

An Investigation of the Effect of Concept Mapping on Improving Iranian EFL Learners' Listening Comprehension Ability

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Abstract: The current study investigated the influence of concept mapping on EFL learners' listening comprehension ability. Concept maps are visual representations of knowledge which can be employed as a learning strategy by the learners to find the relationship between current knowledge and new information. They allow the learners to figure out how ideas are connected through representing knowledge in graphs. The major aim of the current study is to assess the effects of concept mapping on Iranian EFL learners' listening comprehension in two English Institutes in Iran, at the upper-intermediate level. So, the study sought to answer the following question: Does the use of concept mapping significantly improve learners' ability to comprehend listening tasks? To do so, fifty EFL learners at upper-intermediate level were randomly assigned to experimental (n=25) and control (n=25) groups. Then a pretest-posttest design was utilized. The results of the pretest indicated that the two groups were homogeneous with regard to their listening comprehension ability. The experimental group was taught to construct concept maps through brainstorming before listening to each passage. Then, the results were analyzed by using paired T-test, and showed that listening performance can be improved through the utilization of concept mapping strategy.

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1. Introduction

Developments in the realm of second language acquisition have profoundly influenced the importance assigned to comprehension skills in EFL classes. Krashen's proposal regarding the need for comprehensible input in language acquisition has certainly led to the emergence of comprehension-based methods and materials. Nowadays, a culminating number of scholars and practitioners strongly advocate the active teaching of comprehension processes and strategies in second/foreign language classrooms.

Listening, according to Brown (2007), is "a major component in language teaching and learning" (p.247). This skill received the attention it deserved in the late 1970s in James Asher's Total Physical Response in which prominence was given to comprehension, especially the comprehension of spoken language. Natural approach, likewise, included a great quantity of listening comprehension activities in its framework to avoid the anxiety of speaking through providing the security of listening.

Rost (1994, pp. 141-142) states that listening is vital in language classrooms since it provides learners with input. Nunan (2002) emphasizes the importance of adequate input when he writes

"without understanding input at the right level, any learning simply cannot begin" (p. 239). Furthermore, Rost (2001) emphasizes the important role contextualized listening opportunities play in providing linguistic input. From the relevant literature, therefore, we can get to know that listening must receive due attention in any language teaching program which aims to enable learners use the language communicatively.

Due to the increased amount of access to listening resources in Iran, Iranian English institutes have recently paid more attention to listening comprehension in their programs. Therefore, following the international trend in English teaching profession, Iranian language teachers are searching for new techniques and procedures through which they can train more successful listeners.

One of the major techniques to make a bridge between listening and learners' experiences is called concept mapping which can effectively be utilized in pre-listening stage of teaching listening comprehension. Concept maps are graphical/spatial representations of knowledge. They facilitate understanding of the relationship between ideas via creating a visual map of connections. They are composed of concepts, enclosed in circles/boxes, and

connecting lines showing the relationship between these concepts (Cañas, 2003).

Psychological foundation of concept maps derives from Ausubel's meaningful learning theory and the constructivist movement, both of which emphasize that learning takes place through a meaningful process of assimilating new information into previously learned/existing cognitive concepts or propositions (Novak & Gowin, 1984). Novak (1998) asserted that concept maps sufficiently fulfill the requirements of meaningful learning. For learning to be meaningful, it needs to meet three requirements: 1. Relevant prior knowledge must be activated, 2. Learners must deliberately choose to learn meaningfully, and 3. Meaningful material must be provided (Novak & Gowin, 1984).

Due to their organizing nature, concept maps can adequately be used in educational settings as learning, assessment, and brainstorming tools. Cañas (2003) summarized the educational applications of concept maps as follows:

1. a scaffold for understanding
2. a tool for the consolidation of educational experiences
3. a tool for improvement of affective conditions for learning
4. an aid or alternative to traditional writing assignments
5. a tool to teach critical thinking
6. a mediation representation for supporting interaction among learners, and
7. an aid to the process of learning by teaching

Since Novak's initial work, numerous studies have been carried out to assess the efficacy of concept maps as a teaching/learning tool. McCagg and Dansereu (1991) tested the effects of student-generated knowledge maps on the students of psychology and came to know that mapping had a positive effect on students' memory retention, based on their performance on recognition and recall tests.

