

The Influence of Explicit Teaching and Utilization of Concept-mapping on EFL Students' Listening and Self-efficacy

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Abstract

One of the most important communicative skills is listening and, at the same time, the Achilles' heel of many L2 learners as it entails multi-level cognitive processes (Lynch, 2002). Besides, as various studies show, self-efficacy measures are closely tied to the effective use of learning strategies. Considering the key role that concept mapping, as an indispensable cognitive learning strategy, and self-efficacy play on an individual's achievement (Bandura, 1986, 1997), the present study aimed to examine the influence of explicit teaching and utilization of concept mapping on Iranian EFL students' listening achievement and perceived self-efficacy. The participants were sixty intermediate university students studying English as a foreign language. They were assigned into two groups, namely control and one experimental group, each including thirty participants. The students in the experimental group were trained to utilize concept mapping while doing their routine listening tasks. The instruments were a self-efficacy questionnaire and a test of listening achievement. The findings indicated that the experimental group performed significantly better in the listening achievement test after learning to use a concept-mapping strategy. Likewise, their perceived self-efficacy in accomplishing listening tasks improved after the intervention period.

Keywords: *Learning Strategies, Visual Organizers, Concept Mapping, Listening Skill, Self-Efficacy*

Introduction

In the field of educational psychology, the paradigm shift to cognitivism puts an unprecedented emphasis on the learners, and the role they play for their learning. Contrary to the behaviourist learning approach, cognitivism no longer views learners as passive absorbers of information;

rather, they are considered actively engaged in recognizing, reconstructing, and building information on top of their existing knowledge. It also strongly denounced the orthodoxy that ignored the teacher's part as a facilitator of learning and questioned the commonly held belief that learners have access to an inherent repository of skills that helps them deal with the bulk of processing tasks and the new information they are exposed to. Consequently, this theoretical transition brought learning strategies into the limelight. To highlight this transition's significance, Vermunt (1996) proclaims that learning is not an automatic instruction outcome. The quality of learning is largely determined by the nature and quality of the learning strategies utilized during the learning process. Therefore, he urges educators and policy-makers to foster an educational setting that promotes instruction of learning strategies and encourages the students to use them.

Particularly, in second language teaching and learning, multiple scholars (e.g., Chamot, Barnhardt, El-Dinary, & Robbins, 1999; Montaña, 2017; Szyszka, 2017) have emphasized that L2 learners can and should be equipped with learning strategies through instruction. It has also been maintained that the instruction becomes more efficient when students are taught and trained explicitly to use such strategies. A prominent class of learning strategies that has received well-deserved attention in the body of L2 teaching and learning research is *cognitive learning strategies*. In their broadest sense, they refer to those learning strategies that equip learners with effective cognitive tools for acquiring, storing, managing, integrating, retrieving, and applying information. In their recent book, Brown, Roediger III, and McDaniel (2014) have highlighted the pivotal role that cognitive learning strategies play in various learning environments to foster productive and sustained learning. They provide solid evidence that systematic integration of these strategies in the regular learning tasks results in higher-order and long-lasting outcomes. Besides, some researchers have identified a set of cognitive learning tools that have proven effective in various ESL learning contexts among which graphic organizers, and particularly concept maps, have been underscored (See, e.g., Kansızoğlu, 2017; Kılıçkaya, 2020; Uba, Oteikwu, Onwuka, & Abiodun-Eniayekan, 2017).

Review of the Literature

Concept-mapping in Second/Foreign Language Education

Originally, Joseph D. Novak and his colleagues at Cornell University were the pioneers who, building on David Ausubel's cognitive theories and constructivist movement (Ausubel, 1963), introduced *concept maps* in the 1970s as graphical networks that represent knowledge structures and the relationships among concepts and ideas (Novak, 1977). Since then, numerous studies have explored and confirmed the effectiveness of concept mapping in second/foreign language education. Nevertheless, these studies have mostly focused on such language skills as reading comprehension, speaking, writing, and grammar, listening to the least studied of all. To illustrate, Gopal (2004) used concept mapping as a teaching/learning tool in the English grammar classes of Army Public School in Delhi Cantt, India. The results verified that the students whose learning experience had been mediated by this strategy performed better in understanding

English grammar's complex structures. Regarding the influence of concept mapping on speaking skill, Kazemi and Moradi (2019) compared the two learning strategies of concept mapping and rehearsal to see if utilization of either of these two strategies by EFL learners would have any significant effect on their speaking accuracy and complexity. To this end, the participating students were assigned into two experimental groups where one group was instructed to use concept maps. At the same time, the other was encouraged to rehearse in the pre-speaking phase. The results of the post-test substantiated the significant effect of concept mapping on the two variables of interest. Particularly, the concept-map group outperformed its counterpart in terms of complexity. In a similar vein, Chen and Hwang (2020) examined the impact of concept mapping on critical thinking awareness, speaking performance, and speaking anxiety of EFL learners. Their study's findings point to a positive correlation between concept mapping and critical thinking awareness in particular. As Brown et al. (2014) stated, these three studies would imply that the use of concept mapping as a cognitive strategy can enhance higher-order reasoning and learning. In a theoretical paper, Roddy & Bridges (2020) discussed the mapping problem. They argue that the issue can be addressed by using models from the field of embodied cognitive science, including embodied image schema theory, conceptual metaphor theory, and conceptual blends, and from research that treats sound and musical structures using these models when mapping data to sound.

