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Investigate the Impact of Educational Multimedia on English Vocabulary Learning

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Abstract
Learning of students. This study, in terms of purpose, applied, and in the manner and method of implementation, is an integral part of empirical studies. In this research, a four-group Solomon design with pre-test and post-test, and control group were used. The statistical population consisted of all undergraduate students at Kermanshah Payam Noor University, who had specialized language lessons during the semester. Among them, 60 people were selected as the statistical sample using available sampling. To test the students' learning, a researcher-made test was used. The validity of the test using the Kooder Richardson method was 82. announced. SPSS software was used to perform statistical calculations, and multivariate analysis of variance analysis was used to investigate the hypotheses of the research. The results of the data analysis showed that there is a significant difference between the mean scores of the experimental and control groups in the visual, written, audio, and oral components, but the effect of the pre-test, as well as the interaction of pretest and group is not meaningful. The results also showed that the participation of learners in training exercises, while paved the way for activating knowledge of learners' resources, helps them to associate past and future. These findings ultimately confirm the impact of multimedia education on the level of learning the student's English language vocabulary, and can be used in conjunction with other intervening methods.

Keywords
Educational, Multimedia, English Vocabulary, Learning.

Introduction

The need to learn English as the language of the world, in exchange for information, and to communicate with others with the aim of using the knowledge of the day, is undeniable. Over the past few years, effective English language education has been one of the most important concerns of curriculum planners in the country because learners are incapable of effective and useful communication after a few years of learning in spite of spending a lot of time, energy and cost. The factors that contribute to this failure can be sought in inappropriate educational content, inefficient teaching methods, lack of motivation, and non-use of what has been learned. [1]. With the advent and development of new technologies, in educating, the design of multimedia environments has become increasingly important in this regard. Among the benefits of using multimedia, in-training can be a more in-depth and comprehensive interaction between teachers, a better analysis of content, the use of different learning styles, the combination of reading, listening skills, writing, speaking skills and enhancing collaboration skills. named. One of the main goals of using multimedia is to raise the quality of education through increased motivation for learners to engage actively in learners' learning, with the goal of improving meaningful learning, through the combination of different sensory organs and multiple methods.

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They are offered to learners [2]. Teaching English is one of the disciplines that specifically utilizes the benefits of technology. Ma and Kelly (2006), have taught vocabulary learning, through multimedia, one of the main topics discussed in language teaching [3].

Previous studies have shown that the learning of second language vocabulary plays an important role in the development of the cognitive system of knowledge. Therefore, these studies always emphasize different ways of facilitating the learning of second language vocabularies, such as the use of educational games, and multimedia learning [4,5]. In examining the history of research on the role of technology in language learning, it is obvious that each of these studies refers to a specific section of the effects of using technology in education. Many scholars believe that the vocabulary of each language forms an important part of that language, while different languages, in the order section, are often common, and the major difference is usually in the vocabulary section. Therefore, second language learners often face a lot of problems in this area. Several studies have been conducted on the study of effective methods for learning English vocabulary [6,7,8,9, 10,11). But most of the research results have been contradictory, and there is no consensus on the use of different language learning methods among scholars. For example, in some studies, the use of multimedia has been reported in effective vocabulary learning [12,13,14,15,16]. However, the results of other studies have reported the opposite [17,18,19]. Also, some researchers believe that the use of word meanings has no effect on vocabulary learning and / or comprehension of learners [20,21]. Of course, despite the contradictory reports, there is no comprehensive and complete information about the use of multimedia and traditional methods in learning English vocabulary, and the existence of these conflicts provide a ground for further research. Accordingly, our goal in this study is to investigate the effect of using a variety of education types, on the performance of student learning, in English lessons. Although, at the moment, this study has been undertaken on a small scale, its application is useful in many educational environments, and it can bring about greater collaboration and learning among learners.

The present study has also tried to study the performance of a group of students. Although this study has been undertaken on a small scale, it is useful in many educational environments, and it can bring about greater collaboration and learning among learners. This study has been investigated following hypotheses in order to examine the effect of educational multimedia on the measurement of English vocabulary learning.

Learning through educational multi media is effective on students' visual skills.
Learning through educational multi media is effective on students' writing skills.
Learning through educational multi media is effective on students' listening skills.
Learning through educational multi media is effective on students' spoken skills.

Materials and Methods

This study consists of two steps. In the first stage, an educational multimedia design was introduced, and in the second stage, with practical implementation of the design, in the learning environment, its effectiveness was assessed on the level of learning of the students studied. The first part of this study should be considered in the study group, and the second part of the study, in terms of purpose, applied, and in the method and method, is an experimental study, with pre-test, post-test and control group. In this research, a Solomon four-member plan was used (to eliminate the impact of the pre-test, and to cause harm, in the external validity of the research). In Solomon four groups, there were two experimental groups and two control groups, one of the experimental groups, experimental intervention, and post-test, and the second group received a pre-test, experimental intervention and a post-test, and in the control group of a group Post-test, and the second group received pre-test and post-test. The statistical population of this study consisted of all undergraduate students at Punjab Kermanshah University in the 2017academic year, who had specialized language lessons. Sampling method In this research, sampling has

been available. Sample size consists of 60 students who were randomly assigned to each of the experimental and control groups. A researcher-made test was used to collect data. The test was prepared in accordance with the content of the specialized textbook, and was performed as a pre-test and post-test between the groups. It is worth mentioning that the content of the test was confirmed by the researcher and the experts of the subject, and its validity was declared equivalent to 82% by Kooder Richardson. The test included four parts: 1. Five questions to test visual skills, including testing the correct form of letters and words, embodying the image of letters and words, and recognizing words that are related to visual memory. 2. The questionnaire for measuring written texts involves writing the correct form of the letter constructor, rewording the word, and the proper sequence associated with the memory. 3. Five questions to assess hearing skills using a computer and a written test, including recognition of sounds that are given in the form of words and sentences and perception of the word that is associated with auditory memory. 4. Finally, five questions of verbal skills are used to measure English vocabulary skills and student learning performance.