O'Donrell, Dansereau and Hall (2002) rendered a review of the research on knowledge mapping and reiterated McCagg and Dansereau's (1991) position that knowledge maps are dissimilar to other spatial learning strategies due to a definite, common set of labels for the links between nodes. They outlined three main types of links with knowledge mapping: dynamic, static, and elaborative. The review underlined some common findings: knowledge maps heighten students' recall of central ideas, and subjective reactions to studying and testing were more positive. The research also demonstrated that the types of map construction may be important, and that the types of links may impact

performance, particularly with students with low verbal ability or low prior knowledge of a topic.

In Taiwan, Chang, Sung, and Chen (2007) investigated the use of three different concept mapping approaches with 126 fifth-graders. They designed three approaches – map correction, scaffold fading, and map generation – and tested the effects of each on students' reading comprehension and summarization skills. Results showed that map correction had the most significant, positive effect on reading comprehension and summarization skills overall, and that scaffold fading method considerably improved summarization skills, compared to the map generation and control groups. The authors also deduced that the process of concept mapping is very similar to steps necessary for summarization, and that the concept mapping may have efficaciously channeled to summarization skills.

There are three different types of spatial learning strategies: knowledge mapping, graphic organizers and concept mapping. This study attempts to focus on concept mapping and its effect on improving Iranian EFL learners listening comprehension ability. According to the research, concept mapping seems to be an efficient way to teach and learn new information. The argument for concept mapping consists of the importance of connecting new information to prior knowledge and experience (Novak & Gowin, 1999; Cromley & Azevedo, 2007; Jonassen et al., 1999; O'Donnell et al., 2002), the efficacy of building visual-verbal representations of knowledge (Novak & Gowin, 1999; Jonassen et al., 1999; Plotnik, 1997) and that these representations are more effective for knowledge retention than using traditional text (McCagg & Dansereau, 1991; Jonassen et al., 1999).

2. Methodology

2.1. Research question

This study aims at investigating the following research question: *Does the use of concept mapping significantly improve students' ability to comprehend spoken language?*

2.2. Subjects

The subjects in this study consisted of two English classes at Nawazeh & Aram English Institute in Iran, between the age range of 18 – 23. The classes had the same number of the students, namely 25. Based on the listening section of a TOEFL, the participants had the same listening comprehension level.

2.3. Instrumentation

The first testing instrument was the TOEFL test. This test aimed at controlling the proficiency level of the subjects. The pre-test was a listening comprehension test which consisted of three sections. The test was taken from a TOEFL booklet. The post-test, which was administered to both groups, contained the same sections as the pre-test.

2.4. Procedure

To accomplish the purpose of the study, the following procedure was followed: the two classes were conducted two hours a week and the study lasted for twelve weeks. Since the purpose of this study was to investigate the effect of concept mapping on improving Iranian EFL learners' listening comprehension ability, the two groups were treated differently. For the control group, the teacher introduced them the new words, phrases, and concepts, and the students began to listen to the listening activity and answer the comprehension questions. For the experimental group, the same listening exercises were employed but this time the teacher used concept mapping in order to pre-teach the concepts, ideas, words and phrases. When students had completed all the exercises, they were

required to take a post-test. The post-test consisted of ten listening comprehension exercises and the subjects in experimental group had to listen to the spoken passages and then complete the exercises. Then, the researchers collected all the data sheets and the data were analyzed by using SPSS 11.5 and measuring the statistical measurements of mean, standard deviation, and variance. Finally, in order to answer the research question paired T-test was utilized.

3. Data analysis

The effect of concept mapping on listening comprehension ability of Iranian university students was determined with the pretest-posttest equivalent group design. The pre-test was administered before students received listening instruction through concept mapping for experimental group and traditional method for control group. A paired sample t-test was used to analyze the data.

To answer the stated question, after scoring the tests and tabulating the scores for each subject, the results were put under a series of statistical analyses. First of all, the means, standard deviations, and variances of the two groups in pretest were calculated.