Concerning the influence of cognitive learning strategies on receptive skills, Vakilifard and Armand (2006) investigated concept mapping on second language learners' comprehension of informative texts. The participants were advanced-level French learners as a second language studying in the language preparatory program of the University of Montréal. Over an intervention period of four weeks, the experimental group students worked in groups and completed fill-in concept maps collaboratively before reading informative texts. After reading each text, the students had to work individually to make corrections and amendments to their maps. The researchers found out that the experimental group outperformed the control group who had received traditional instruction based on the explanation of keywords and discussed the new concepts. Along similar lines, Salehi, Jahandar, and Khodabandehlou (2013) explored the influence of concept mapping on the reading comprehension of Iranian EFL students. To this end, a population of 80 high school students was randomly divided into two groups: One experimental and one control group, each including forty participants. The experimental group was instructed to use concept maps, and the other group received traditional instruction. The post-test results indicated a substantial difference between the performances of the two groups, with the concept-map group outscoring the other. These studies would imply that the cognitive processes triggered during concept mapping can make learners aware of the higher-order processes involved in reading comprehension and that the students can gain more control over their learning by mapping the text's content.

Finally, regarding the effect of concept mapping on EFL students' writing skill, Zarei and Feizollahi (2018) sought to examine how concept mapping and brainstorming strategies affect EFL students' grammatical and lexical accuracy in argumentative essays. A further attempt was

also made to see how these two strategies would influence the students' writing anxiety. A comparison between the students' mean scores obtained in the pre- and post-test, plus their responses to the writing anxiety questionnaire demonstrated that concept mapping, in particular, had improved the grammatical accuracy of the students in the writing tasks. Furthermore, although the writing anxiety level decreased in the brainstorming group (compared with the control group who received no treatment), this decrease was relatively greater in the concept-map group. The findings of this research were in line with those of some other studies (e.g., Ahmed, 2020; Gardner, 2015; Nobahar, Nemat Tabrizi, & Shaghghi, 2013; Shakoori, Kadivar, & Sarami, 2017), which had similarly found a strong positive relationship between the use of graphic organizers (concept mapping in particular) and achievement in writing tasks.

Although the findings of the studies mentioned above unequivocally underscore the significance of concept mapping and its role in activating higher-level cognitive processes involved in the acquisition of language skills, very few studies have been conducted on the influence of this efficient learning strategy on listening comprehension. Hence, the current study is trying to fill the research gap by paying special attention to this "Cinderella skill" (Nunan, 2002).

Strategy use and self-efficacy in language education

In addition to achievement gains, the utilization of cognitive learning strategies may improve achievement-related variables such as perceived self-efficacy in academic contexts. Self-efficacy has its roots in Bandura's (1977, 1986) social cognitive theory, and it has an indispensable role in self-regulatory mechanisms controlling a person's motivation and action. Accordingly, "what people think, believe, and feel affects how they behave" (Bandura, 1986, p. 25). Likewise, students' perceived self-efficacy can influence their learning behaviour and reinforce persistence, effort, and ultimately learning performance and achievement (Schunk, 2001). Aligned with the theories above, multiple studies have confirmed that a sense of self-efficacy can influence achievement in language learning and that use of learning strategies would have a crucial role in shaping such efficacy beliefs (e.g., Chularut & DeBacker, 2004; Gahungu, 2007; Kargar & Zamanian, 2014; Kim, Wang, Ahn, & Bong, 2015; Li & Wang, 2010; Nobahar, Nemat Tabrizi, & Shaghghi, 2013; Magogwe & Oliver, 2007; Raoofi, Hun Tan, & Heng Chan, 2012). Based on these studies' findings, the students who are equipped with stronger self-efficacy perceptions have shown to have higher achievement. Likewise, those who believed in their capability to perform tasks tapped into more learning strategies and persisted longer in doing the assigned tasks. Namaziandost & Çakmak (2020) carried out a study to investigate the flipped classroom's difference on students' self-efficacy and gender. The results showed a significant increase in self-efficacy scores of the experimental group. In light of the results, female students could increase their confidence in producing requested performance in language learning while engaged in the flipped classroom. It is worth mentioning that a large body of research is available on the effects of self-efficacy in first language and literacy and science. However, relatively few studies have been carried out in second/foreign language teaching, and learning

and the ones that exist have mostly been done on reading and writing skills; otherwise, they have focused more narrowly on self-confidence, a construct somewhat different from self-efficacy. As a result, further undertaking from both educators and curriculum designers is demanded to develop methods that promote students' self-efficacy in second/foreign language education.

Strategy Use and Self-efficacy in L2 Listening

Numerous researchers have emphasized the fundamental role of receptive input in language learning, providing evidence for the priority of listening skill in instructional methods. On this basis, Dunkel (1991) expressed that the studies on listening should become the axis of theory building in L2 acquisition and pedagogy. Contrary to this fact, and although research on second language learning strategies has evolved enormously in recent years, the number of studies on listening strategies is relatively small. Nonetheless, the findings of these few studies have unequivocally supported the fact that in terms of strategy use, there is a big difference between effective and less effective listeners (e.g., Graham, 2011; Rahimi & Abedini, 2009; Vandergrift, 1999, 2003, 2007). More specifically, the research on listening strategy instruction confirms that L2 learners can be taught strategy use to improve their listening skill and enhance their performance in the assigned tasks, which can positively affect their sense of self-efficacy.

