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Suggestions for Further Research

Based on the findings of this study the following topics can be suggested for further research.

First, the subjects of this study ranged between 14 to 22 years of age; another study can be conducted to determine the impact of concept maps on different age groups. Therefore, it may be the case that if this research were conducted with younger or older subjects, different results would come up.

Second, as the subjects of this study were female students, another study can be conducted to observe the impact of concept mapping on male students.

Third, this study focused on the effect of concept mapping on listening comprehension. Another line of research can be pursued on the effect of concept mapping on speaking and writing abilities.

Finally this study focused on the effect of a concept map technique, fill-in-the-map, on the listening comprehension of Iranian EFL learners. Another study can be done on the same topic, using other concept map techniques.

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cated that the five components of the listening test loaded on a single factor, indicating that they all tapped on the same underlying construct. So it was concluded that the post-test was construct valid.

Table 8: Factor Analysis of the Post-Test

Components	Factor 1
B	.92
E	.83
C	.80
D	.72
A	.64

An independent t-test was run to check the significance of the difference between the obtained means of the experimental and control groups on the post-test. As table (9) shows, the null hypothesis was rejected because the t-observed value (11.16) exceeded the critical t-value (2.04), at 58 degree of freedom.

Table 9: t-Test for Post-Test

Level of significant (two tailed)	t-observed	D.F	t-critical
$P \leq .05$	11.16	58	2.04

Conclusion

The findings demonstrate that the employment of a concept map technique, fill-in-the-map, has a positive effect on the Iranian EFL learners' listening comprehension.

The study is limited in that only two classrooms and sixty students were examined in the experimental and control groups, so one should be so cautious in generalizing the results. Also only students who were at elementary levels of language proficiency were involved in this study. Furthermore, only female students were involved in this study. Finally, the only linguistic component under study was listening comprehension.

chunk by chunk. Students were encouraged to ask any questions that they might have had about the texts at this point in the class. The correct responses of the listening comprehension tests and completed forms of the concept maps were also given to the students in the post-listening phase.

Finally, after seven weeks, a parallel test; namely, one with the same nature and characteristics as the one in the pre-test, was given to the subjects in the control and experimental groups as a post-test. The only difference between the pre-test and the post-test was that, on the pre-test, both groups answered listening comprehension questions without using the concept map technique, while on the post-test, the experimental group had to complete the concept maps of the texts, and then answer the listening comprehension questions in the multiple-choice form. After scoring students' papers, the descriptive statistics and reliability of the post-test were computed. Table (7) shows the results.

Table 7: Descriptive Statistics and Reliability of the Post-Test

Statistics	Experimental Group	Control Group
K	30	30
N	30	30
Mean	27.3333	20.20
Mode	26,27	23
Median	27	21
Midpoint	28	19.5
Low-High	26-30	14-25
Range	5	12
Variance	1.402	10.855
S	1.18419	3.29472
KR-21	0.76	

As displayed in table (8), the results of the factor analysis indi-

t critical value of 2.04 for a two-tailed test at the .05 level at 58 degrees of freedom, it was concluded that there was not a significant difference between the mean scores of the experimental and control groups on the pre-test.

Following the pre-test and after ensuring the homogeneity of the experimental and control groups, the subjects in both groups were trained in listening in accordance to their treatment conditions; the experimental group with the concept map technique, fill-in-the-map, and the control group with no concept mapping. The treatment lasted about 7 weeks, with three sessions in a week. The first step in concept map training was to introduce students to the ideas of concept, linking word, proposition and concept map. This introduction was in the form of a set of preparing activities dealing with learning and memory that was developed by Novak (1984). After that the training sessions were divided into three phases.

The pre-listening phase. The pre-listening activities are probably the most important aspect of any listening sequence because the success of all the other activities depends on the extent to which the teacher manages to give the students the necessary background, guidance, and direction to achieve the objectives of the activity. Giving linguistic knowledge such as teaching unknown vocabularies and pronunciation drills, and also providing related background knowledge were some of the pre-listening activities carried out in both groups.

The while-listening phase. In this phase, the tape was played twice and the students in both groups; namely, experimental and control groups, were required to complete a comprehension test. The only difference between the control and experimental groups was in the while-listening phase. Students answered the listening comprehension questions without using concept mapping in the control group, whereas students in the experimental group were required to complete a concept map while they were listening to the tape before they answered the listening comprehension questions of the texts.

The Post-listening phase. The first step in the post-listening phase was to play the tape again and ask students to repeat after the tape

Table 4: Factor Extraction

Section	Factor
B	.88
A	.64
C	.63

To ensure the homogeneity of the experimental and control groups, on f-test and t-test were run for the pre-test.

