

## EVALUATING LEARNERS' VOCABULARY GAIN AND RETENTION IN AN E-LEARNING CONTEXT USING VOCABULARY PODCASTING TASKS: A CASE STUDY

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### ABSTRACT

The advent of new technologies and rapid growth of online distance education have fostered interaction as well as collaboration among learners and created a true learning community. Moreover, forming synchronous and asynchronous learning networks utilizing the Internet have been simplified by new technologies. Since the importance of technology is undeniable, teachers and instructors must use it to create new opportunities and experiences for educators. The present study investigates the use of audio podcast plus still pictures and audio podcasts plus animated pictures on learners' vocabulary gain and retention in a process-oriented approach. The results indicate that the participants who received audio plus animated pictures had higher levels of vocabulary gain as well as retention. The present study showed that podcasting is an influential tool to course resources and increases the contact between students and teachers.

**Keywords:** online distance education, vocabulary podcasting tasks, vocabulary gain, vocabulary retention

### INTRODUCTION

Nowadays, living is characterized by technologies related to individualized as well as interactive distance education programs. Moreover, numerous forms of Internet-based communication tools are available with the advent of the Internet and mobile technologies. New technologies give rise to academic developments and adopting them is required for suitable educational use. Instructors are becoming encouraged to prepare their learning resources and activities for flexible as well as collaborative environments. The advent of the Internet has offered new ways of education for educators in order to expand collaboration. The Internet provides tools to form, distribute and share knowledge among educators. Furthermore, 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 that enables groups of people to collaborate via the Internet have added dimensions to online learning (Beldarrain, 2006).

Podcasting is one of the technologies that has converted traditional audio broadcast into portable, digital media (Putman & Kingsley, 2009). Podcasts motivate learners outside the classrooms and learners' positive attitude was indicated by several research (Ducate & Lomicka, 2009; Lord, 2008; O'Bryan & Hegelheimer, 2007). At the same time, vocabulary learning is a crucial feature of learning a second or foreign language. It is conspicuous that learners' lack of lexical knowledge impedes language learning. Hence, 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 employ technologies as means of improving learners' second language vocabulary skills. Application of Telegram would be exemplified as a technology for distance teaching of foreign vocabularies. Telegram provides an advanced and exciting learning paradigm. It also has the potential to be embraced by societal entities such as communities.

A significant consideration in an E-learning or a distance education context is "how to make principled choices among technology options" (Doughty & Long, 2003, p. 67). Distance language programs must be carefully planned in relation to understanding learner needs in order to be effective. Moreover, Mayer and Moreno (2002) suggest, "it is better to present an explanation in words and pictures than solely in words" (p. 107). Therefore, the purpose of the present study was to mainly focus on the utilization of audio podcast plus still pictures and audio podcasts plus animated pictures on learners' vocabulary gain and retention in a process-oriented approach.

The nature of the problem confronted by EFL learners is that they do not have enough time to be present in classes and they were taught through distance language education. Therefore, Telegram was utilized as a technology for distance teaching of foreign vocabularies in the present study. This study also concentrated on tasks in order to support learners to make sophisticated choices regarding distance language learning.

Moreover, 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. However, "we have a rich history of research on vocabulary, but a limited one when it comes to podcasting" (Putman & Kingsley, 2009, p. 105.) Therefore, the present study investigated the effects of audio podcast plus still pictures and audio podcasts plus animated pictures on Iranian EFL learners' vocabulary gain and retention.

## LITERATURE REVIEW

Learning based on technology has affected learning theories such as anchored instruction (Bransford, Sherwood, Hosselbring, Kinzer & Williams, 1990). This learning theory identifies that technology influences social interaction as well as learning processes. Anchored instruction tries to build problem-solving skills by anchoring instruction around a problem or situation. Learners solve the problems by role-playing as well as interacting with both the content and their peers. Online distance education can incorporate technologies such as wikis, blogs, as well as podcasts in order to attain the type of interaction and communication that would support learning theories like anchored instruction (Beldarrain, 2006).