On the other side of the debate, Field (1998) has challenged the prevailing idea that language teachers can and should provide instruction on listening strategies. He dubs the research in this field 'inconclusive' and argues that instructing and training learners in strategy use may not benefit weak strategy users. He also questions the effectiveness of teaching a subconscious construct, maintaining that learners who have received instruction in strategy use can barely apply them in real-life situations. As a more efficient and productive alternative, Field proposes instruction or modelling strategy use on the listening subskills, such as recognizing word boundaries and sentence constituents and deducing meaning from the context. He contends that native speakers are naturally equipped with listening subskills (in their L1). In contrast, non-native speakers need to be instructed and trained to acquire or activate these competencies (in their L2). With regard to the arguments of both sides and the fact that theory and practice are not entirely aligned, and bearing in mind that the body of research on this issue is not adequately large, the current study deemed further research necessary to shed more light on the effectiveness (or ineffectiveness) of listening strategy instruction on the learners' performance.

Statement of the Problem

Despite the indispensable importance of the cognitive strategies in the learning process (particularly L2 learning) and the crucial role of listening as a receptive skill in language learning, many Iranian EFL learners are barely aware of or taught effective cognitive listening strategies. Similarly, the ones who are introduced to such strategies have extreme difficulties in using them efficiently. Various studies (e.g., Nowrouzi, Sim Tam, Zareian, & Nimehchisalem, 2015; Nushi & Orouji, 2020) have reported Iranian English language learners' problems in listening comprehension and the fact that these deficiencies can consequently become a source of

anxiety that degrades their sense of self-efficacy. Unfortunately, neither English language teachers nor policy-makers in Iran have paid the deserving attention to such learning strategies as concept mapping in the country's L2 education context. So far, no serious measures have been taken to alleviate the concerns of Iranian EFL students who assume listening comprehension to be one of the most distressing language skills that hardly develops.

Purpose of the Study

The present research aimed to investigate the teachability of concept mapping and its effectiveness on English listening skill. The second aim was to investigate the influence of this learning strategy on students' self-efficacy. A further attempt was also made to discover the extent to which students' competence in their L2 listening skill is associated with their sense of self-efficacy.

Research Questions

The present study intended to respond to the following research questions:

1. Does explicit teaching of concept mapping and its utilization by Iranian intermediate EFL students affect their achievement in listening tasks?
2. Does explicit teaching of concept mapping and its utilization in listening tasks by Iranian intermediate EFL students affect their self-efficacy beliefs about L2 listening skill?
3. Is there any relationship between Iranian intermediate EFL students' achievement in listening tasks and their sense of self-efficacy in listening skill?

Methodology

Participants

The participants in this study were sixty Iranian male and female undergraduate university students majoring in English language teaching (ELT), translation studies, and English literature at Azad University of Dezful. Their age ranged from 20 to 25, and they were at the intermediate (high and low) level of listening proficiency based on the scores they obtained from a mock TOEFL listening test. Initially, the test was administered to 120 students, and 60 students whose scores fell in the 12-25 band (out 30) were selected. This scoring range is in accordance with the high and low intermediate level bands set by Educational Testing Service (ETS) for the TOEFL test. Later, they were randomly divided into two groups of 30 participants: One experimental group and one control group. The variables of interest were concept mapping strategy as the independent variable and listening skill and self-efficacy as the dependent variables. The experimental group participants were instructed and trained to utilize concept mapping strategy while doing listening tasks. On the other hand, the control group did not receive any instruction and were free to use conventional listening strategies such as note-taking that is popular in Iran's language education context.

Instrumentation

Instructional materials

Six audio recordings were used in the intervention period as the instructional materials for the experimental group. The first three recordings were chosen from the audio files of the upper-intermediate book of 'Select Readings' series, 2nd edition (Gundersen & Lee, 2002), chapters one, three, and five. Each file's length was about 8 minutes, and the titles were 'the Youngsters behind Youtube,' 'Your Negative Attitude Can Hurt Your Career,' and 'What is behind Creative Thinking.' The other three recordings, which were somewhat longer and more difficult, were drawn from the same book, chapters six (Listen Up), eight (Why I Quit the Company), and twelve (When E.T. Calls). The experimental group was also supplied with a pamphlet that briefed them on concept mapping strategy and its use, plus some samples and exercises for designing concept maps. During the intervention, they were instructed, trained, and stimulated to use this newly learned strategy while doing their listening tasks.

Testing Materials

Proficiency test

A listening part of TOEFL's English proficiency test (Adopted from Phillips, 2005) was used to measure the participants' listening level. The test contained 30 items, and sixty students whose scores stood in the 12-25 band (out 30) were selected. This range is in line with the high and low-level bands set by Educational Testing Service (ETS) for the TOEFL test.

Test of homogeneity

Another listening part of TOEFL (Adopted from Phillips, 2005) was given to ensure the participants' homogeneity in both groups. Similarly, it consisted of 30 items. This time, each participant's obtained score was recorded as his/her pretest score for the analyses.

Self-efficacy questionnaire

A questionnaire was developed and used to collect self-efficacy information of the participants about listening skill, both before and after the treatment. The items of the questionnaire were borrowed/adapted from Coronado-Aliegro (2006), McCrudden, Perkins, and Putney (2005), and Mills, Pajares, and Herron (2006), and the participants specified the degree of their agreement with the given statements on a five-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = uncertain; 4 = agree; 5 = strongly agree). This questionnaire was filled out two times by the participants in both groups: first, as a pretest, before the intervention period; second, as a post-test, after the experimental group participants received instruction on concept mapping.