Table 5: F-Test for the Homogeneity of Two Groups in the Pre-Test

Statistics	Experimental Group	Control Group
N	30	30
Mean	25	24.56
Variance	7.93	10.03
S	2.86	3.19
F-observed	1.24	
F-critical	1.91	

As shown in table (5), since the observed F value (1.24) did not exceed F-critical value (1.91) at the .05 level of significant at 58 degrees of freedom, it was concluded that the variances were homogeneous and the two groups were not significantly different.

For further statistical proof of the homogeneity of the experimental and control groups, an independent t-test (Best, 1977) was run to compare the mean scores of the control and experimental groups on the pre-test.

Table 6: t-Test for Pre-Test

Level of significant (two tailed)	t-observed	D.F	t-critical
$P \le .05$	1.24	58	2.04

As displayed in table (6), since the t value of 1.24 did not exceed

and the descriptive statistics were computed. Table (2), shows the results:

Table 2: Descriptive Statistics and Reliability of the Pre-Test

Statistics	Experimental Group	Control Group
K	30	30
N	30	30
Mean	25	24.56
Mode	27	25
Median	26	25
Midpoint	24	23.5
Low-high	19-29	18-29
Range	11	12
Variance	7.93	10.03
S	2.86	3.19
KR-21	0.54	

The next step was to compute the construct validity of the pre-test to ensure that the test measured just the ability it was supposed to measure. A factor analysis was run. As displayed in table (3) and (4), all three sections (A, B, C) loaded on a single factor, indicating that they tapped the same underlying construct, hence their construct validity. This one factor model accounted for 53.6 percent of the variance (table 3). So it was concluded that the pre-test was construct valid.

Table 3: Final Statistics

Factor	Eigenvalue	%	Cum %
1	1.60	53.6	53.6

Table 1: Descriptive Statistics and Reliability of the Achievement Test

Tests	$\overline{X}$	S	V	K K-R Number of items	21
Listening	24.77	3.02	9.10	30	.54
Reading	15.8	02.73	7.45	20	.58
Vocabulary	24.62	3.18	10.14	30	.58
Grammar	27.20	2.51	6.30	30	.62
Total	92.38	11.29	127.46	110	.89

Table (1) shows the descriptive Statistics and Reliability of the achievement test, as can be seen descriptive Statistics and Reliability of each section of the achievement test were also computed. The reliability of sub-tests and the test were computed through K-R 21 formula. In this way, a reliable and nearly standard achievement test was developed.

The cut-point is a compromise or standard. The cut-point for passing the test with 100 items is .70 (Brown, 1984). Since this test was composed of 110 items, the cut-point can be .77.

Among all the candidates, those students whose scores fell above the cut-point (.77) were selected as the subjects of this study. All the students who took part in this test passed the exam (they scored above the cut-point .77), but since only 60 subjects were required for this study, so 60 students were randomly selected and assigned to the experimental and control groups, with a minimum of 30 subjects in each group.

The listening comprehension test of the achievement test was considered as a pre-test. This test was composed of 3 texts with 30 multiple-choice questions.

Once the 30-item pre-test was administered to the experimental and control groups, it went through the process of standardization

The concept map technique, fill-in-the-map, does not have any significant impact on the development of Iranian EFL learners' listening comprehension ability.

Method
Subjects
Of the original 65 students at Kavosh English Language School in the first district of Tehran, 60 students were selected for this study through an achievement test. The subjects were at the elementary levels of language proficiency, within a 14-22 age range.

Instrumentation
In this study, the following instruments were used:

1. an achievement test,
2. two listening comprehension tests as the pre-test and post-test,
3. a concept map technique,
4. the computer software "word 2000."

Procedure
To accomplish the purpose of the study, the following procedures were carried on:

Selecting the subjects by a standardized achievement test was the first step in this study. The achievement test was composed of four sections: 30 listening with 3 parts, 30 grammar, 30 vocabulary and 5 reading passages with 20 questions in the multiple-choice form.

Once the administration of the achievement test was finished, it was scored and went through the process of standardization.

Figure 3: Concept Map Techniques According to Constraints of the Mapping Tasks (Ruiz-Primo, 2000)

In the construct-a-map technique three approaches can be investigated. In the first approach, no concept and structure are provided by the teacher. In the second approach, again structure is not suggested, but students can construct a map from scratch, using the concepts provided by the teacher. Finally, in the third approach, both concepts and structure are suggested in the form of a Skeleton map. And students must complete the Skeleton map.

In this study, fill-in-the-map technique was used and only concepts, but not linking lines, were left out.

