1997) explained how second language reading research is focused on the cognitive processes which are involved in reading and suggest that integrating verbal and visual information, especially through the use of multimedia, can be effective. They emphasized that vocabulary associated with various types of multimedia improved recall and retention and learners acquire words better when they are coded dually in two modes. Therefore, they proposed that studies should focus on the effectiveness of specific sorts of multimedia for specific types of learners, for specific cognitive processes as well as for specific learning tasks. Having conducted a study, Plass, Chun, Mayer and Leutner (1998) found that learners remembered word translations much better when they received both visual and verbal annotations. Moreover, students realized the story better when they

could choose their preferred mode of annotation. Al-Seghayer (2001) investigated the effect of image modalities (dynamic video and still picture) in improving vocabulary acquisition of 30 ESL students through a hypermedia-learning program. Printed text definition alone, printed text definition associated with still pictures, and printed text definition associated with video clips were the three situations which were examined. Based on the results, the video clips were more effective in teaching vocabulary.

Rao (2006) examined 225 Chinese students' strategy use at three levels including overall strategy use, the use of strategy categories and individual categories related to cultural and educational settings. It was reported that the students used affective strategies the most and distinctive features such as Chinese educational patterns, cultural beliefs and standards as well as EFL setting affected participants' application of language learning strategies. Lee and Chan (2007) investigated the potential of utilizing complementary audio podcasts to decrease students' anxiety. The results showed that students' anxiety and feelings of isolation were reduced and their sense of inclusivity were increased. In addition, students believed that podcasts were effective in improving their understanding of the subject and provided backup of what they had learnt. Although Evans (2008) believed that podcasting has considerable potential as an advanced learning tool, Fose and Mehl (2007) found that "students may possibly feel overwhelmed by the addition of more material in a course where podcast listening becomes a requirement" (p. 280).

Examining meta-cognitive beliefs and strategies of learners towards learning Chinese as a foreign language, Wang, Spencer and Xing (2009) conducted a study including 45 learners. It was found that meta-cognitive beliefs and strategies affected learners' improvement. Moreover, those learners who tended to express autonomy used meta-cognitive strategies in order to be more successful. Putman and Kingsley (2009) examined the effect of podcasts of science-specific vocabulary on fifth-grade students' vocabulary development. It has been reported that learners were more motivated to learn science vocabulary and podcasts as learning tools greatly supported students in order to develop their vocabulary instruction. However, Fernandez, Simo and Sallan (2009) conducted a study in order to consider the usefulness of podcasting in higher education. The results revealed that although podcasting was not a substitute for traditional resources in a course, they were complementary. Moreover, podcasts increased students' motivation by improving the contact between teachers and students. Furthermore, various ranges of student skills as well as learning methods were reported regarding using podcasts.

Ducate and Lomicka (2009) completed a study in order to find out whether podcasting could improve learners' pronunciation skills. Twenty-two students in intermediate German as well as French courses created five scripted pronunciation recordings and three spontaneous podcasts. The results indicated that podcast was perceived positively by learners and they enjoyed using podcasts throughout the semester. Martin and Beckmann (2011) examined the effect of using podcasting in university students' learning of Spanish. The results showed that students displayed a significant positive attitude towards the project and their listening improved. Zarei and Elekaei (2012) conducted a study in order to investigate the impacts of motivation and attitude on learner autonomy and language learning strategies of Iranian EFL learners. The results revealed that there were significant relationships between motivation and learner autonomy and positive relationships between attitude and learner autonomy. Moreover,

the level of motivation and attitude considerably affected students' choice of memory, compensation and affective strategies.

Elekaei, Faramarzi and Koosha (2015) examined the effect of various types of glosses on reading comprehension, vocabulary gain as well as retention of 140 Iranian EFL learners. The results indicated that interlinear gloss group was the best group in comprehending the text. Moreover, the group that received the interlinear glosses had the best results in vocabulary gains as well as retention.