Achievement test

After the intervention period, another mock listening test of the TOEFL (Phillips, 2005) was administered to both control and experimental groups as the achievement post-test.

Procedure

The four-week study included four phases: (1) Pretesting; (2) Strategy instruction to the experimental group; (3) Listening sessions; and (4) Post-testing.

Pretesting

Before the instruction phase, 120 students sat a mock TOEFL listening test, and 60 of them in the 12-25 band (out 30) were selected. They, in turn, were randomly divided into two groups. Then, another mock TOEFL listening test with 30 items was administered specifically to ensure the groups' level and homogeneity. The individuals' scores obtained on this test were recorded for later analyses. Next, the participants in both groups completed the self-efficacy questionnaire, which particularly accounted for their listening self-efficacy. The students' scores on this questionnaire were also assessed and recorded.

Strategy instruction

Following the pretesting phase, all 60 participants (both groups) took part in six 60-minute 'listening sessions,' held at regular intervals across four weeks. Additionally, the experimental group students took part in three *extra* 60-minute 'instruction sessions' in which they particularly were familiarized with and trained in concept mapping strategy and its utilization. These three instruction sessions were held after pretesting and before the listening sessions. During these training hours, the concept-map group had this chance to practice strategy use in small-groups or individually and receive feedback after completing each session.

Listening sessions

In each time slot of this phase, the control group was introduced to one topic of the listening recordings at a time. Next, as a warm-up, they had discussions about the given topic under the teacher's supervision. Finally, they would listen to the relevant recording and take notes (if they wished) to be ready for answering the post-listening comprehension questions, summarizing, and taking part in post-listening discussions. The experimental group, likewise, followed a similar plan. However, as mentioned earlier, they were instructed to design and use concept maps in listening tasks instead of or in addition to note-taking. They would also refer to their concept maps for post-listening summarization and discussion.

Post-testing

After the treatment (intervention) period, all participants in both groups took an achievement test (i.e., another mock TOEFL test of listening comprehension) and filled out the same self-efficacy questionnaire. The students' scores were recorded for further analyses. It should be clarified that the scoring of the questionnaire was based on a 5-point Likert scale, but some items had to be reverse-scaled (R). As for the scoring of reverse-scaled items, 1= 5, 2= 4, 3= 3, 4= 2, and 5= 1. The computed Cronbach's coefficient alpha was $\alpha= 0.74$, which denotes that the questionnaire had high reliability.

Results

The purpose of this study was to determine whether the use of concept mapping strategy would have any effect on L2 learners' listening proficiency and sense of self-efficacy toward listening skill. Both before and after the concept mapping strategy instruction, all the students in the two groups were asked to take a TOEFL listening test. Means and standard deviations for pretest and post-test scores of the two groups are represented in Table1.

Table1.

Descriptive Statistics for Pretest and Posttest Scores on the Listening Tests

	Minimum	Maximum	Sum	Mean	SD	N
Pretest						
Experimental group	13.00	25.00	567.0	18.90	3.26	30
Control group	12.00	24.00	564.0	18.80	3.31	30
Post-test						
Experimental group	17.00	26.00	634.0	21.13	2.56	30
Control group	13.00	25.00	574.0	19.13	3.22	30

The self-efficacy questionnaire was also completed by the participants as a measurement of their listening self-efficacy. It was given in both pretesting and post-testing phases to all the participating students. As mentioned before, a 5-point Likert-type scale was used for scoring the responses; and scale scores were computed by summing the points and taking an average for each student. Means and standard deviations for pretest and post-test scores of the two groups are shown in Table2.

Table2.

Descriptive Statistics for Pretest and Posttest Scores on the self-efficacy

	Minimum	Maximum	Sum	Mean	SD	N
Pretest						
Experimental group	1.40	4.40	90.20	3.00	1.04	30
Control group	1.20	4.60	88.80	2.96	1.113	30
Post-test						
Experimental group	1.80	4.60	97.20	3.24	0.86	30
Control group	1.00	4.60	87.86	2.93	1.117	30

H0 1: *Explicit teaching of concept mapping and its utilization by the upper-intermediate EFL students have no effect on their achievement in listening tasks.*

To test the first null hypothesis, a paired t-test was applied to the obtained results from the pre and post-tests scores of the experimental group, the results of which are presented in Table 3.

Table3.

Paired t-test for pre/post-test scores of listening comprehension (Exp. Group)

Experimental Group	df	T observed	Mean Dif	Sig (2.tail)
Listening, pre/post test	29	8.026	2.23	0.001

As Table 3 displays, the t-observed value for the experimental group at 29 degrees of freedom was $t = 8.026$. It is greater than the critical value of t , which is 2.045 at the .05 level of probability. Moreover, as the table shows, the t value was significant at $p = .0001$ level, which indicates that statistically, there was a significant difference between listening comprehension pretest and post-test scores of the experimental group. As for the control group, by applying the paired t-test for pretest and post-test scores of listening comprehension, the following statistics were obtained:

Table 4.