Different researchers (Istanto, 2011; Putman & Kingsley, 2009) accept that podcasts are helpful materials to the courses in order to improve learners' proficiency. Alternatively, they remediate learners who require supplementary teaching or access to what has been discussed in the classroom. Therefore, podcasts have been selected to highlight the present study. Moreover, tests have been selected as assignments for the learners. According to Ellis (2003) and Larsen-Freeman and Anderson (2015), tasks help learners improve their motivation. The tasks of the present study are meaningful, reasonable, logical and challenging. They are meaningful, reasonable and logical since there is a target and the tasks are to the point. In addition, they are challenging since they include  $i+1$  hypothesis (Krashen, 1981).

## E-Learning/Distance Language Education

As Moore (1993) believes, the distinctive teaching and learning strategies as well as techniques used by teachers and learners can be identified as unique characteristics of educational practices since the separation of teachers and learners is considerably significant. He proposes six processes that must be organized in each

E-learning or distance education program. The processes include “presentation; support of the learner’s motivation; stimulate analysis and criticism; give advice and counsel; arrange practice, application, testing and evaluation; and arrange for student creation of knowledge” (pp. 28-30).

It is important that learners who participate in distance education feel like they belong to it. Ubon and Kimble (2004) believe that social presence is a requirement to create online learning communities. However, Picciano (2002) suggests 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. Distance education instructors can provide podcasts in order to support learning and teaching.

Collaborative technologies such as blogs, wikis, podcasts as well as social software affect the role of instructor. The instructor is more of a “partner in learning” than a facilitator (Beldarrain, 2006). Moreover, it is the responsibility of the instructor to support collaboration and participate in the exchange of knowledge as well as reflection in distance education. Shahid and Ali (2017) believe that the role of the teacher is vital in using podcasts in teaching. Moreover, it is the responsibility of the instructor to support collaboration and participate in the exchange of knowledge as well as reflection in distance education.

## 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) defines 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”. It 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. There are two types of podcast: “radio podcasts” and “independent podcasts” (p. 117). Radio podcasts are available radio programs which are converted into podcast. Independent podcasts are those podcasts which are produced by individuals as well as administrators. According to Liu and McCombs (2008), there are three types of podcasts: audio-podcasts that include audio only, enhanced podcasts that are a combination of audio as well as digital still images, and video podcasts or vodcasts that include audio as well as video.

Donnelly and Berge (2006) summarize four unique attributes of podcasts. First, podcasts include the voices of the designers and they make information more personal than written words. Second, they can offer learners control over their learning by presenting options such as listening to podcasts, reading a book or both. Third, podcasts permit learners to listen to the portable files while they are engaged in other tasks. Fourth, they permit learners to time-shift instructional education as well as information. Learners and educators can download the files and listen to them whenever and wherever they want.

Numerous studies on podcasts (Ashton-Hay & Brookes, 2011; Chan, Chi, Chin & Lin, 2011; Ducate & Lumika, 2009; Li, 2010; O’Bryan & Hegelheimer, 2007; Putman & Kingsley, 2009) have confirmed that podcasts significantly support language learning not just in listening and speaking but also in other language skills and areas such as vocabulary, grammar and pronunciation. While Ducate and Lomicka (2009) pinpointed that learners’ pronunciation can be developed by podcasting, Ashton-Hay and Brookes (2011) believe that podcasting can simplify self-paced learning by providing platform for remediation.

Lee and Chan (2007) investigated the potential of utilizing complementary audio podcasts to decrease students’ anxiety. Results showed that students’ anxiety and feelings of isolation were reduced and their senses of inclusivity were increased. In addition, students believed that podcasts were effective in improving their understanding of the subject and providing backup of what they had learnt.

Evans (2008) examined the effectiveness of mobile learning in the form of podcasting to teach undergraduate students in Higher Education. The results revealed that students agree that podcasts are more influential than their textbooks and notes. Moreover, they maintained that they were more interested in learning in the form of podcasts than a traditional textbook or lecture.

Since Mobile Assisted Language Learning (MALL) technology becomes common in education, Abdous, Camarena, and Facer (2009) compared the academic benefits of integrating podcast into the curriculum contrary to using them as a supplemental/review tool. The results revealed that learners were more interested in using technology. In addition, they had academic benefits. Moreover, it has been reported that podcast technology can result in considerable benefits especially when it is used more than merely as a tool for reviewing.