Although many researchers have examined E-learning, podcasting, vocabulary knowledge, and language learning strategies (Bolliger, Supanakorn, & Boggs, 2010; Evans, 2008; Faramarzi, Elekaei and Heidari Tabrizi, 2016; Mayer & Moreno, 2002; Wang et al., 2009), few have conducted research on the effects of vocabulary gain and retention on the choice of Iranian EFL learners' language learning strategies. Therefore, the purpose of the present study was to focus on the effects of learners' vocabulary gain and retention levels dependent on their choice of memory and compensation strategies in a process-oriented approach. The present study was an attempt to answer the following questions:

1. Does Iranian EFL learners' vocabulary gain level significantly affect their choice of memory and compensation strategies when utilizing audio podcasts plus animated pictures in an E-learning context?
2. Does Iranian EFL learners' vocabulary retention level significantly affect their choice of memory and compensation strategies when utilizing audio podcasts plus animated pictures in an E-learning context?

Methodology

Participants

The participants were selected from Iranian EFL learners (both male and female) at Qazvin University of Medical sciences and Andisheh Nou Foreign Language Institute in Qazvin, Iran. A random purposive sampling was considered for the present study since the research concentrated on two groups of learners of intermediate-level vocabulary proficiency and tested their improvement through the treatment period. First, 280 learners were invited to the take part in the present study and take the proficiency test. An Oxford Placement Test was administered in order to homogenize the learners. Learners who achieved more than one standard deviation away from (above or below) the mean were excluded from the subsequent analyses and 180 learners were selected as the intermediate level learners. The learners' ages were from 17 to 30. Their first language was Persian and they studied English as a foreign language.

Materials

Podcasting Tasks

A series of 120 audio podcasts plus still pictures as well as audio podcasts plus animated pictures were presented to the participants. The vocabulary were selected from *504 Absolutely Essential Words* that each EFL learner must learn. Twelve new words were presented to the participants during six days of the week and one test including multiple-choice tests and filling the blanks assignments were given to the participants on the seventh days of the weeks. The participants were asked to complete the exercises and send them back. The incorporation of these tests supported learners in an online environment and made the current study distinct from previous studies.

Telegram Application

The network-based technology does offer advantages over the traditional classrooms in terms of ease and range of access to materials and interlocutors. However, this technology is not without difficulty. For instance, the teacher, who is the most reliable source of input and feedback and who can best make decisions, is removed in most network-based instruction. The question arises considering which technology options are appropriate in distance language learning. The question is how network-based technology can be effective while compensating for the problems created by the absence of real interaction. Telegram is the world's fastest messaging application. It is free and secure. It delivers messages faster than any other application. Moreover, Telegram has no limits on the data size of the media and chats. It keeps messages safe from hacker attacks. Telegram lets people access their messages from multiple devices. It also provides an innovative and exciting learning paradigm. Telegram has the potential to be embraced not only by consumers and academic users, but also societal entities such as communities. It allows people to integrate distinct sources of information into comprehensible schemas, capture and recall items or events that they would otherwise forget, enhance conversations by providing a way to exchange and share relevant information, and promote performing experiments and solving problems in the everyday world. Therefore, Telegram was implemented in the present study since the e-instructor was present and supported the participants by designing tests.

Instruments

In order to answer the research questions, the following instruments were used:
1. A proficiency test
2. A language learning strategy questionnaire
3. An immediate vocabulary posttest
4. A delayed vocabulary posttest

First, in order to homogenize the participants, a general proficiency test (Oxford Placement Test) was administered at the outset of the study. Then, a modified version of Oxford's SILL (Strategy Inventory for Language Learning) with 15strategy items on a 5-point Likert scale by means of a voting robot system on the main page of the channel was presented to the participants. The Cronbach's Alpha of the questionnaire was$\alpha = 0.80$.The participants answered the questions by tabs (pressing the tab keys). The questionnaire was divided into two categories:

1- Memory strategies that had nine items.
2- Compensation strategies that included six items.

An immediate vocabulary multi-choice posttest was administered two weeks after the treatment in order to measure the participants' vocabulary gain via an E-learning program. Furthermore, a delayed vocabulary multi-choice posttest and equivalent to the immediate vocabulary posttest was given to the participants four weeks after the treatment to investigate the test-takers' vocabulary retention in an online environment.