Paired t-test for pre/post-test scores of listening comprehension (Control Group)

Control Group	df	T observed	Mean Dif	Sig (2.tail)
Listening, pre/post test	29	1.904	0.333	0.067

The results of the paired t-test, as shown in Table 4, revealed that the t-observed value for the control group at 29 degrees of freedom was $t = 1.904$, which is smaller than the critical value of t that is 2.045 at a .05 level of probability. Furthermore, the t value significance level was $p = .067$, which points out that, in the control group, statistically, there was not a significant difference between the listening comprehension pretest and post-test scores. Meanwhile, to make sure that the two groups did not differ at the beginning (i.e., they were homogeneous), the means of both groups in the pretest were compared. As Table 5 depicts, no significant difference was found. The t-observed value at 58 degrees of freedom was $t = 0.275$. It is smaller than the critical value of t , which is 2.00 at .05 level of probability.

Table 5.

Independent t-test for pretest mean scores of listening comprehension (experimental and control groups)

Pretest	df	Tobs	Mean Dif	Sig (2.tail)
Exp & Cont Groups	58	0.275	0.1000	0.785

Another independent t-test was applied on the listening comprehension post-test mean scores of experimental and control groups. The result (Table 6.) shows that the t-observed value at 58 degrees of freedom was $t = 4.950$, which is greater than the critical value of t that is 2.00 at the .05 level of probability. Also, the t value significance was .0001, which supports a significant difference between the listening post-test mean scores of the experimental and control groups.

Table 6.

Independent t-test for post-test mean scores of listening comprehension (experimental and control groups)

Pretest	df	Tobs	Mean Dif	Sig (2.tail)
Exp & Cont Groups	58	4.950	2.000	0.001

To sum up, the application of independent and paired t-tests on the listening comprehension pretest and post-test scores of the experimental and control groups confirmed that explicit instruction of the concept mapping strategy and its use by the L2 learners had had a positive effect on the way the students performed on the listening tasks. The data analysis demonstrated that statistically, the experimental group students gained significantly higher listening comprehension scores in contrast to the students in the control group. Therefore, the null hypothesis is rejected.

H0 2: Explicit teaching of concept mapping and its utilization by the intermediate EFL students in listening tasks have no effect on their sense of self-efficacy in listening skill.

Again, a paired t-test was applied to experimental and control groups' self-efficacy results to investigate this hypothesis. Table 7 displays the results for the experimental group.

Table 7.

Paired t-test for pre and post-test scores of self-efficacy questionnaire (Experimental Group)

Experimental Group	df	Tobs	Mean Dif	Sig (2.tail)
Self efficacy, pre/post test	29	2.125	0.233	0.042

It can be seen that the t-observed value for the experimental group at 29 degrees of freedom was $t = 2.125$. It is greater than the critical value of t , which is 2.045 at the .05 level of probability. Furthermore, as the table shows, the t value significance level was $p = .042$, which proves a significant difference between pretest and post-test scores of the experimental group's self-efficacy questionnaire. The following statistics were obtained in the control group by applying the paired t-test to the pretest and post-test scores of the self-efficacy questionnaire.

Table 8.

Paired t-test for pretest and post-test scores of self-efficacy questionnaire (Control Group)

Control Group	df	Tobs	Mean Dif	Sig (2.tail)
Self efficacy, pre & post test	29	0.961	-0.033	0.344

As Table 8 shows, the t-observed value for the control group at 29 degrees of freedom was $t = 0.961$. It is smaller than the critical value of t , which is 2.045 at a .05 level of probability. Furthermore, the t value significance level was $p = 0.344$, which indicates that there was NOT a significant difference between the pretest and post-test scores of the self-efficacy questionnaire in the control group. Meanwhile, the application of an independent t-test on pretest mean scores of the self-efficacy questionnaire between experimental and control groups revealed that the t-observed value at 58 degrees of freedom was $t = 0.443$. It is smaller than the critical value of t , which is 2.00 at .05 level of probability. Besides, the t value significance was 0.661 (Table 9.). Accordingly, it can be concluded that there was not a significant difference between the experimental and control groups in terms of the self-efficacy pretest mean scores.

Table 9.

Independent t-test for pretest mean scores of self-efficacy questionnaire (experimental and control groups)

Pretest	df	Tobs	Mean Dif	Sig (2.tail)
Exp. & Control Group	58	0.443	0.0467	0.661

On the other hand, the application of an independent t-test on the post-test mean scores of the self-efficacy questionnaire between experimental and control groups (Table 10.) revealed that the t-observed value at 58 degrees of freedom was $t = 2.726$. It is greater than the critical value of t , which is 2.00 at the .05 level of probability. Moreover, the t value significance was 0.011. They support a significant difference between the experimental and control groups' post-test scores in terms of the mean scores of the self-efficacy questionnaire.

Table 10.

Independent t-test for post-test mean scores of self-efficacy questionnaire (experimental and control groups)

Post-test	df	Tobs	Mean Dif	Sig (2.tail)
Exp. & Control Group	58	2.726	0.313	0.011

These findings indicated that explicit instruction of the concept mapping strategy and its utilization by the L2 learners positively affected the students' sense of self-efficacy in L2 listening skills. The data analysis confirmed that statistically, the experimental group students gained significantly higher self-efficacy scores in contrast to the students in the control group. Therefore, the second null hypothesis is also rejected.

Ho 3: There is no relationship between the self-efficacy of Iranian EFL learners at the intermediate level toward listening skill and their achievement in listening tasks.

To investigate the last hypothesis, the Pearson product-moment correlation coefficient (r) was computed. This allows determining how students' scores on the listening tests are associated with their self-efficacy questionnaire scores. The results are shown in Table 11.