In this intervening program, students learn how to function effectively and effectively use English. They learn to effectively Visual, read, listen, speak and write, and how to use the language in a variety of ways, and in different situations. They also learn about language and efficient use of it through working with the words and studying them and to reach this goal, printed or electronic media as well as different methods and technologies are used. Expected goals in this research include four visual, written, audio, and oral skills, which are interconnected, interrelated and interrelated with training and repetition activities, and progress in achieving a skill depends on progress in other goals.

The process of visual skill, in this study, requires that learners have critical or personal reaction to texts and associate their previous knowledge and personal experiences with written texts. Basic reading, phonological awareness, knowledge acquisition, the relationship between sounds and letters, and the understanding of the characteristics of English writing texts are essential. Other components of reading skills are the ability to use images and photographs of various texts in order to memorize the content, and monitor the comprehension of the subject. In this research, learners are trained to use symbolic systems (visual, written, etc.) to communicate the meaning of communication. Also, reading instruction is done according to linguistic and linguistic context.

Written skills are a complex process, whereby learners find many opportunities for writing and mentoring skills and practice. In the process of learning to write, learners learn to interpret and modify the text to revise the structure and to select the correct vocabulary. They also focus on their writing and determine some goals to improve and expand it and they utilize the other's opinions to survey and organize the impact of these goals and they investigate the impact of tone, vocabulary, and content. In this regard, emphasis will also be placed on the use of information technology and technology.

Concerning listening skills, learners are trained to listen carefully to different information sources in different situations. Listening is the process of hearing, receiving, making sense of hearing, and responding to verbal messages and Non-verbal. Listening is a multi-activity set, and it's not done individually. By listening actively, learners of language and communication know and enjoy. Learners use different listening skills, depending on the purpose of listening, such as listening to alphabet sounds for phonemes, understanding, receiving information, evaluating messages. This characteristic reflects the impact of the position on education, and suggests that, depending on the subject, the purpose of listening and the importance of the subject, a specific strategy is recommended. Effective learners can actively listen, say, explain, respond to messages, and evaluate the messages they hear, and provide an appropriate response to it.

Speaking skills teach learners to use a language that is concise, clear and appropriate to the

target audience for speaking. For example, according to the question asked, they use appropriate vocabulary, and respond appropriately to the purpose of the question. Because oral language is a powerful tool for communicating, thinking and learning, teaching this skill provides them with the important tools that learners need to communicate with others, learn vocabulary and understand the structure of English. One of the most important goals of language skills training is to speak with confidence and in different situations. In order to achieve this goal, learners have been involved in small and large group discussions, and they are trying to talk about oral communication, and provide detailed explanations and explanations. Interaction in these activities indicates that effective communication is one of the most important and essential factors in teaching speaking skills. It should be noted that speaking is a process for the expression, transmission and exchange of information, thoughts and feelings, and these characteristics show that learning to speak is not one-dimensional and monolithic process, but a set of activities are taught in this process. Within the framework of the training program, there are various opportunities for learners to reach a variety of goals (such as asking questions, exchanging information or helping others). Paying attention to this is not a blessing that learners should realize that what they say, read, write and Visual affects their content and experiences, and this effect, the association and coherence of this skill with other skills explains the language.

The method of implementation was that, at first, a pre-test was conducted for the control and testing group, then the experimental groups were subjected to a multimedia education that was an active and participatory teaching method for one semester. While the witness groups did not have such training, the lesson was typically taught. In the this study, according to Simpson(2002), the meaning of multimedia education is computer-assisted instruction in any way (in general and detailed) and use of computer to assist the educational activities such as providing synchronous and asynchronous courses, as well as educational games[22]. Because computer-assisted learning requires a background, how to work with computers, how to present content, how to use the word environment, how to work with the Internet and various software, and several other technical communication skills, so two The session was devoted to the initial training of the experimental group in these fields. Then the activities were structured in terms of content, in a coherent and related context, and an intervention program was implemented as follows. Session 1: Play with letter shapes. Session 2: Matches in alphabetical order. Session 3: Match with words sequence. Session Four: Playing With Mother's Word. Session Five: Puzzle Game. Session Six: Playing With Familiar Words. Seventh Session: Play Letters Letter. Session 8: Using the key word technique and mental imagery using the screenshots. Session Ninth: The use of computer games includes: word completion, word matching, word-formation, read-only, dictation, memory game and pronunciation.

In this method of teaching, which is a collaborative effort, the teacher submits the starting point, faces with students' reluctance. This is important because students are deprived of teaching in the usual way. Before the training process, all stages of the research were described for learners. In terms of delivery time and duration of the training process, the viewpoints were considered. Students have had active participation in learning, and provided educational content in the form of entertainment and entertainment, and in the multimedia space. At the first sessions, students were divided into 3 groups for familiarity and readiness, and at subsequent meetings in groups of 5 people. The layout of the groups varied from session to session in each session. In each group, one person presented as a representative, and this role changed among the members of the group in analyzing and answering each question. Given the fact that the researcher had educational and research experience in this regard, he personally performed the program, and while he was asking questions, he was following the participation of the members of the group and directing the group.

At elementary student sessions, while conducting game-centric activities, they sought to find

initial of word, middle of word, end of word, letter combination, sentence or image completion, in various ways (visual, written, auditory, and spoken). The process of completing the game in order to achieve meaningful learning resulted in the participation of learners, because they were trying to achieve a complete understanding of each other's interaction. In subsequent sessions, the key word technique and mental imagery were used. In that way, an English word was first given to students, and then they were asked to choose a word from the phonetic language of the word in question, with which the keyword Or, by changing the English letters, presenting an image that would mean it in mind. During the training session, students were able to create a number of keywords and images for the provided vocabulary. Then, with activities designed to enhance memory and accuracy in recognizing and differentiating letters, they were entertained with shapes and sounds. It has educational content, computer usability, and mobile communication components. After the end of the test, the test of language again was performed as a post-test.

Findings

In the descriptive statistics section, indicators such as mean and standard deviation, and inferential statistics, have been used to analyze the hypotheses of the research, multivariate analysis of variance analysis. The results are presented below. In Table 1, the mean and standard deviations of subjects are presented in terms of the experimental and control group.