Data Collection Procedure

The following procedures were followed to answer the research questions in the current study. First, a general proficiency test was administered in order to make sure that there were no significant differences among the participants in terms of their proficiency level. The participants' scores on the general proficiency test were summarized. Moreover, the mean and the standard deviation were computed. Those who attained more than one standard deviation above or below the mean were excluded from others in order to take part in the treatment. In the second stage, a language learning strategies questionnaire was sent to all participants in the telegram channel via @vote robot systems. The test-takers answered the questions by touching the tabs. Third, an immediate and delayed multi-choice vocabulary posttest were administered in weeks two and four after the treatment, respectively, in order to measure the participants' vocabulary gain and retention in an E-learning project. Finally, the obtained data were summarized, evaluated and prepared for further statistical analysis.

Data Analysis Procedure

Four one-way ANOVAs were run in order to answer the Questions one and two which consider the effects of vocabulary gain and retention level of Iranian EFL learners on their choice of memory and compensation strategies applying podcasts. All statistical analyses were calculated by SPSS software, version 20.

Results

Results of the Language Learning Strategies Questionnaire and Vocabulary Gain

The first research question attempted to ascertain whether Iranian EFL learners' vocabulary gain level significantly affects their choice of memory and compensation strategies applying audio podcasts plus animated in an E-learning context. To this end, participants were divided into three equal groups of high, medium, and low vocabulary gain levels according to their scores on the vocabulary gain exam. To examine the effects of vocabulary gain level on the participants' choice of memory and compensation strategies, a one-way ANOVA was run two times.

The first one-way ANOVA procedure was run to investigate the effects of Iranian EFL learners' vocabulary gain level on their choice of memory strategies. Table 1 shows the results of descriptive and test statistics. Based on Table 1, the participants who had high vocabulary gain level applying audio podcasts plus animated pictures had the highest mean ($M = 30.30$), followed by the medium vocabulary gain level ($M = 27.37$), and the low vocabulary gain level ($M = 25.60$). In addition, the F-value is statistically significant ($p. = .000$). Therefore, the differences among the three vocabulary gain levels applying audio podcasts plus animated pictures in the choice of memory strategy are significant. Moreover, the assumption of homogeneity was met.

Table 1
Descriptive and Test Statistics for Vocabulary Gain Levels and Memory Strategy

	Vocabulary Retention Level	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
Memory					Lower Bound	Upper Bound
Strategy	High	30	30.30	4.886	28.48	32.12
	Mid	30	27.67	4.302	26.06	29.27
	Low	30	24.63	3.439	23.35	25.92
	F = 13.351			Sig = .000	ω^2= .22	

As Table 1 shows, 22 percent of the total variance in the dependent variable, memory strategy, is accounted for by the independent variable, vocabulary gain level. This means that the remaining 78 percent of the variance in the dependent variable is left unaccounted for.

To locate the differences among the three levels, post hoc Tukey test procedure was used, yielding the following results:

Table 2
Post Hoc Multiple Comparison of Vocabulary Gain Levels in the Choice of Memory Strategy
Tukey HSD

(I) Vocabulary Gain Levels	(J) Vocabulary Gain Levels	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
High	Mid	2.633[*]	.048	.02	5.25
High	Low	5.667[*]	.000	3.05	8.28
Mid	Low	3.033[*]	.019	.42	5.65

*. The mean difference is significant at the 0.05 level.