Podcasts have potential advantages for students in distance education. Many Instructors (Evans, 2008; Fose & Mehl, 2007) have used podcasts in courses by recording lectures or offering complementary materials to learners for access outside the classroom. Although Evans (2008) believes 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).

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 on a course, they complemented the course. 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.

Contrary to Evans (2008), Lazzari (2009) reported that podcasting does not have positive effects on learners’ grades and using podcasts for supporting learning was pedagogically neutral. Moreover, Lonn and Teasley (2009) considered the perceptions, attitudes as well as use of podcasting reported by instructors and students at a large American Midwestern university. The findings showed that students used podcasts for reviewing concepts as well as issues explained in lectures. Moreover, students were less sure about whether podcasts could improve instructors’ teaching although both instructors and students believe that podcasts helped students learn.

Putman and Kingsley (2009) examined the effect of podcasts of science-specific vocabularies 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.

Sanjana (2014) examined the effect of podcasts in developing listening skills of students of the higher secondary level in Bangladeshi context. The findings showed that the students were interested in using podcasts in both classroom and outside of it in order to learn English better. Moreover, they enjoyed listening to podcasts in their mobile phones even in their leisure time that showed they were autonomous in learning English.

Shahid and Ali (2017) considered the effect of video podcasts on listening comprehension of Saudin EFL learners. The results revealed that video podcasts significantly helped learners achieve better results in listening comprehension. Shahid and Ali (2017) believe that the role of the teacher is vital in using podcasts in teaching.

## **Vocabulary Knowledge**

Learning a second language and having sufficient levels of proficiency in the four skills (listening, speaking, reading and writing) are essential for communication with people who do not share a first language. Moreover, vocabulary knowledge is fundamental to learners’ comprehension and production in the four skills. As Schmitt and Meara (1997) maintain, “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) believe that “without adequate vocabulary knowledge, a second language learner’s conversational fluency and reading comprehension will meet difficulties” (p.55). They suggest that multimedia environment and vocabulary teaching are impressive techniques to develop learners’ vocabulary as well as English level.

Recently, a number of studies have proposed the advantages of language learning using multimedia components such as visual text, audio files, graphics and videos as well as learners’ lexical knowledge, vocabulary gain and retention (Al-Seghayer, 2001; Chun & Plass, 1997; Ehsani & Knodt, 1998; Kim & Gilman, 2008; Mayer & Moreno, 2002).

Chun and Plass (1997) explain 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 using multimedia can be effective. They emphasize that vocabularies associated with various types of multimedia improves recall and retention and learners learn words better when words are coded dually in two modes. Therefore, they propose 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. Moreover, Yeh and Wang (2003) examined the use of three types of vocabulary annotations on vocabulary learning including text annotation only, text plus picture, and text plus picture and sound. Moreover, they wanted to consider whether learners with specific perceptual learning styles (auditory, visual-verbal, visual-nonverbal, and mixed preferences) benefited more from a particular type of vocabulary annotations. Text plus picture was reported to be the most influential type of vocabulary annotation and perceptual learning styles did not have considerable impact on the usefulness of vocabulary annotations.

In addition, Plass, Chun, Mayer and Leutner (2003) conducted a study regarding annotations. Learners received no annotations, verbal annotations, visual annotations or both verbal and visual annotations. Results showed that recall of word translations was worse for learners with low-verbal and low-spatial abilities when learners received visual annotations. However, there were no significant differences among students when they received verbal annotations. Moreover, learners who received visual annotations could not comprehend the text. Furthermore, Amemiya, Hasegawa, Kaneko, Miyakoda and Tsukahara (2007) conducted a study in order to consider the effect of iPod in language learning. The learners first selected the foreign words that they wanted to learn by the use of their computers. Then, they downloaded the corresponding contents into their iPods. The contents included the pronunciation of each word with a series of either still or moving images related to the foreign words. Moreover, they compared their study with paper and pencil method. The results revealed that their method was 1.5 times better than the paper and pencil method in memorization of words.