Table 11.

Correlation matrix of students' Self-efficacy and Listening scores

		Self-Efficacy	Listening Comprehension
Self Efficacy	Pearson Correlation	1	0.94
	Sig. (2-tailed)	.	.000
	N	30	30
Listening	Pearson Correlation	0.94	1
	Sig. (2-tailed)	.000	.
	N	30	30

As Table 11 shows, the correlation coefficient at 28 degrees of freedom was $r = 0.94$, which is greater than the critical value of r , which is .354 at the .05 level of probability. Moreover, the correlation significance was 0.000. These findings suggest that statistically, there was a strong positive relationship between students' listening skills and self-efficacy in listening. Therefore, the third null hypothesis is rejected, too.

Discussion

The answers to the research questions of the study were explored through the testing of the null hypotheses. Through the first null hypothesis, we wanted to show that explicit teaching of concept mapping and its use by Iranian intermediate EFL students does not affect their achievement in listening tasks. Nevertheless, it was rejected. The results showed a statistically significant effect of the concept mapping strategy. It was revealed that the utilization of concept mapping as a cognitive learning strategy benefited the students in accomplishing listening tasks. Analysis of the numerical data collected from the pre and post-test results and a comparison between the post-test mean scores in the two groups demonstrate that the experimental group performed significantly better than the control group. The results signify that the experimental group students performed better than the students in the control group. This is consistent with the findings of Graham (2011), Rahimi & Abedini (2009), and Vandergrift (1999, 2003, 2007). He presented supporting evidence for cognitive learning strategies' positive effects, including concept mapping, on academic listening proficiency. Moreover, as research on strategy teaching has emphasized, learners need to know how, when, and what strategies to apply, but they also need to be trained and motivated to use them. This guideline highlights the importance of the explicit instruction that the students in this study received, and the results support its significance. Another reason behind the effectiveness of concept mapping in this study could be that this strategy helps the students visualize the information. According to Cicognani (2000), with the visual representation of main ideas and details on a map, users can refine the language, recognize the main concepts and their relationship, and organize them in a meaningful context. Furthermore, he maintains that concept maps can improve learners' confidence in dealing with the content. It assures them that they can master the content by connecting the new information to their previous knowledge. Another point that can be perceived from the trend of the listening scores obtained by the experimental group in pretest and post-test is that listening is more vivid in the low and mid-achiever students than proficient ones. This is in line with some other researches (e.g., Guastello, Beasley, Sinatra, 2000) that speculate concept mapping helps low ability students to a greater degree.

By testing the second null hypothesis, the aim was to determine whether explicit teaching of concept mapping and its utilization by Iranian intermediate EFL students in listening tasks would affect their sense of self-efficacy towards listening skill. The results rejected this null hypothesis, too. In other words, the students' self-efficacy improved considerably after the treatment period. This is in full alignment with the findings of the scholars who have attested the positive effect of learning strategy utilization in general and concept mapping in particular on learners' self-

efficacy (e.g., see Chularut & DeBacker, 2004; Gahungu, 2007; Kargar & Zamanian, 2014; Kim, Wang, Ahn, & Bong, 2015; Li & Wang, 2010; Nobahar, Nemat Tabrizi, & Shaghaghi, 2013; Magogwe & Oliver, 2007; Raoofi, Hun Tan, & Heng Chan, 2012). A comparison between the post-test mean scores in the two groups indicates that the experimental group's mean score had increased in the post-test while the control group decreased. In comparison with the control group, the experimental group students achieved a higher sense of self-efficacy towards listening skill after being instructed and motivated to apply concept mapping strategy in their listening tasks.

Furthermore, self-efficacy scores of the experimental group increased unevenly after the instructional period. In other words, a comparison between the pre- and post-test results indicates that the progress has been more significant with the low and mid-achieving students than proficient ones. This finding supports Multon, Brown, and Lent's (1991) claim (among others) that compared with high-achieving learners, the low-achieving students' self-efficacy beliefs are more positively affected by their successful academic performances. On the other hand, the control group students who received no instruction in strategy use followed an overlapping pattern with no or much less change in self-efficacy than their counterparts.

An explanation for the self-efficacy improvement in the experimental group might be attributable to the participants' *attitude*. The ones who had long-lasting negative attitudes towards listening might have had a positive change in attitude after seeing their success in strategy use and listening achievement. Rejection of the second null hypothesis supports the speculation that concept mapping may also affect achievement-related variables such as self-efficacy in addition to achievement gains. This study's findings are consistent with those of some other studies (e.g., Magogwe & Oliver, 2007) that support the idea that instruction in strategy use is an effective way of promoting self-efficacy beliefs. To put it succinctly, the utilization of concept mapping by the EFL learners in this study appeared to be both personally rewarding and academically potent as they used it as a tool for constructing meaning and enhancing their language skills. The third null hypothesis aimed to show no relationship between EFL learners' sense of self-efficacy in listening skills and their achievement in listening tasks. The third null hypothesis was rejected, too, and students with higher progress on listening achievement test obtained higher self-efficacy scores. The students with higher scores on the listening achievement test gained higher self-efficacy scores as well. A somewhat strong linear relationship exists in the plot above, and the line has a positive slope. In other words, lower listening scores match up with lower self-efficacy scores and vice versa. An explanation for this trend could be that the students who believed they were learning and benefiting from a useful strategy (i.e., concept mapping) in doing listening activities were apt to feel more successful in accomplishing their tasks. As various scholars have attested, attitude can strongly impact active engagement in doing tasks that one finds challenging.