Table 2 illustrates that all the three means differences are statistically significant. This means that the higher the level of vocabulary gain, the more memory strategies the learners utilized. Figure 1shows the differences among the three vocabulary gain levels in the use of memory strategy more clearly.
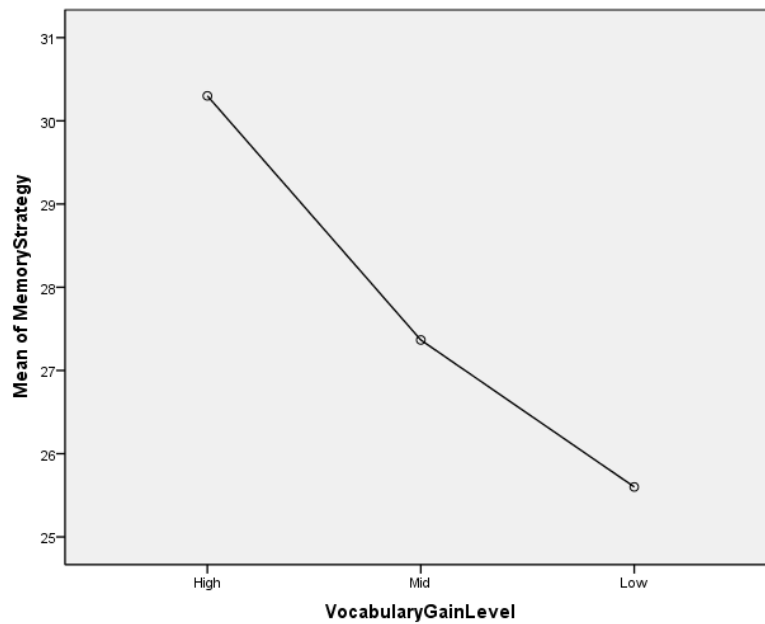
Figure 1. Vocabulary gain levels and the choice of memory strategy.

In order to perceive the effects of Iranian EFL learners' vocabulary gain level on their choice of compensation strategy, the second ANOVA was used. Table 3 displays the results of the descriptive and test statistics. Based on Table 3, the participants who had high vocabulary gain level applying audio podcasts plus animated pictures had the highest mean ($M = 21.10$), followed by the medium vocabulary gain level ($M = 18.97$), and the low vocabulary gain level ($M = 16.97$). In addition, the F-value is statistically significant ($p. = .000$). Therefore, the differences among the three vocabulary gain levels when using audio podcasts plus animated pictures in relation to participants' choice of compensation strategy are significant. Moreover, the assumption of homogeneity was met.

Table 3
Descriptive and Test Statistics for Vocabulary Gain Levels and Compensation Strategy

	Vocabulary Retention Level	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Compensation						
Strategy	High	30	21.10	2.833	20.04	22.16
	Mid	30	18.97	2.822	17.91	20.02
	Low	30	16.97	2.859	15.90	18.03
	F = 15.916			Sig = .000	$\omega^2 = .10$	

As Table 3 shows, 10 percent of the total variance in the dependent variable, compensation strategy, is accounted for by the independent variable, vocabulary gain level. This means that the remaining 90 percent of the variance in the dependent variable is left unaccounted for. In order to locate the differences among the three levels, post hoc Tukey test procedure was used. The results are shown in Table 4.

Table 4
Post Hoc Multiple Comparison of Vocabulary Gain Levels in the Choice of
Compensation Strategy
Tukey HSD

(I) Vocabulary Gain Levels	(J) Vocabulary Gain Levels	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
High	Mid	2.133*	.013	.39	3.88
High	Low	4.133*	.000	2.39	5.88
Mid	Low	2.000*	.021	.25	3.75

*. The mean difference is significant at the 0.05 level.

Table 4 illustrates that all the three means differences are statistically significant. This means that the higher the level of vocabulary gain, the more compensation strategy the learners use. Figure 2 shows the differences among the three vocabulary gain levels in the use of compensation strategy more clearly.
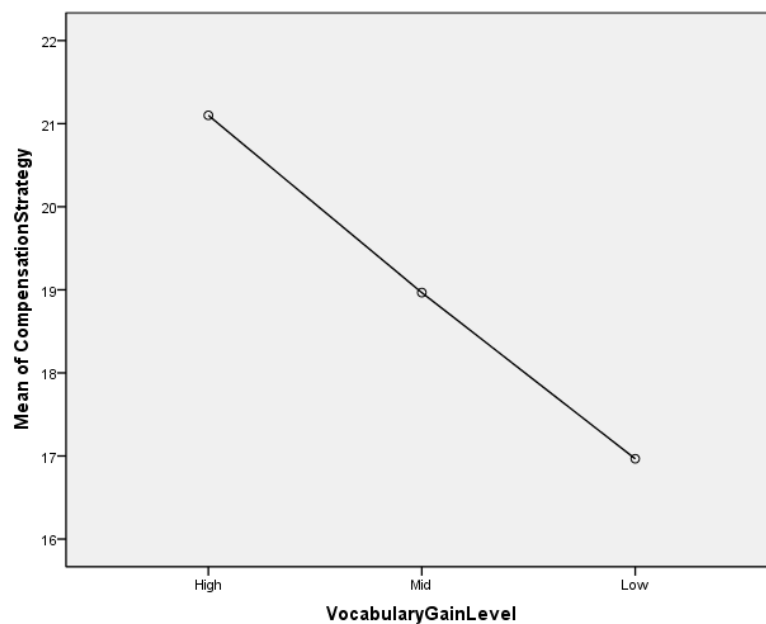