Pre-test results for both groups

Groups	N	Range	Min.	Max.	Mean	SD	V
Cont. G.	25	13.00	5.00	18.00	11.94	3.03	9.23
Exp. G.	25	11.00	6.00	17.00	12.17	3.01	9.08

According to the table, the mean score of control group in pre-test is 11.94 and the mean score of experimental group in post-test is 12.17. Therefore, this table indicates that the two samples had, though

not exactly, the same descriptions of means which seemed to be suitable for the research purpose in this study.

Post-test results for both groups

Groups	N	Range	Min.	Max.	Mean	SD	V
Cont. G.	25	12.00	6.00	18.00	12.20	2.63	6.92
Exp. G.	25	11.00	9.00	20.00	14.51	2.64	7.02

As the above table shows, the mean score of control group in post-test is 12.20 and the mean of the experimental group in this test is 14.51. Hence, it indicates that the experimental group has performed significantly better than the control group and it

shows the positive effect of learning listening comprehension through using concept mapping than the traditional method of listening comprehension strategy. Next, paired t-test was used to verify the pre and post-test results of the control group.

Paired t-test of control group

	Mean	N	SD	SE. Mean
Pair 1 C. G. Pre	11.94	25	3.03	0.51
C. G. Post	12.20	25	2.63	0.44

Paired sample test of control group

	Mean	SD	SE. Mean	T	Df	Sig.
Pair 1 C. G (pre – test) – C. G (post – test)	0.25	1.78	0.30	0.85	34	0.40

The pair t-test table of control group in pre and post-test shows that there is a slight difference between the performances of this group in both tests. The value of calculate t is 0.85, and the sig in this analysis is 0.40 which is higher than the value of sig – critical (0.05), hence, it shows that it is not

significant. So, the traditional method of listening comprehension does not affect students' comprehension of spoken tasks.

Then, the same procedure, paired t-test, was used to verify the pre and post-test results of the experimental group.

Paired t-test of experimental group

	Mean	N	SD	SE. Mean
Pair 1 E.G. Pre	12.17	35	3.01	0.50
E. G. Post	14.51	35	2.64	0.44

Paired sample test of experimental group

	Mean	SD	SE. Mean	T	Df	Sig.
Pair 1 E. G (pre – test) – E. G (post – test)	2.34	1.62	0.27	8.52	34	0.00

As it is indicated in the above tables, the differences between mean scores of experimental group in both tests is higher than the control group, and it shows the significantly better performance of the experimental group in the post-test. As well as, the t-value of the experimental group is 8.52 which is higher than the value of the t-critical and it is significant, since the sig of the performance of this group is 0.00 and it is lower than the sig – critical value (0.05). Therefore, the calculated results show the positive effect of concept mapping on the listening comprehension ability of the experimental group.

4. Discussion

The obtained data from the performance of the control group and the experimental group was analyzed in the preceding section. The results presented in the previous section suggest that concept maps may provide a means to foster listening comprehension among students. The proposed hypothesis which is the effect of using concept mapping in improving Iranian EFL learners' listening comprehension ability, was confirmed. The two groups scored differently in both tests, and the differences were statistically significant. The mean score of two groups in pre-test were approximately at the same level, and it shows the homogeneity of the subjects in the study. But, the mean scores of the two groups in the post-test were statistically different and

the mean score of the experimental group was higher than the control group, and it indicates the better performance. Furthermore, the t ratio of the experimental group exceeds the t ratio of the control group in post-test. Consequently, by confirming the proposed hypothesis, the researchers can claim that the concept mapping is more useful and can play an important role in teaching listening comprehension to Iranian EFL learners.

Consequently, the results of the present study confirms the positive effect of using concept map in language learning.

5. Conclusion

In summary, this study endeavored to find out whether concept maps can promote greater listening comprehension skills, and thus, can contribute to improving the academic performance, and the personal and social development of students in Iranian EFL context. The findings of this study imply that concept maps can have a significant effect on improving the listening ability of Iranian EFL learners.

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