Kim and Gilman (2008) examined learners' English vocabulary learning through the application of multimedia components in a web-based self-instruction program. The results indicated that learners' vocabulary increased when they received visual text and added graphics or visual text, added spoken text, and added graphics instruction. They believe that learning English vocabulary can be improved by offering graphics that illustrate what the vocabulary means. Rimrott (2010) also considered the usefulness of annotations for vocabulary learning. Learners received a translation, an example sentence and one of five annotation clusters including picture and gloss, definition and gloss, picture and audio presentation, definition and audio, and picture, audio, gloss and definition. Two posttests were administered. The immediate vocabulary posttest showed that annotation clusters including a picture were considerably influential for both abstract and concrete words. However, the delayed posttest revealed that all annotation clusters were equally influential.

Lowman (2014) considered the effect of podcasts as well as vodcasts through iPod on fourth- and sixth-grade students' vocabulary acquisition. Each student was supposed to complete three to six-minute podcast or vodcast a day for three days. The results revealed that the vodcast group learned more words considerably at the receptive as well as expressive level.

The present study is an attempt to answer the following question:

- Are there any significant differences between the effects of vocabulary podcasting tasks (audio podcasts plus still pictures and audio podcasts plus animated pictures) on Iranian EFL learners' vocabulary gain and retention in an E-learning context?

## **METHODOLOGY**

### **Design and Setting**

The present study is an attempt to consider a quasi-experimental design to investigate the long-term effects of the treatment as the main part of the work in an E-learning project. The procedures include quantitative analysis. As it is not desirable to randomly assign treatments to participants individually, the quasi-experimental design was selected. Samples of the study were selected randomly for both control and experimental groups. Moreover, two vocabulary posttests (immediate and delayed) with identical difficulties were designed for the study. Furthermore, as Mackey and Gass (2005) suggest, the treatment process was ten weeks which is reasonable.

An Oxford Placement Test was administered in order to homogenize the learners. Participants 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 research question considers the differences between the effects of vocabulary podcasting tasks (audio podcasts plus still pictures and audio podcasts plus animated pictures) on Iranian EFL learners' vocabulary gain and retention in an E-learning context. Then, the participants were selected randomly for two groups for the treatment that were conducted in an E-learning project. The first group received the audio podcasts plus still-picture vocabularies. The second group received the audio podcast plus animated pictures. After completing the treatment part that took 10 weeks, the two immediate and delayed vocabulary posttests were administered. The immediate and delayed vocabulary posttests were given to the test-takers two weeks and four weeks after the treatment, respectively.

The setting of the present experiment is mostly online except the proficiency level test and the posttests that were administered at Qazvin University of Medical Sciences and Andisheh Nou Foreign Language Institute. Therefore, the online environment was explained to the participants. The time of the treatment was taken ten weeks. Moreover, one immediate vocabulary posttest and one delayed vocabulary posttest were administered two and four weeks after the treatment, respectively.

## **Participants**

The participants were selected from Iranian EFL learners (both male and female) learning English at Qazvin University of Medical sciences and Andisheh Nou Foreign Language Institute in Qazvin, Iran. A nonrandom purposive sampling was considered for the present study since this study concentrated on two groups of learners of intermediate-level vocabulary proficiency and tested their improvement through the treatment period.

Firstly, 280 learners were invited to 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' age was from 17 to 30. Their first language was Persian and they studied English as a foreign language.

## **Materials and Instruments**

A series of 120 audio podcasts plus still pictures as well as audio podcasts plus animated pictures were presented to the participants. The vocabularies 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.

The network-based technology does offer advantages over the traditional classrooms in terms of ease and range of access to materials and interlocutors. However, the network-based 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 many network-based teachings. A question arises when 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 constituted by the absence of real interaction.

The idea of web-based learning has been implemented since the advent of the Internet. 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 size of the media and chats. It keeps messages safe from hacker attacks. Telegram lets people access their messages from multiple devices.

Furthermore, Telegram is an opportunity for people to improve communication and collaboration. 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.

In order to answer the research questions, the following instruments were used:

- 1) A proficiency test
- 2) An immediate vocabulary posttest
- 3) A delayed vocabulary posttest

First, in order to homogenize the participants, a general proficiency test (Oxford Placement Test) developed by Allen (1992) was administered at the outset of the study. The Oxford Placement Test is made up of two grammar and listening sections, each comprised of 100 questions. An immediate vocabulary posttest in the form of multiple-choice was administered two weeks after the treatment in order to measure the participants' vocabulary gain via an E-learning program. The immediate vocabulary posttest was constructed by the researchers and it was pilot-tested to a similar group of participants to ascertain the reliability of the questionnaire. The internal consistency of the questionnaire was  $\alpha = 0.89$ . Furthermore, a delayed vocabulary posttest in the form of multiple-choice 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. The delayed vocabulary posttest was constructed by the researchers and it was pilot-tested to a similar group of participants to establish the reliability of the questionnaire. The internal consistency of the questionnaire was  $\alpha = 0.88$ .