Figure 2. Vocabulary gain levels and the choice of compensation strategy.

Results of the Language Learning Strategies Questionnaire and Vocabulary Retention

The second research question considered whether Iranian EFL learners' vocabulary retention level significantly affects their choice of memory and compensation strategies when using audio podcasts plus animated pictures in an E-learning context. To this end, participants were divided into three equal groups of high, medium, and low levels of vocabulary retention according to their scores on the vocabulary retention exam. To examine the effects of vocabulary retention level on the participants' choice of memory and compensation strategies, a one-way ANOVA was run two times.

The first one-way ANOVA procedure was run to consider the effects of Iranian EFL learners' vocabulary retention level on their choice of memory strategies. Table 5 shows the results of the descriptive and test statistics. Based on Table 5, the participants who had a high vocabulary retention level when using audio podcasts plus animated pictures had the highest mean ($M = 29.53$), followed by the medium vocabulary retention level ($M = 26.77$), and the low vocabulary retention level ($M = 23.47$). In addition, the F-value is statistically significant ($p. = .000$). Therefore, the differences among the three vocabulary retention levels when using audio podcasts plus animated pictures in the participants' choice of memory strategy are significant. Moreover, the assumption of homogeneity was met.

Table 5
Descriptive and Test Statistics for Vocabulary Retention Levels and Memory Strategy

| | Vocabulary Retention Level | N | Mean | Std. Deviation | 95% Confidence Interval for Mean | |
					Lower Bound	Upper Bound
Memory						
Strategy	High	30	29.53	5.008	27.66	31.40
	Mid	30	26.74	4.337	25.15	28.39
	Low	30	23.47	3.919	22.00	24.93
	F = 14.012			Sig = .000	ω²= .24	

As Table 5 shows, 24 percent of the total variance in the dependent variable, memory strategy, is accounted for by the independent variable, vocabulary retention level. This means that the remaining 76 percent of the variance in the dependent variable is left unaccounted for.

To locate the differences among the three levels, post hoc Tukey test procedure was used, yielding the following results:

Table 6
Post Hoc Multiple Comparison of Vocabulary Retention Levels in the Choice of Memory Strategy
Tukey HSD

| (I) Vocabulary Retention Levels | (J) Vocabulary Retention Levels | Mean Difference (I-J) | Sig. | 95% Confidence Interval | |
				Lower Bound	Upper Bound
High	Mid	2.767[*]	.047	.03	5.50
High	Low	6.067[*]	.000	3.33	8.80
Mid	Low	3.300[*]	.014	.56	6.04

*. The mean difference is significant at the 0.05 level.

Table 6 illustrates that all the three means differences are statistically significant. This means that the higher the level of vocabulary retention, the more memory strategies