Finally, the present study's findings have some theoretical and pedagogical implications for language teachers, learners, and syllabus designers. Teaching the learning strategy of concept mapping and its utilization by L2 learners brings visualized order to the tasks, which are usually

considered challenging by the students and alters them to enjoyable and interesting tasks. This change of attitude can enhance the learners' feelings of self-efficacy, influencing several aspects of their behavior such as effort, persistence, and eventually learning and achievement. Besides, concept-based teaching helps students gain a deeper understanding of the processes involved in mastering language skills, and teachers can use various techniques to help the learners discern the relationship among the ideas and concepts to understand how they connect and fit into a broader concept. Forming such meaningful connections and developing mental pictures will help the learners comprehend the content more quickly and effectively. Regarding syllabus designing, it should be noted that as the learning strategy of concept mapping has an indisputable effect on learners' sense of self-efficacy and achievement, it should be accepted as a benchmark for syllabus designers. To this end, they should incorporate strategy teaching and content teaching in the syllabus and build a framework that effectively blends these two and exhibits how the former enhances the latter. Strategy-based teaching should be promoted to enhance the learners' motivation in using the learning strategies such as concept-maps and facilitate their learning and, ultimately, mastery of the target skills.

The present study conducted in Iran's educational context provided additional evidence for concept mapping's effectiveness on EFL learners' listening skill and self-efficacy. However, caution should be exercised in generalizing the results to other contexts, learning strategies, or language skills. Additional research is also needed to examine the influential factors and variables that were not considered in this study. Therefore, the following issues might focus on further research: The achievement test in this study followed the instruction period. It is useful to see the delayed instructional effect of concept mapping on listening skill. Further exploration is needed to examine the effect of concept mapping on learners with different language proficiency levels, ages, and especially genders. Finally, further investigation is required to study the effect of concept mapping on other second/foreign language skills and sub-skills such as writing, reading, speaking, vocabulary, and grammar.

Conclusion

The present study's findings proved that the utilization of concept mapping in listening tasks benefited students at the upper-intermediate listening skill level. Also, engagement with this learning strategy improved students' self-efficacy beliefs that could, in turn, help them increase their interest and motivation, and after that, overcome the difficulties and anxieties that are traditionally attributed to this language skill, especially in the educational context of Iran. Most Iranian students often lack the necessary strategies for approaching L2 learning tasks in general and listening tasks in particular. Some are not even aware of the existence of such strategies, and some fail to apply them. On the other hand, teachers play a pivotal role in developing students' strategy use. They can and should help students decide on the best strategies that suit their learning goals (Oxford, 1990). In plenty of educational settings, it has been observed that teachers spend a considerable amount of their time bombarding learners with information and declarative knowledge (i.e., the what); instead of helping them engage with the proper learning

strategies that facilitate problem-solving and meaning-making skills (i.e., the how). Moreover, when students are pushed to acquire knowledge without using the right processes and procedures to build understanding, they usually forget the content (i.e., the what). Finally, as Oxford (1990) contends, students' strategic activity goes hand in hand with teachers' training and modelling on strategy use and how they stimulate students to utilize them in different learning tasks. As it was applied in this study when introducing a learning strategy, educators should explain the rationale behind its use (i.e., why it is useful), demonstrate its practicality (i.e., how it should be used), and let students practise its application in various situations by providing sufficient modelling and feedback.

References

- Ahmed, B. S. (2020). The effect of using concept mapping on developing EFL students' writing skills. *Journal of the University of Garmian*, 7(1), 220-236.
- Ausubel, D. P. (1963). *The psychology of meaningful verbal learning*. New York: Grune & Stratton.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.
- Brown, P. C, Roediger III, H. L., & McDaniel M. A. (2014). *Make it stick: The science of successful learning*. Cambridge, MA: Harvard University Press.
- Chamot, A. U., Barnhardt, S., El-Dinary, P. B., & Robbins, J. (1999). *The learning strategies handbook*. New York: Addison Wesley Longman.
- Chen, M. A., & Hwang, G. (2020). Effects of a concept mapping-based flipped learning approach on EFL students' English speaking performance, critical thinking awareness and speaking anxiety. *British Journal of Educational Technology*, 51(3), 817-834. DOI:10.1111/bjet.12887
- Chularut, P., & DeBacker, T. K. (2004). The influence of concept mapping on achievement, self-regulation, and self-efficacy in students of English as a second language. *Contemporary Educational Psychology*, 29 (3), 248-263.
- Cicognani, A. (2000). Concept mapping as a collaborative tool for enhanced online learning. *Educational Technology & Society*, 3(3), 150-158.
- Coronado-Aliegro, J. (2006). *The effect of self-assessment on the self-efficacy of students studying Spanish as a foreign language*. (Doctoral dissertation, University of Pittsburgh, Pennsylvania, USA). Retrieved from http://d-scholarship.pitt.edu/9914/1/Coronado-AliegroJ2_etd2006.pdf
- Dunkel, P. (1991). Listening in the native and second/foreign language: Toward an integration of research and practice. *TESOL Quarterly*, 25(3), 431-457. DOI: 10.2307/3586979
- Field, J. (1998). Skills and strategies: Towards a new methodology for listening. *ELT Journal*, 52(2), 110- 118.
- Gahungu, O. N. (2007). *The relationships among strategy use, self-efficacy, and language ability in foreign language learners*. (Doctoral dissertation, Northern Arizona University, USA). Retrieved from <https://pdfs.semanticscholar.org/47db/638b4ba4f3a3b1ec7eab28bddafa2743229e.pdf>
- Gardner, M. E. (2015). *Concept mapping: Effects on content knowledge and engagement with content in elementary students' persuasive writing*. (Doctoral dissertation, University of Kentucky, Kentucky, USA). Retrieved from https://uknowledge.uky.edu/edc_etds/14
- Gopal, P. (2004). Concept mapping – A pedagogical tool for grammar lessons, Army Institute of Education, N.