### **Data Analysis Procedure**

To analyze the obtained data and to answer the research question that is the differences between the effects of vocabulary podcasting tasks (audio podcasts plus still pictures and audio podcasts plus animated pictures) on Iranian EFL learners' vocabulary gain as well as retention in an E-learning context, a one-way multivariate analysis of variance (MANOVA) was run.

### **RESULTS**

A one-way multivariate analysis of variance was performed in order to investigate the effects of vocabulary podcasting tasks (audio podcasts plus still pictures and audio podcasts plus animated pictures) on Iranian EFL learners' vocabulary gain and retention in an E-learning context. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no violations noted.

Table 1 illustrates the results of the descriptive and test statistics. An inspection of the mean scores reveals that participants who received audio plus animated pictures had higher levels of vocabulary gain (Mean = 99.26, SD = 11.18) as well as retention (Mean = 91.19, SD = 9.70).

**Table 1.** Descriptive and Test Statistics for Vocabulary Podcasting Tasks, Vocabulary Gain and Vocabulary Retention

	Vocabulary Podcasting Tasks	Mean	Std. Deviation	N
Vocabulary Gain	Audio Plus Still Pictures	76.19	15.176	90
	Audio Plus Animated Pictures	99.26	11.185	90
	Total	87.72	17.620	180
Vocabulary Retention	Audio Plus Still Pictures	67.28	13.449	90
	Audio Plus Animated Pictures	91.19	9.709	90
	Total	79.23	16.749	180

Table 2 shows that there were statistically significant differences between the effects of vocabulary podcasting tasks (audio podcasts plus still pictures and audio podcasts plus animated pictures) on Iranian EFL learners' vocabulary gain and retention in an E-learning context,  $F(2, 177) = .000$ ,  $p < .0005$ , Wilks' Lambda = .30, partial eta squared = .69. Therefore, the first null hypothesis is rejected.

**Table 2.** Multivariate Tests for Vocabulary Podcasting Tasks, Vocabulary Gain and Vocabulary Retention

	Effect	Value	F	Hypothesis df	Error df	$p$	Partial Eta Squared
Vocabulary Podcasting Tasks	Wilks' Lambda	.305	201.710a	2.000	177.000	.000	.695

a. Exact statistic

Table 3 illustrates how dependent variables differ from the independent variables.

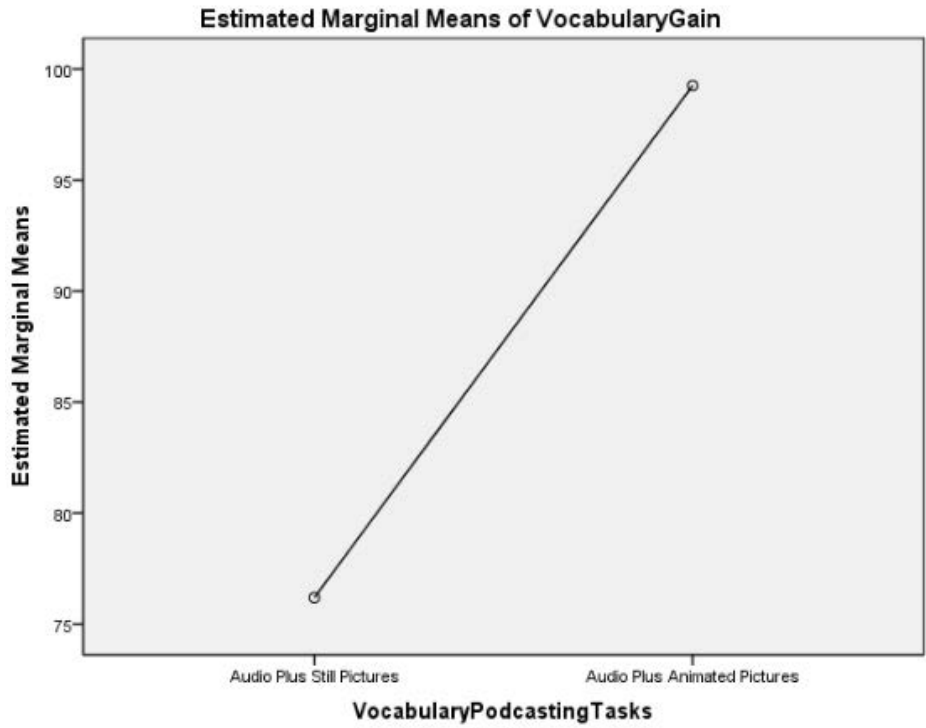
**Table 3.** Tests of Between-Subject Effects for Vocabulary Podcasting Tasks, Vocabulary Gain and Vocabulary Retention