the learners used. Figure 3 shows the differences among the three vocabulary retention levels in the use of memory strategy more clearly.
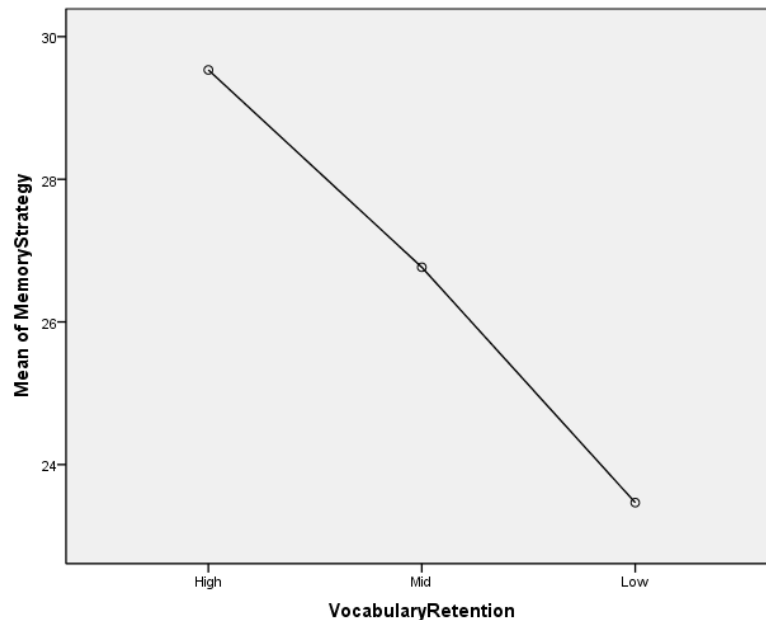

Figure 3. Vocabulary retention levels and the choice of memory strategy.

The second ANOVA was used to examine the effects of Iranian EFL learners' vocabulary retention level on their choice of compensation strategy. Table 7 displays the results of descriptive and test statistics. Based on Table 7, the participants who had high vocabulary retention levels when using audio podcasts plus animated pictures had the highest mean ($M = 21.60$), followed by the medium vocabulary retention level ($M = 19.30$), and the low vocabulary retention level ($M = 17.33$). In addition, the F-value is statistically significant ($p. = .000$). Therefore, the differences among the three vocabulary retention levels when using audio podcasts plus animated pictures in the choice of compensation strategy are significant. Moreover, the assumption of homogeneity was met.

Table 7
Descriptive and Test Statistics for Vocabulary Retention Levels and Compensation Strategy

	Vocabulary Retention Level	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Compensation						
Strategy	High	30	21.60	3.460	20.31	22.89
	Mid	30	19.30	2.855	18.23	20.37
	Low	30	17.33	2.746	16.31	18.36
	F = 14.838			Sig = .000	$\omega^2 = .11$	

As Table 7 shows, 11 percent of the total variance in the dependent variable, compensation strategy, is accounted for by the independent variable, vocabulary retention level. This means that the remaining 89 percent of the variance in the dependent variable is left unaccounted for. In order to locate the differences among the three levels, post hoc Tukey test procedure was used. The results are shown in Table 8.

Table 8
Post Hoc Multiple Comparison of Vocabulary Retention Levels in the Choice of Compensation Strategy
Tukey HSD

				95% Confidence Interval	
(I) Vocabulary Retention Levels	(J) Vocabulary Retention Levels	Mean Difference (I-J)	Sig.	Lower Bound	Upper Bound
High	Mid	2.300*	.012	.43	4.17
High	Low	4.267*	.000	2.40	6.14
Mid	Low	15.967*	.037	.10	3.84

*. The mean difference is significant at the 0.05 level.

Table 8 illustrates that all the three means differences are statistically significant. This means that the higher the level of vocabulary retention, the more compensation strategies the learners use. Figure 4 shows the differences among the three vocabulary retention levels in the use of compensation strategy more clearly.
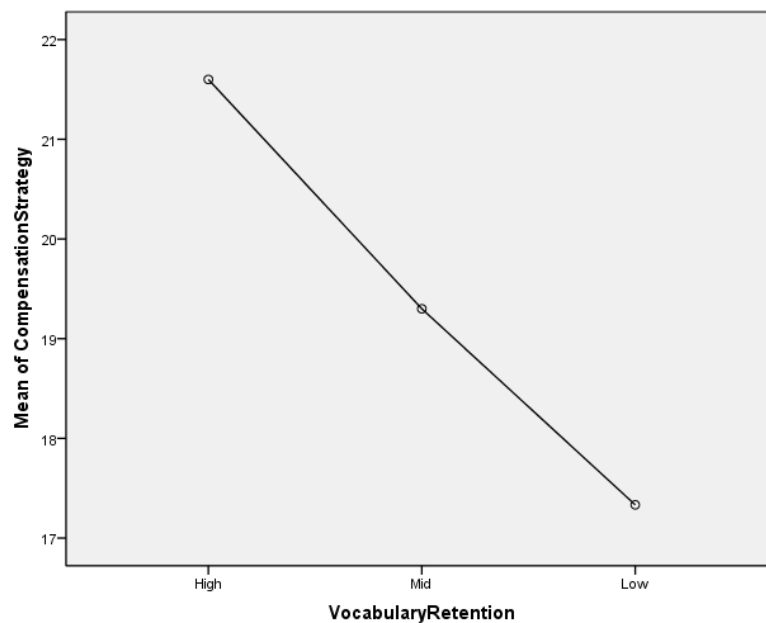