Table 1. Average (left) and standard deviation (right) of research variables, by groups

Components	Level	Experiment 1	Experiment 2	Control 1	Control 2
Visual skill	Pretest	2.00±.84	-	1.73±.70	-
	Post-test	4.46±.83	4.20±.56	2.33±.97	2.06±.79
Writing skills	Pretest	2.40±.73	-	2.13±.83	-
	Post-test	4.66±.48	4.86±.35	2.53±.83	2.86±.99
Aural skill	Pretest	.80±.77	-	1.00±.65	-
	Post-test	3.13±.99	3.13±.83	1.13±.91	.93±.70
Spoken skills	Pretest	.73±.70	-	.53±.74	-
	Post-test	3.00±.925	3.06±1.09	1.13±.83	.73±.79

The results of Table 1 show that the differences between the control and experimental groups in the learning performance components of the pre-test stage are low, but in the post-test there is a significant difference which ,in the inferential analysis section, their meaningfulness will be analyzed statistically. For data analysis, multivariate analysis of variance was used. Of course, before submitting this test, its assumptions were examined, first these assumptions were presented. To verify the normality of the data, which is one of the manual presuppositions, the Smirnov colomogram test was used. The results showed that, in all variables, the obtained value of Z is smaller than the value of the table, and is not significant($P> 0.05$), and the data are normal. Another precondition for using Manua analysis is homogeneity of the variance of the studied groups. For reviewing this assumption, the Levine test was used, the results of this test are presented in Table 2.

Table 2. Levin index test on learning performance components

Variable	F	Df1	Df2	Sig
Visual	2.00	3	56	.123
Writing	1.33	3	56	.26
Audible	2.247	3	56	.093
Vocal	.734	3	56	.536

The results of Table 2 show that the observed F value in all components is smaller than the table value, and there is no significant difference between the variance errors of the two groups (P>0.05). Therefore, the homogeneity assumption of variance errors is observed. The homogeneity of the variance-covariance matrices is another precondition for using the Mana's test, in Table 3 the results of this test are presented.

Table 3. The results of the MB test in the learning performance components

Mbox	F	egree of freedom 1	Degree of freedom 2	The significance level
45.54	1.318	30	8622.12	.11

As the results of Table 3 show, the Mbox statistics is 45.54 and the value of the F statement of this test is 1.32, which is not statistically significant (P> 0.05), hence the homogeneous assumption of variance-covariance matrices, observance Has been. According to the Mana's presumptions, the comparison of the groups is presented, Table 4 presents the results of the Lamberty Wilkes test.

Table 4. The results of Lamberty Wilkes' test, in the average evaluation of learning performance components, in posttest

Test name	F value	F	DF hypothesis	DF	significance	eta Squared
Wilkes Lambda Test	.833	65.97	4.00	53.00	.001	.59

The results of Table 4 show that there is a significant difference between the experimental and control groups at least in one of the learning performance components. With regard to the quantum squares of the Lambdesa Wikis test, it can be determined that group membership accounts for 57.4% of the total variance. Table 5 gives a meaningful review of the group's work, pre-test and their interaction.

Table 5. Effect of multimedia education on learning performance components, based on Manu's test

Sources of changes		Sum of squares	Degrees of freedom	Degrees of freedom	F	significance level	eta Squared
Group	Visual	68.267	1	68.267	105.026	0/001	.652
	Writing	64.067	1	64.067	125.738	0/001	.692
	Audible	66.150	1	66.150	87.921	0/001	.611
	Vocal	66.150	1	66.150	77.824	0/001	.582
pretest	Visual	1.067	1	1.067	1.641	.205	.028
	Writing	1.067	1	1.067	2.093	.154	.036
	Audible	.150	1	.150	.199	.657	.004
	Vocal	.417	1	.417	.490	.487	.009
pretest ** group	Visual	.000	1	.000	.000	1.000	.000
	Writing	.067	1	.067	.131	.719	.002
	Audible	.150	1	.150	.199	.657	.004
	Vocal	.817	1	.817	.961	.331	.017
Error	Visual	36.400	56	.650			
	Writing	28.533	56	.510			
	Audible	42.133	56	.752			
	Vocal	47.600	56	.850			

According to the results of Table 5, it is concluded that the mean scores of two groups of experiment and control in visual faculties (P= 0.01, F = 68.26), written(P= 0.01, F = 64.07), auditory(P=0.01, F=66.15), and speech(P=0.01, F=77.82,), there is a significant difference. However, the effect of pre-test, as well as pre-test and group interaction is not significant(P> 0.05). Considering that the effect of interaction is not significant, there is no need to use follow-up tests, and in Table 6, the mean and the adjusted error of the components of learning performance are presented in the experimental and control group.

Table 6. The mean and standard error of the moderated scores, in the test and control group, in the learning performance components

Learning performance components	Group	Average	standard error	standard error	
				Lower	Upper
Visual	Experiment	4.333	.147	4.038	4.628
	Control	2.200	.147	1.905	2.495
Writing	Experiment	4.767	.130	4.506	5.028
	Control	2.700	.130	2.439	2.961
Audible	Experiment	3.133	.158	2.816	3.451
	Control	1.033	.158	.716	1.351
Vocal	Experiment	3.033	.168	2.696	3.371
	Control	.933	.168	.596	1.271

The results of the table above show that the mean post-test scores, all the components of learning performance, are significantly higher in the experimental group than in the control group, which suggests that multimedia training is significantly Has influenced these components.

Discussion and Conclusion

Today's educational environments that use computer capabilities for learning and teaching are rapidly increasing. What is important in this area is how to use it as a tool in the direction of the goal or the goals of the educational system. The purpose of this study was to investigate the effect of educational multimedia on the learning of English vocabulary. The results of this study showed that between the mean scores of two groups of experiment and control in visual components(P= 0.01, F = 68.26), written(P= 0.01, F=64.07), auditory(P=0.01, F=66.15), and speech (P=0.01, F=77.82,)There is a significant difference. which indicates that educational multimedia has significantly influenced the components. The results are consistent with the results of Coady and Huckin, 1997; Ma and Kelly, 2006; Stockwell, 2007; Zapata and Sagarra, 2007; Elliot, 2010; Oberg; 2011; Lin et al., 2011; Sharifi et al., 2016; has it. These studies also emphasized on different ways of facilitating the learning of second language vocabularies, such as the use of educational games, and multimedia learning. Of course, Sakar and Ercetin, 2005; Yang et al., 2008; Anderson, 2009; Jones, 2009; Yang et al., 2010, reported the opposite of these results, which are inconsistent with the results of the present study. They have reported that, in some cases, the use of educational multimedia in teaching has no effect on academic achievement, and the multimedia impact on learning and education has been addressed.