Purpose of the Study

A lot of studies were conducted to see whether the concept map employment has any significant impact on learning or not. The majority of them show that concept mapping has a positive effect on learning, and some of them reveal that there is no significant relationship between the employment of concept maps and students' learning. So, the purpose of this study was to investigate whether there is any significant difference between the performance of Iranian EFL learners who receive a concept map technique, namely the fill-in-the-map technique, and those learners who receive no concept mapping on the listening comprehension.

Research Question

As a result, the following question was addressed:

Does the employment of the concept map technique, fill-in-the-map, have any significant impact on the Iranian EFL learners' listening comprehension?
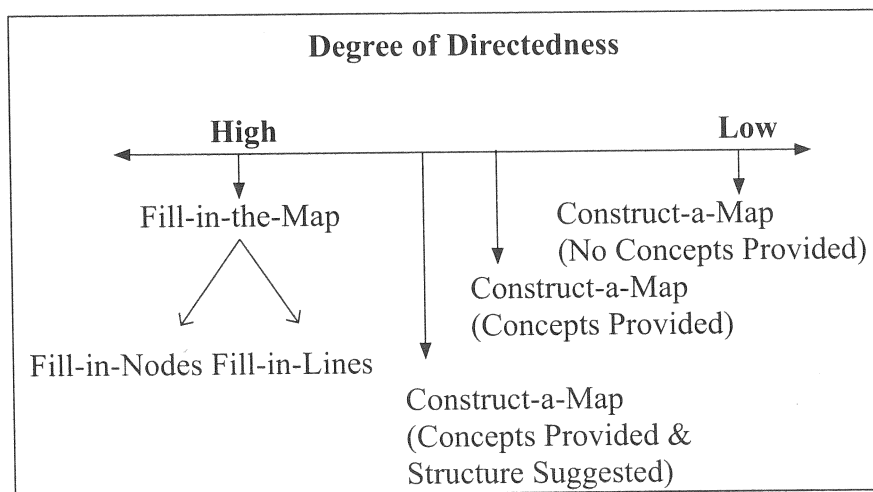
Null Hypothesis

In order to investigate the research question empirically, the following null hypothesis was proposed:

of a Skeleton map with the information provided. This technique is called fill-in-the-map technique.

	Degree of Directedness	
	High ⟷ Low	
Concepts	Provided by Assessor	Provided by Student
Linking Lines	Provided by Assessor	Provided by Student
Linking Words	Provided by Assessor	Provided by Student
Structure of the Map	Provided by Assessor	Provided by Student

Figure 2: Degree of Directedness in the Concept Assessment Tasks (Ruiz-Primo, 2000)

At the right end, mapping technique are low-directed, students are free to decide which and how many concepts to include in their map. As displayed in figure (3), the *fill-in-the-map technique* provides students with a concept map where "some" of the concepts or the linking words, not all of them, have been left out.

Degree of Directedness

High   Low

Fill-in-the-Map   Construct-a-Map
                         (No Concepts Provided)

Fill-in-Nodes Fill-in-Lines   Construct-a-Map
                               (Concepts Provided)

                    Construct-a-Map
                    (Concepts Provided &
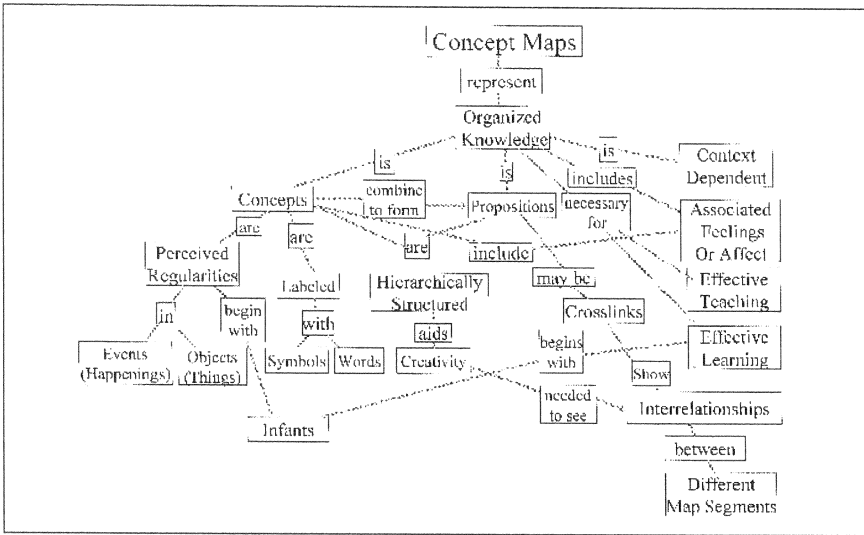   Structure Suggested)

Figure 1: The Concept Map of a Concept Map (Novak, 2001)

Another important characteristic of concept map is the inclusion of cross-links. These are relationships between concepts in different domains of the concept map.