Figure 4. Vocabulary retention levels and the choice of compensation strategy.

Discussion

The present study attempted to investigate the effects of Iranian EFL learners' vocabulary gain and retention level on their choice of memory and compensation strategies in an E-learning context.

The findings of the present study were that the level of vocabulary gain and retention significantly affected the choice of memory and compensation strategies. The results of this study lead support to those of Ashton-Hay and Brookes (2011) who reported that language learning strategies simplified language learning. In addition, the findings of the present study corroborate those of Zarei and Elekaei (2012). They found that the level of motivation and attitude considerably affected students' choice of memory and compensation strategies.

However, these findings are in contrast to those of Rao (2006), who reported that students used affective strategies the most. The results of this study are different from Wang et al.'s (2009) findings. They found that meta-cognitive strategies affected learners' improvement. Moreover, those learners who tended to express autonomy used meta-cognitive strategies in order to be more successful. The results of the present study contradict those of Zarei and Elekaei (2012), who reported that the level of motivation and attitude significantly affected students' choice of affective strategies.

A number of factors could possibly account for these findings. One of the reasons may be that vocabulary in form of audio podcasts plus still as well as animated pictures were beneficial because podcasts provided time-saving and easy-to-use technology for learners. Moreover, the present study showed that learners could receive the information easily in Telegram instead of seeking them. Students were faced new learning paradigm, they used their talents and abilities, their learning motivation and attitude improved and they promoted their vocabulary knowledge.

The participants' level of proficiency can be addressed as the other factor that may have brought about such findings. All the participants were at an intermediate proficiency level and they were familiar with the use of memory and compensation strategies. Therefore, the effects of vocabulary gain and retention level in the choice of these strategies were significant.

The present study examined the effects of vocabulary gain and retention level of Iranian EFL learners on their choice of memory and compensation strategies regarding audio plus animated pictures. As omega squared showed, just 22 percent of memory strategy and 10 percent of compensation strategy were accounted for by vocabulary gain level. Moreover, 24 percent of memory strategy and 11 percent of compensation strategy were accounted for by vocabulary retention. Therefore, further research can be conducted on the effect of other variables.

Conclusion

With the new paradigm shift of education in the 21st century, the findings of the present study can be beneficial to second/foreign language teaching. The results of this study showed how podcasting can play an important role not only for learners but also for teachers and instructors in order to support learners as well as their own teaching process. Podcasts are interesting for learners especially in learning vocabulary that is significant in acquiring a second or foreign language and meeting learners' academic needs. Podcasts are not only easy to store and distribute, but also easy to share among the other academic

parties. The results showed that podcasts were useful in long-term retention of words. As Shahid and Ali (2017b) believed, the combination of excitement, fun as well as enthusiasm in animated vocabulary podcasts helped learners understand the words without difficulty and remember them for a long time.

Moreover, campus educational systems take more time since learners go to school as well as universities for several hours on a daily basis and several days per week. Distance education was designed to allow leaners to access the course materials through their mobile devices and save their time. Finding new ways of improving the process of learning a satisfactory amount of vocabulary knowledge plays a vital role in EFL contexts. Besides, it is essential for teachers, instructors, researchers as well as practitioners to find innovative ways in order to assist learners to develop their language learning accomplishment.

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