In general, the use of multi media software can, in various ways, facilitate the learning process, as well as richer learning environments [23]. Several factors can be considered for the proper returns of this method in this study. Because of its success, the difference between this new educational method is routine and older because it provides real and objective experience, learner acquisition, and speed of information acquisition. Also, the availability of education, coordination with inclusive needs, and compliance with student ability levels are other reasons for its effectiveness [24]. Another factor in the success of this method is that learning should be meaningfully mentioned, as learners were able to acquire a coherent mental image of multiple sources of information (audio, image, animation, computer game), and to provide content Meaning, and provide the basis for learning. This multimedia, in addition to the attention of the subjects, is very simple in the presentation method, providing less content to subjects, coordinating text and image, engaging multiple senses at one time, and, in fact, facilitating learning.

As for the other reason for increased learning, students should be well remembered when they learn a good subject. Several studies have come to the conclusion that the cause of forgetting and interfering in the reminder of information is the lack of systematic and sustainable learning. Students in this study could actively engage in reading, writing, listening, and speaking skills. The more important reason for increasing the retention in the test group was the principle of learning, and the emphasis on learning the components of a concept in a multimedia environment that increased reminiscence. This is due to the meaningfulness of information in the cognitive system of individuals. Accordingly, it can be concluded that educational media should be designed according to individual characteristics of learners and learning styles so that all audiences benefit from it. The most important problem in this research was the time constraint, which made it difficult to coordinate and plan, and inevitably intensive teaching sessions were held. It is suggested that in future studies, this teaching method be implemented in different courses and at other levels of study, and the results will be evaluated in a long process.

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The Effect of Multimedia Technology on Improving Listening Achievement of Iranian Secondary School Students

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Abstract
The study tried to examine the possible effect of multimedia materials on augmenting listening skills of girls in Meheaval higher secondary school, Karaj city. The next purpose was to detect whether there is a meaningful relationship between students' attitudes towards using multimedia materials and teaching listening skills. The participants of this study were 60 second-year high school (EFL famale students) in the second semester of 2016 academic year. The homogeneity of the participants was ensured through application of the Oxford Placement Test (OPT, 2001). The materials was comprised of students' textbook and Listening Assisted Multimedia. Three types of instruments which were utilized namely, listening comprehension pre-test, post-test, and a listening assisted multimedia questionnaire. Independent samples t-tests and regression coefficients were applied to determine whether there were significant inter and intra-group differences. The results showed evidence that multimedia materials significantly enhanced EFL learners' listening achievement. It was also found that the attitude to the use of multimedia had a statistically significant impact on explaining the changes in learners' listening skill. Based upon the findings of the study, it is recommended that the English instruction should be integrated to the English instruction listening course.

Keywords
Multimedia, Listening, Listening Assisted Multimedia Questionnaire.

Introduction

Considering the emerging new technologies in general and multimedia technologies in particular and their impacts on different aspects of people and teaching-learning languages seems to have entered a new area. Computer Assisted Language Learning (CALL) and Technology Enhanced Language Learning (TELL) have been studied for their impact on L2 listening comprehension skill and its instruction. Multimedia could be utilized as an effective technological instrument for instruction to augment learning and retention of material presented in classrooms. According to [1] Mayer (2001), multimedia can provide multiple sources of stimuli as inputs for the students as well as help improve senses and the brain because it is attributed mainly to dual coding of the information presented in visual plus auditory which are the two different modalities leading to increased comprehension of the material during the class session, and improved retention of the material at later testing.

The basic principle underlying learning through multimedia is that people learn better from words and pictures than from words alone. Words, in this context, are the accompanying pictures including written and spoken text, and static graphic images, animation and videos. In the light of what we know about the way that the brain processes information, using both words and pictures together could be more effective for listening comprehension than words alone. Research confirms that using both words and pictures

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assists the brain process more information in working memory [2] (Sweller, 2005). [3] Astleitner and Wiesner (2004), in the same vein, confirmed that in courses where multimedia materials are used besides learning outcomes, students' satisfaction and motivation is higher than the traditional ones.

Listening, among the four skills in every language, plays an undeniable role in our real life communications. This contribution can even be more essential than other skills. As [4] Feyten (1991) argues, listening provides more than 45% of our total communication ability, followed by speaking (30%), reading (16%), and writing (9%). In spite of this salient role, in a foreign language (FL) context, most learners do not observe a satisfactory level of improvement in their process of learning which may arise mainly due to their low exposure to listening skills. This is why it is crucial that listening be taught effectively in our classrooms.

Although listening is a complex process, it can be developed by the students' consistent practice and teacher's help. When designing listening tasks, instructors ought to consider how enable learners to be more conscious of their listening comprehension. [5] Rost (2002), in highlighting the teachers' role, claims that "if language instructors can successfully incorporate clear noticing steps into tasks, learners can then accelerate their learning and make breakthroughs in listening ability" (pp. 21-22). This is said, it is necessary for instructors to design activities that enhance language awareness and good support to enhance listening comprehension via listening strategies.

In addition to teacher's support, as is also confirmed by many researchers, using appropriate strategies can help students improve their listening performance. In fact, good language learners not only have an awareness of strategies but also aware of more strategies compare to the lower successful learners. [6] (Goh, 2008; Mendelson, 1994). [7] Mendelsohn (1994), in the same vein, requires training students in the use of strategies for listening since this would lead to the enhancement in their listening ability.

A lot of suggestions have been made about teaching listening support strategies. Some researchers propose direct or explicit teaching technique which raises learner awareness such as introducing strategies individually, explaining and providing support, modeling strategies for learners as well as providing effective learning materials and controlled practice of strategies [8] (O'Mally & Chamot, 1990).