Novak (2001) believes one of the reasons that concept mapping is so powerful for the facilitation of meaningful learning is that it serves as a kind of template to help to organize knowledge and to structure it.

Concept Map Techniques

Ruiz-Primo (2000) states that variation in tasks, response formats, and scoring systems produce different mapping techniques. For example, one dimension in which tasks can vary is the constraints imposed on students in representing their connected understanding. Ruiz Primo (2000) has named this dimension "directedness". He characterizes the concept map techniques as having different degrees of directedness.

As demonstrated in figure (2), at the left extreme of the continuum, mapping techniques are *high-directed*, students do not select the concepts to be used in the map; they just fill in the blank parts

overestimated. Through reception, we internalize linguistic informa-tion which we couldn't produce language. In classrooms, students always do more listening than speaking. Listening competence is universally "larger" than speaking competence.

However, listening, particularly in second language learning is problematic for learners. As a result, second language teachers must recognize and implement effective listening approaches in their classrooms. One of the most commonly used strategies in listening is "concept mapping".

Concept Map

Concept mapping is a tool for organizing and representing knowl-edge. Concept mapping was first used in Novak and his Colleague's research programs at Cornell University in 1984. Concept map is based on the learning psychology of David Ausubel. The fundamen-tal idea in Ausubel's Cognitive Psychology is that learning takes place by the assimilation of new concepts and propositions into ex-isting concept propositional frameworks held by the learner.

Figure (1) presents the concept of a concept map. Concept map includes concepts, usually enclosed in circles or boxes and relation-ship between concepts or propositions indicated by connecting line between two concepts. Words on the line specify the relationship between the two concepts.

Another Characteristic of concept map is that concepts are rep-resented in a hierarchical fashion with most general concepts at the top of the map and the more specific, less general concepts arranged hierarchically below.

School in the first district of Tehran. After ensuring the homogene-ity of the students by using a standard achievement test, they were randomly assigned to experimental and control groups. A listening pre-test was used to determine the students' level of listening com-prehension. Thereafter, the students in both groups were trained in listening in accordance to their treatment conditions; namely the ex-perimental group with a concept map technique, fill-in-the-map, and the control group with no concept mapping. Following the training sessions, a parallel test as a post-test on listening comprehension was given to all students. A t-test between the obtained means of the experimental and

Control group on the post-test revealed that there was a signifi-cant difference

between the performance of the experimental and control groups. As a result, the null hypothesis was rejected and it was concluded that the employment of the fill-in-the-map technique has a positive effect on Iranian EFL learners' listening comprehension.

Introduction
Listening
Listening is the ability to identify and understand what others are saying. This involves understanding a speaker's accent or pronun-ciation, his grammar and vocabulary, and grasping his meaning (Howatt and Daking, 1984). Listening is a psycholinguistic process in that it starts with a linguistic representation encoded by a speaker and ends with the meaning that the listener constructs. There is thus an essential interaction between language and thought in listening. The speaker encodes thought as language and the listener decodes language to thought (Chastain, 1988).

The importance of listening in language learning can hardly be

The Impact of the Application of the Concept Mapping Technique of Fill-in-the-Map on the Iranian EFL Learners' Listening Comprehension

Mansoor Fahim and Roghayyeh Mahdipour Azar*

Abstract

Listening is the ability to identify and understand what others are saying. This involves understanding a speaker's accent or pronunciation, his grammar and vocabulary, and grasping his meaning. Listening is a psycholinguistic process in that it starts with a linguistic representation encoded by a speaker and ends with the meaning that the listener constructs. There is thus an essential interaction between language and thought in listening. The speaker encodes thought as language and the listener decodes language to thought. However, listening, particularly in second language learning, is problematic for learners. As a result, second language teachers must recognize and implement effective listening approaches in their classrooms. One of the most commonly used strategies in listening is "concept mapping". The concept maps are visual instruments to comprehend the content of the text. The concept map technique can be introduced to the students in different forms. Variation in tasks, response formats, and scoring systems produce different mapping techniques. Fill-in-the-map is one of them. The present study is an attempt to understand whether this concept map technique has any significant impact on listening comprehension of Iranian EFL learners. The study was conducted on 60 female EFL learners at Kavosh English Language

*Allameh Tabataba'i University