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	$p$	Partial Eta Squared
Vocabulary Podcasting Tasks	Vocabulary Gain	23943.200	1	23943.200	134.730	.000	.431
	Vocabulary Retention	25728.356	1	25728.356	187.017	.000	.512

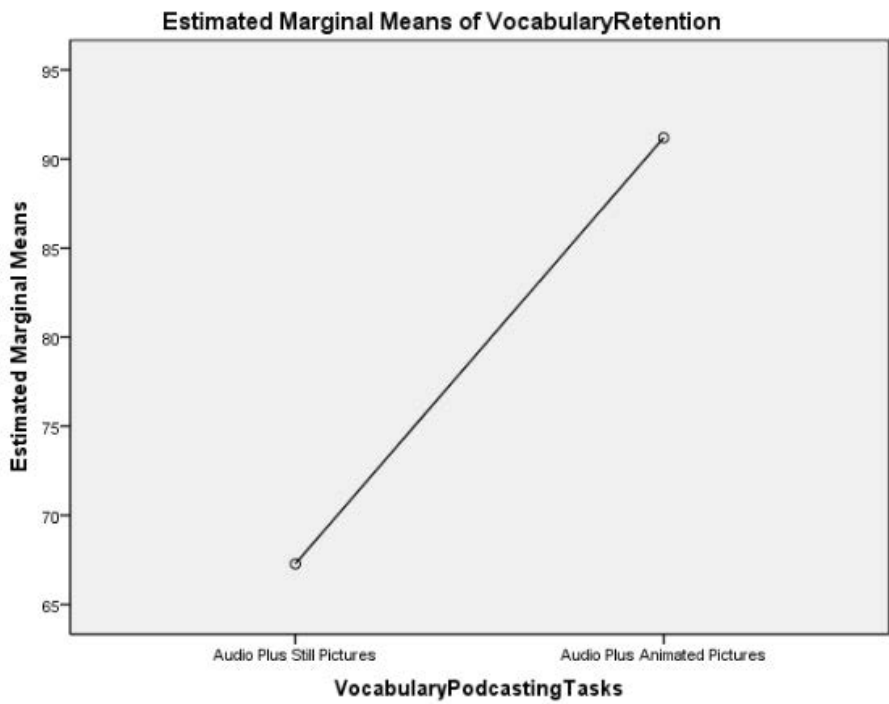
Table 3 shows that vocabulary podcasting tasks had statistically significant effects on both vocabulary gain ( $F(1, 178) = 134.73$ ;  $p < .0005$ ; partial eta squared = .43) and vocabulary retention ( $F(1, 178) = 187.01$ ;  $p < .0005$ ; partial eta squared = .51).

Figures 1 and 2 show the differences between audio plus still pictures and audio plus animated pictures for vocabulary gain and retention, respectively.





**Figure 1.** Vocabulary Podcasting Tasks (Audio Plus Still Pictures and Audio Plus Animated Pictures) and Vocabulary Gain



**Figure 2.** Vocabulary Podcasting Tasks (Audio Plus Still Pictures and Audio Plus Animated Pictures) and Vocabulary Retention

## DISCUSSION

The present study attempted to investigate the utilization of audio podcast plus still pictures and audio podcasts plus animated pictures on learners' vocabulary gain as well as retention in a process-oriented approach.