Even though listening has a vital role in language learning and communicative skills and can even affect other skills, it is the least understood procedure in language acquisition [9] (Mendelsohn, 2001). This is largely due to the fact that listening is ignored or poorly taught in language learning process [10], [11] (Vandergrift 1997; Osada, 2001), and L2 learners do not also use a very large number of strategies when listening [12] (Chamot & Kupper, 1989). Regarding this ignorance, there are many reasons why listening remains one of the least emphasized skills in language teaching and learning in spite of its importance. The purpose of this study was first to develop the listening skills of students studying English through using multimedia materials. Furthermore, the present study attempted to evaluate students' attitudes towards using multimedia materials in teaching listening skills.

Literature Review

Multimedia in the Teaching/Learning Process

Generally speaking, multimedia learning involves utilizing components of multimedia to produce an integrated educational environment. Multimedia learning, as Mayer (2001) explains, is the consequence of being exposed to a multimedia show which in turn forms its cognitive effects or mental images. Multimedia learning occurs when people build mental

representations from words (such as spoken text or printed text) and pictures (such as illustrations, photos, animation, or video). The process by which people build mental representations from words and pictures is the focus of Mayer's (2001) *Cognitive Theory of Multimedia Learning*. He believes that multimedia offers teachers and students new ways to enhance the teaching/learning process. Multimedia is important in education because it holds great promise in improving the quality of education. That is, it provides teachers and students with the tools to access multiple images and sounds. Teachers can "break free" from the constraints of textbooks and the chalkboard. Classes can experience specific learning material, know about its background in real-time or slow motion (Mayer, 2001, p. 34). Furthermore, in learning English, there is interactivity which means mutual actions between the learner, the learning system, and the learning material [13] (Stanfford, 1990).

Multimedia Principles

In order to take many advantages of multimedia in language learners' listening skills development, certain conditions and principle need to apply. [14] Iubbad (2013) in a comprehensive study reviews the basic principles for designing multimedia learning environments which are briefly presented below:

Multiple representation principle

According to Iubbad (2013), it would have better results to present an explanation using two modes of representation rather than one. For instance, students who listened to a narration about how a bicycle tire pump works together with the corresponding animation formulated twice as many useful solutions to subsequent problem-solving transfer questions than the students who listened to the same narration without viewing any animation. This result is called a multimedia learning effect. The multimedia effect is consistent with a cognitive theory of multimedia learning because students given multimedia explanations are able to build two different mental representations verbal model and a visual model--and build connections between them.

Contiguity principle

Based on contiguity principle, students understand an explanation better when related words and pictures are presented at the same time than in separated time. For example, students who read a text explaining how tire pumps work that included captioned illustrations placed near the text generated about 75% more useful solutions on problem-solving transfer questions than did students who read the same text and illustrations presented on separate pages [15] (Mayer, Steinhoff, Bower, & Mars, 1995). Accordingly, this result is called a contiguity effect. The results are consistent with the cognitive theory of multimedia learning because corresponding words and pictures must be in working memory at the same time in order to facilitate the construction of referential links between them (Iubbad, 2013).

Split-attention principle

According to this principle, when giving a multimedia explanation, it is best to present words as auditory narration rather than as visual on-screen text. In other words, the third principle is that words should be presented auditory rather than visually. For example, students who viewed an animation depicting the formation of lightning while also listening to a corresponding narration generated approximately 50% more useful solutions on a subsequent problem-solving transfer test than did students who viewed the same animation with corresponding on-screen text consisting of the same words as the narration [16] (Mayer & Moreno, 1995).

Individual differences principle

The fourth principle is that multimedia effects, contiguity effects, and split-attention effects

depend on learners' individual differences. This principle is more important for low knowledge than high-knowledge learners, and for high-spatial rather than low-spatial learners. For example, students who lack background knowledge tended to show stronger multimedia effects and contiguity effects than students who possessed high levels of prior knowledge (Mayer et al., 1995). Additionally, students who scored high on spatial ability tests showed greater multimedia effects than did students who scored low on spatial ability [17] (Mayer & Sims, 1994).

Coherence principle

This principle expresses that students learn better from a coherent summary which highlights the relevant words and pictures than from a longer version of the summary. Thus it is recommended to use few rather than many extraneous words and pictures when giving a multimedia explanation. For example, students who read a passage explaining the steps in how lightning forms along with corresponding illustrations generated 50% more useful solutions on a subsequent problem-solving transfer test than did students who read the same information with additional details inserted in the materials [18], [19] (Mayer, Bove, Bryman, Mars & Tapangco, 1996; Harp & Mayer, 1997).

Previous Studies

Many studies have examined the effect of particular multimedia tools in producing language outcomes among students. [20] O'Bryan and Hegelheimer (2007), for instance, studied how podcasting is an innovative way of teaching language in the classroom. Not only was the podcast viewed as an easy method by the instructor, the students also viewed podcasting as a positive tool, despite the technical difficulties experienced.

[21] Grgurović and Hegelheimer (2007) implemented a multimedia listening activity using video in order to help students with language comprehension using target language subtitles compared with video with transcripts. The use of captions and subtitles in the video lecture were found to stimulate the participation of students who interacted more frequently with subtitles as help rather than with transcripts. [22] Brett (1995) developed multimedia language learning software in order to help students communicate in English within the context of business situations. It was found that multimedia use resulted in better listening skills among students in terms of listening for the gist and guessing the meaning from context.

Using a quasi-experimental research design, [23] Verdugo and Belmonte (2007) explored the effectiveness of digital stories by applying this intervention into the experimental group. The results showed that the experimental group scored significantly higher in listening comprehension than the control group who did not received multimedia lessons. In Turkey, a quasi-experimental study was conducted by [24] Isik and Yilmaz (2011) to evaluate the effectiveness of computer-assisted listening instruction on listening comprehension of 21 students. The results showed that the experimental group which received multimedia-aided instruction scored significantly higher than the control group which received traditional language instruction.

Yet, in another study, [25] Sandaran and Lim (2013) attempted to investigate the effects of digital stories on listening comprehension skills with 9-year old third grade students in a Malaysian primary school which used instruction in Chinese. The participants listened and watched eight fairy tales designed as digital stories. The findings obtained from observations revealed that the students' interest, concentration and motivation increased substantially, and their listening comprehension skills developed during the listening activities.

As one of the most recent studies in the field of multimedia, [26] Ciğerci and Gultekin (2017) tried to determine the effect of digital stories on the Turkish listening skills of fourth grade students in a primary school. Turkish lessons were conducted using digital stories and activities were designed according to the digital stories during the 8-week application process.

The researcher observed the process while the lesson plans were put into action by the classroom's teacher. Research data were obtained also from a listening comprehension test, and teacher and student interviews. The findings showed a significant difference between the listening comprehension post-test scores for the experimental and control groups. The qualitative data from student and teacher interviews, and from classroom observations, showed that digital stories, listening activities based on the stories, and the creation of a more engaging and motivating classroom environment had positive effects on listening comprehension skills in the experimental group.

Research Questions

This study aimed at finding answers to the following research questions:

1. Does teaching listening through multimedia technology have a significant effect on students listening comprehension achievement?
2. Is there any significant relationship between students' attitudes towards using multimedia materials and teaching listening skills?

Method

Research Design

This was a correlational study aimed to analyze the relationship between the variables including multimedia as the independent variable and listening skill as the dependent variable. The methodology applied in this study was mixed-method, that is both quantitative and qualitative methods were used. [27] Creswell (2009) called this strategy concurrent triangulation since both methods occurred in one phase of the research period. In this approach, data are merged or results of two databases are integrated or compared. This strategy would make it possible for the strengths of one method to compensate for the other's weaknesses and vice versa, thus providing broader understanding of the research problems. This would result in "well-validated and substantial findings" (Creswell, 2009, p. 213) for the study, and save time as both data are collected simultaneously.

Participants

The participants of this study were 60 out of a total population of 85 second-year high school female students in the second semester of academic year 2016 at Mehreaval high school in Karaj, Iran. In order to ensure about the homogeneity of the participants, they were chosen based on their performance on the Oxford Placement Test (OPT, 2001); consequently, the students whose test scores were one standard deviation below and above the mean were selected and the ones who could not achieve this criterion were excluded from the study. Then, the selected students were randomly divided into two groups: The experimental group (n=30) and the control group (n=30). It is worth mentioning here that the high school benefited from up-to-date technologies such as smart board and language laboratory which could facilitate language education. Table 1 presents a quick profile of the students' characteristics.

Table 1. Profile of the Participants' Characteristics

Group	N	Treatment
Experimental	30	Multimedia Learning
Control	30	Conventional Learning

Materials and Instruments

Two types of materials and three instruments which were used in this study included the following:

1. Students' textbook (material)
2. Listening assisted multimedia (material)
3. Oxford Placement Test (OPT, 2001)
4. Listening comprehension pre-test and post-test
5. Listening assisted multimedia questionnaire

The main material of the study was the students' textbook named *English Book (2)* for High School second year students by [28] Parviz Birjandi, Mehdi Norouzi, and Gholamhosein Mahmoudi, published in 2013. The units which were taught during the experiment included all seven units of lesson plans used for the instruction of the textbook over a period of a whole semester. Another basic material of the study, besides the students' textbook, was a package comprising seven short English language documentaries about culture, environment, and adventure activities. An attempt was made to select multimedia tracks which were in line with the topics of the seven lessons of the students' text book. Each video and audio track was 3-5 minutes in length. There were some questions, at the end of each video or audio track, which targeted the comprehension of the presented materials by the participants of the experimental group.

A listening comprehension test functioning as pretest was designed in order to determine the prior listening knowledge of the participants. This was to ensure about the homogeneity of the participants in terms of their listening comprehension level. The test items were selected from the video and audio tracks presented to the experimental group during the treatment. It should be mentioned that these video and audio tracks were in accordance to the seven lessons of the students' textbook. Thus, the researchers selected the post listening activities of the mentioned multimedia tracks in order to devise the listening pre-test. The test included five questions for each multimedia track (video and audio), which amounted to a total of 35 questions. The same test was conducted as the listening comprehension post-test to study the progress of students' learning achievements after they studied listening with video and audios.

The validity of the listening comprehension test was evaluated by three experts who were PhD holders of applied linguistics with more than five years of teaching and testing experience. Based on their ideas, some arrangements and changes were made. In order to determine the reliability of the test, the revised test was pilot studied on the EFL students (n=20). Doing so, the level of difficulty of test items (p) and the discrimination index (D) were first calculated. The results of Cronbach's alpha analysis showed that the test was reliable ($r = 0.82$).

A questionnaire was also administered to investigate if there was a significant relationship between students' attitudes towards using multimedia materials and teaching listening skills. To this end, a questionnaire which was used in a study by [29] Bezen Tuncok (2010) was adapted and some modifications were made to tackle the purposes of the present study. The original questionnaire aimed to investigate foreign language learners' attitude towards computer-assisted language learning, and multimedia assisted language learning. Thus, the researchers made some modifications to the questionnaire in a way that only the items related to multimedia were applied in this study and the others were excluded since they were basically about computer-assisted language learning. As a result, there were 20 items in the final questionnaire for the present study (Appendix A).

Procedure

The treatment spanned across 14 weeks including two sessions of tests and 12 sessions of teaching listening comprehension. After administering an Oxford Placement Test (OPT) and

determining homogeneity and language proficiency level of the participnts with regard to test scores, the participants were randomly assigned to two groups, one experimental and one control group. All participants of the two groups were then asked to take the pre-test before the experiment. They were also required to sit for the same test used as the post test to detect the possible improvement of the learners after the treatment. The time allotted for the listening pre- and post-test was 25 minutes. The steps which were conducted for the experimental group of the study are explained in detail in the following section.

Pre-listening

Before starting the study, an introductory session was held, and we provided the participants of the experimental group with a brief introduction of the study. As for the treatment sessions and at the beginning of each specific lesson (units 1 to10), the teacher outlined the objectives of the lesson and the topic of the presentation material. Then the students were encouraged to recall their background knowledge about the topic and answer to the pre-listening questions. Next, a series of leading questions were presented to the students to help them before studying the material.

While-listening

As the next step, the participants were presented with the entire multimedia (video or audio) learning material and instructed to take notes or write down key words. Then, the material was presented again accompanied by an exercise to be completed by the students. The following skills by [30], [31], Richards (1985, ac cited in Meskill, 1996) which assist the development of listening competency were applied in this study for the experimental group. These are the skills which demonstrate how multimedia technology can be called into service to support the development of listening.