One of the findings of the present study was that there were statistically significant differences between the effects of vocabulary podcasting tasks. In other words, the participants who received audio plus animated pictures had higher levels of vocabulary gain as well as retention. This finding is in line with a number of previous studies (Kim and Gilman, 2008; Lee and Chan, 2007; Mayer and Moreno, 2002; Yeh and Wang, 2003). The results of this study supports those of Plass et al. (1998), who found that learners remembered word translations much better when they received both visual and verbal annotations and those of Mayer and Moreno (2002), who maintained that words associated with narration and animation helped learners more than words alone. The findings of the present study are strongly in line with those of Yeh and Wang (2003), who found that text plus picture was the most influential type of vocabulary annotation. The results of this study lend support to those of Plass et al. (2003). They showed that learners with high verbal and high spatial abilities recalled word translations better than the other learners when learners received visual annotations.

The present study supports Lee and Chan's (2007) findings who reported that podcasts were effective in improving students' understanding of the subject and providing backup of what they had learnt. The findings of the present study are also in accordance with the findings of Amemiya et al. (2007), who remarked that their method in which contents included the pronunciation of each word with a series of either still or moving images related to the foreign words was 1.5 times better than the paper and pencil method in memorization of words. The results of this study corroborate those of Kim and Gilman (2008). The results of their study indicated that learners' vocabulary improved when they received visual text and added graphics or visual text, added spoken text, and added graphics instruction.

In addition, the results of the present study is compatible with the study of Evans (2008), who found that podcasts were more influential than textbooks and notes and the study of Lord (2008), who pinpointed that students' pronunciation skills improved after taking part in the podcasting projects. This study is also in line with the study of Abdous, Camarena, and Facer (2009) who found that podcast resulted in considerable benefits especially when it was used more than merely as a tool for reviewing and the study of Putman and Kingsley (2009), who believed that learners' vocabulary instruction developed through podcasts. Furthermore, the findings of the present study corroborate those of Sanjana (2014), who presented that the students learned English better by using podcasts. The findings of this study are also in line with those of Lowman (2014), who maintained that the vodcast group learned more words significantly at the receptive as well as expressive level. Moreover, the results of this study lead support to those of Shahid and Ali (2017), who reported that video podcasts significantly helped learners achieve better results in listening comprehension.

However, this result of the present study is different from Fernandez, Simo and Sallan (2009), who found that podcasting was not a substitute for traditional resources. Moreover, the findings of the present study contradict those of Lazzari (2009), who reported that podcasting did not have positive influences on learners' scores and using podcasts for supporting learning was pedagogically neutral. The results of this study are in contrast to those of Rimrott (2010) in which the delayed posttest revealed that all annotation clusters were equally influential. The findings of this study corroborate those of Rimrott (2010) in which immediate vocabulary posttest showed that annotation clusters including a picture were significantly influential for both abstract and concrete words.

A number of factors could possibly account for these findings. One of the reasons may be that vocabularies 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. Learners could receive the information 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. Podcasts were not only easy to store and distribute, but also easy to share among the other academic parties. The other reason could be that the content and the clear native pronunciation of the podcasts attracted learners' attentions.

## CONCLUSION

The present study sought to investigate the use of audio podcast plus still pictures and audio podcasts plus animated pictures on learners' vocabulary gain and retention in a process-oriented approach. The research question examined the effects of vocabulary podcasting tasks (audio podcasts plus still pictures and audio podcasts plus animated pictures) on Iranian EFL learners' vocabulary gain and retention in an E-learning context. The results of the one-way multivariate analysis of variance indicated that there were statistically significant differences between the effects of vocabulary podcasting tasks. The participants who received audio plus animated pictures had higher levels of vocabulary gain as well as retention.

The findings of the present study are not enough. Further research is needed. The focus of the present study was on intermediate EFL learners. The same study can be done with participants at other proficiency levels. Moreover, age and gender were not considered in this study. Therefore, interested researchers can consider these variables.

Podcasting is an influential tool to course resources and increases the contact between students and teachers. They can be easily stored in MP3 players, shared and distributed among players. The present study considered distance education and podcasts provided no searching effort technology for learners and the information were presented to the learners without irrelevant knowledge. The results indicated that podcasting affected the efficiency of learners' learning process. Therefore, a question arises in this regard: Would distance courses signify a significant factor affecting perception, attitude and motivation about the use of podcasting in higher education?

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