Retention of language chunks in short term memory

Most current multimedia applications allow the student some control over the rate of language presentation. The addition of video provides a clear, logical flow of events so that linking (remembering) new information to old is facilitated. To help the participants understand and remember the aural text better, the teacher started, stopped, and reviewed chunks of language to ascertain the retention of language chunks in short their term memory.

Discriminate the sounds of the target language

User control over language presented in more than one modality supports a student's ability to determine where words begin and end. The synchronized display of text along with the aural text applied for the experimental group assisted the learners in distinguishing phonetic groupings and boundaries. When learners can see the faces of those speaking in the video, moreover, they can additionally make use of facial movements to understand the sound-meaning correspondence in the target language.

Recognize core vocabulary and the rules and patterns of words used to communicate

Coordinated aural, visual, and textual information on the computer screen at the same time makes up an ideal laboratory for student problem-solving at the level of individual words and sentence structures. The learner has at her disposal rich visual and contextual clues that can assist in breaking the code of the written and aural text. The multimodal cues can be cross-referenced for word, sentence-level and broader understanding.

Understand communicative functions of utterances according to context

Video can be a very rich source of context for language processing. In a multimedia format, the

participants were provided control over the rate and order of video presentation and could therefore take advantage of starting and stopping the action in order to study language in a well represented context. Video also typically boasts tight correspondence between what is seen and what is heard. That is, in only very rare cases is the audio portion of video temporally disconnected to what is being viewed. By studying target language communication in a multimedia format, learners can experience and come to understand the connections between utterances and how they function within a visually depicted context.

Recognize that meanings can be expressed in different grammatical forms

Redundancy in video presentations is common. That is, interlocutors and narrators frequently repeat the same information in different ways so that meaning and intention is made clear to the viewer. During the experiment, phrases and sentences that carried the same or similar meaning were highlighted for the participants to highlight those phrases and sentences.

Infer meaning and make predictions using personal knowledge, experiences, and strategies.

The participants were also required to infer meaning and make predictions from what they see and hear on the screen. In this format, these viewing/comprehension strategies can be cued and guided by, for example, posing pre-viewing questions on top of the stilled first frame of the sequence they are about to watch. Inference, predication, and calling up prior knowledge and experience can thus be activated (Richards, 1985, ac cited in Meskill, 1996).

Post-listening

The students completed the exercises prepared at the end of each multimedia and checked the answers carefully for a minute before exchanging it with their partners in order to check if the answers were correct. Then they handed in the exercises to the researcher. Afterwards, they were given the opportunity to discuss the material presented and to express their ideas or opinions about it. Finally, the problems related to the students' comprehension were solved. The next session, before providing the new topic, the previous lesson was also practiced for a few minutes and the students' questions were answered.

Unlike the experimental group which was presented with multimedia activities in class by the instructor, the control group was taught with no such facility. In fact, the regular traditional method was used to teach listening to the participants in control group. In fact, the most common traditional techniques during the listening activities are read-aloud and repetition. As the second phase of the study, the participants of both groups were asked to answer the questionnaire. To make sure that students understand the items in the questionnaire, and to eliminate ambiguity, students' native language (Persian) was used. They were given enough time to answer slowly, deliberately and honestly to the questions. Finally, the researchers gathered the prints of the students after about 20 minutes.

Results

Question 1. Does teaching listening through multimedia technology have a significant effect on students listening comprehension achievement?

Before examining and testing the main research question, in order to better explain the studied groups' listening skill, first, the groups' pre-test mean scores are compared, using independent sample t-test. The results (see Table 2) revealed that, according to the t-test (T=0.449) and significance level (Sig=0.655), there was no significant difference between the control and experimental groups mean scores in the pre-test: The listening skill mean score of the two groups was similar at 95 % and were homogeneous.

Table 2. Descriptive Statistics; Listening skill mean scores of the control and experimental groups on the pre-test

Independent-sample t-test	Group	N	Mean	Std. Deviation	T	df	Sig
Pre-test	control	30	34.03	4.82	0.449	58	0.655
	experimental	30	34.60	4.95			

To determine the significant difference between the control and the experimental groups' listening skill after the treatment, the means comparison test (Independent-Sample t-test) was used. Table 3 shows that, according to the t-test (T=4.17) and significance level (Sig=0.00), there was a significant difference between the listening skill of learners in the control and experimental groups at < 0.01 and confidence level of 99%, and the listening skill mean score of learners in the experimental group (39.07) was more than the comprehension mean score of the control group (34.76).

Table 3. Independent-sample t-test; Comparison of the control and experimental groups' listening skill on the post test

Independent-sample t-test	Group	N	Mean	Std. Deviation	T	df	Sig
Post-test	Control	30	34.76	4.70	4.17	58	0.000
	Experimental	30	39.07	3.14			

Paired samples t-test results, demonstrated through Table 4 and Table 5, also showed that there was no significant difference in the pre- and post-test listening skill of the control group. But the post-test listening skill of the experimental group, trained with the use of multimedia, was significantly different compared to their listening skill in the pre-test. So, we might claim that the use of multimedia might have a significant impact on listening skill. Accordingly, the first hypothesis of the study was rejected since there was a significant difference between using multimedia materials and improving listening skills in EFL learners.

Table 4. Descriptive Statistics for the control group's Pre-test and post-test

Paired-sample t-test	Control group	N	Mean	Std. Deviation	T	Df	Sig
Listening skill	Pre-test	30	34.03	4.82	0.385	29	0.703
	Post-test	30	34.50	4.43			

Table 5. Paired-sample t-test; Comparing the Control group's Pre-test and post-test

Paired-sample t-test	Experimental group	N	Mean	Std. Deviation	T	df	Sig
Listening skill	Pre-test	30	34.60	4.95	6.86	29	0.000
	Post-test	30	39.07	3.14			

These results revealed that the answer to the first question is affirmative. In other words, using multimedia technology had an effect on the listening achievement of the students in the experimental group.

Question 2. Is there any significant relationship between students' attitudes towards using multimedia materials and teaching listening skills?

To study the relationship between the attitudes of learners to the use of multimedia materials and their listening skill, due to the fact that the two variables' measurement level was interval, simple linear regression analysis was used. Table 6 shows that, according to the F value (F=5.31) and significance level (0.020), there is a direct linear relationship between the learners' attitude to the use of multimedia materials and their listening skill at <0.05 and confidence level of 95%, hence the learners' attitude to the use multimedia materials can well explain the variations and variance of the listening skill.

In Table 6, in the fitting model part, the coefficient of determination (R^2) shows the variance explained and variations of the learners' listening skill by their attitude to the use of multimedia material. The coefficient of determination obtained (R^2 =0.187) indicates the weak role of the attitude towards the use of multimedia material in explaining the listening skill of learners. Adjusted coefficient of determination (R^2.adj=0.182) shows that the attitude to the use of multimedia material could explain 18.2 % variation in the listening skill of the learners.

Standardized regression coefficient or Beta indicates the relative contribution of the variable, the attitude to the use of multimedia materials, in explaining the changes in learners' listening skills. In Table 6, the Beta coefficient (0.371) indicates that one standard deviation change in the attitude to the use of multimedia material changes the standard deviation 0.371 in the listening skill of learners. Statistic T shows the relative importance of the variable attitude to the use of multimedia materials in the model.

Considering the significance level (Sig=0.020) obtained for the statistic T and its significance <0.05, it is suggested that the attitude to the use of multimedia had a statistical significant impact on explaining the changes in learners' listening skill. These results were the bases to conclude that there is a significant relationship between students' attitudes towards using multimedia materials and teaching listening skills.

Table 6. Regression analysis of the effect of the attitude to the use of multimedia on listening skill

Variable		The results of fitting model		Analysis of variance		Regression coefficients of the variable, the effect of attitude towards the use of multimedia on listening skill			
Independent	Dependent	R^2	R^2.adj	F	Sig	B	Beta	T	Sig
Use of multimedia	Listening skill	0.187	0. 182	5.31	0.020	0.302	0.371	4.52	0.020

Discussion and Conclusion

This study attempted to examine the impact of multimedia materials on Iranian EFL learners' listening comprehension. Furthermore, the study examined the students' attitudes towards using multimedia materials and teaching listening skills. As it was illuminated in the preceding sections, the findings of the study revealed that multimedia can improve listening ability of Iranian EFL learners. The reason for such findings may be due to the twelve principles that shape the design and organization of multimedia presentations (Mayer, 2001). These principles, according to Mayer (2001), which comprise Coherence, Signaling, Redundancy, Spatial Contiguity, Temporal Contiguity, Segmenting, Pre-training, Modality, Multimedia,

Personalization, Voice, and finally Image Principles could be summed up into one important support for multimedia instruction and its role in developing listening skill. In conclusion, one can say based on these principles, human learns better when he/she receives stimuli by different senses (Auditory, visual and animation) and when those stimuli are presented in contiguity (Mayer, 2001).

It was also found that there is a significant relationship between students' attitudes towards using multimedia materials and teaching listening skills. In fact, multimedia presentations have proved to have an amount of entertainment, enjoyment and excitement as learners may be involved in the live experience as participants in the real time, place and event on the affective level. Similar to the present study which depicted a relatively strong relationship between the students' attitude towards multimedia instruction and their listening achievement, Astleitner & Wiesner (2004) and [32] Yarbrough (2001) also suggested that student satisfaction and motivation is higher in courses that use multimedia materials than the traditional ones. On the cognitive level multimedia can improve learning and retention of material presented during a class session or individual study period as it provides multiple sources of stimuli for the senses and the brain.

The results of this study which demonstrated a significant effect of multimedia on listening comprehension support the previous studies which had the same outcomes (Grgurović & Hegelheimer, 2007; Isik & Yilmaz, 2011; O'Bryan & Hegelheimer, 2007; Verdugo & Belmonte, 2007). To solve EFL learners' problems, recent instructional approaches emphasize learning by engaging learners in knowledge construction [33] (Reiser, 2004). The conditions of meaningful learning require an appropriate instructional strategy, where students need to elaborate, or generate activities, such as self-questioning, semantic mapping, and summary writing, monitor learning, and construct meaning from a listening text. Such strategies can be considered effective in listening comprehension [34] (McGriff, 1996). If provided with appropriate assistance, students can attain a goal or engage in a practice or task that is beyond their reach. Reiser (2004) points out that through multimedia activities, learners receive support and assistance to successfully perform certain tasks and move to more complex ones. Without such assistance, these tasks would be beyond their ability; therefore, building on the multimedia materials and teacher support, students reshape their knowledge and improve their performance.

Similarly, [35] Vacca (2008) suggests that when the students are guided, supported and provided with the necessary materials, they become more responsible for their learning, more motivated, and more successful. Instructional multimedia is, therefore, an effective model for teaching listening, and such an instruction influences the development of higher functions and skills beyond the confines of a learner. Thus, it can, undoubtedly, further develop students' cognitive and metacognitive skills [36], [37] (Olson & Land, 2007; Davis & Miyake, 2004).

The results of this study could brighten the path for both language teachers and learners. The results can encourage language teachers to take a more systematic approach in teaching listening and planning their programs in classrooms. In practice, teachers may utilize new methodologies to teach the instructional materials relating listening, and try to improve listening ability of students through multimedia materials. It should be mentioned that the findings of this study could also enrich the literature in the area of second/foreign language acquisition development. The EFL learners can also take benefit of the multimedia materials to enhance their listening skills.

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«فرم اشتراک»

علاقه‌مندان به اشتراک فصلنامه علمی - تخصصی « ***Iranian Distance Education***» می‌توانند فرم زیر را تکمیل کنند و به همراه فیش بانکی به شماره شبای: ۲۱۷۸۶۰۹۰۰۱۰۰۷ نزد بانک ملی ایران شعبه بنفشه، کد: ۱۵۰۸ با معادل شبای متمرکز IR42 0170 0000 0217 8609 0010 07 به دبیرخانه مجله ارسال دارند تا مجله برای آنان فرستاده شود.

نام خانوادگی:.....

نام:.....

نشانی:.....

شماره تلفن:.....

کد پستی:.....