- Delhi. Retrieved October 12, 2019 from http://www.hbcse.tifr.res.in/episteme/episteme-1/allabs/pranita_abs.pdf
- Graham, S. (2011). Self-efficacy and academic listening. *Journal of English for Academic Purposes*, 10(2), 113–117. DOI:10.1016/j.jeap.2011.04.001
- Guastello, E. F., Beasley, T. M., Sinatra, R. C. (2000). Concept mapping effects on science content comprehension of low-achieving inner-city seventh graders. *Remedial and Special Education*, 21(6), 356-364.
- Gundersen, E., & Lee, L. (2002). *Select readings*. Oxford: Oxford University Press.
- Kargar, M., & Zamanian, M. (2014). The relationship between self-efficacy and reading comprehension strategies used by Iranian male and female EFL learners. *International Journal of Language Learning and Applied Linguistics World*, 7(2), 313–325.
- Kazemi, A., & Moradi, A. (2019). The influence of concept mapping and rehearsal on speaking accuracy and complexity. *Cogent Arts & Humanities*, 6(1), 1-21. DOI: 10.1080/23311983.2019.1597463
- Kim, D. H., Wang, C., Ahn, H. S., & Bong, M. (2015). English language learners' self-efficacy profiles and relationship with self-regulated learning strategies. *Learning and Individual Differences*, 38, 136–142. DOI: 10.1016/j.lindif.2015.01.016
- Kansızoğlu, H. B. (2017). The effect of graphic organizers on language teaching and learning areas: A meta-analysis study. *Education and Science*, 42(191), 139-164. DOI: 10.15390/EB.2017.6777
- Kılıçkaya, F. (2020) Learners' perceptions of collaborative digital graphic writing based on semantic mapping. *Computer Assisted Language Learning*, 33(1-2), 58-84. DOI: 10.1080/09588221.2018.1544912
- Li, Y., & Wang, C. (2010). An empirical study of reading self-efficacy and the use of reading strategies in the Chinese EFL context. *The Asian EFL Journal Quarterly*, 12 (2), 144–162.
- Lynch, T. (2002). Listening: Questions of level. In R. B. Kaplan (Ed.), *Oxford handbook of applied linguistics* (pp. 39-48). Oxford: Oxford University Press.
- Magogwe, J. M. & Oliver, R. (2007). The relationship between language learning strategies, proficiency, age and self-efficacy beliefs: A study of language learners in Botswana. *System*, 35 (3), 338-352. DOI: 10.1016/j.system.2007.01.003
- McCrudden, M. T., Perkins, P. G., & Putney, L. G. (2005). Self-efficacy and interest in the use of reading strategies. *Journal of Research In Childhood Education*, 20 (2), 119- 131. DOI: 10.1080/02568540509594556
- Mills, N. A., Pajares, F., & Herron, C. (2006). A reevaluation of the role of anxiety: Self-efficacy, anxiety, and their relation to reading and listening proficiency. *Foreign Language Annals*, 39 (2), 273-292. DOI: 10.1111/j.1944-9720.2006.tb02266.x
- Montaño, J. X. (2017). Learning strategies in second language acquisition. *US-China Foreign Language*, 15(8), 479-492. DOI: 10.17265/1539-8080/2017.08.001
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38(1), 30–38. DOI: 10.1037/0022-0167.38.1.30.
- Namaziandost, E., & Çakmak, F. (2020). An account of EFL learners' self-efficacy and gender in the Flipped Classroom Model. *Education and Information Technologies*, 1-15.
- Nobahar, B., Nemat Tabrizi, A. R., & Shaghghi, M. (2013). The effect of concept mapping on Iranian intermediate EFL learners' self-efficacy and expository writing accuracy. *Theory and Practice in Language Studies*, 3(11), 2117-2127.
- Novak, J. D. (1977). *A Theory of Education*. Ithaca, NY: Cornell University Press.
- Nowrouzi, S., Sim Tam. S., Zareian, G., Nimehchisalem, V. (2015). Iranian EFL students' listening

- comprehension problems. *Theory and Practice in Language Studies*, 5(2), 263-269. DOI:10.17507/tpls.0502.05
- Nunan, D. (2002). Listening in language learning. In J. Richards & W. Renandya (Eds.), *Methodology in Language Teaching: An Anthology of Current Practice* (pp. 238-241). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511667190.032
- Nushi, M., & Orouji, F. (2020). Investigating EFL teachers' views on listening difficulties among their learners: The case of Iranian context. *SAGE Open*, 10(2), 1-16. DOI: 10.1177/2158244020917393
- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. New York, Newbury House.
- Phillips, D. (2005). *Longman complete course for the TOEFL test: Preparation for the computer and paper tests*. White Plains, NY: Addison-Wesley Longman, Inc.
- Rahimi, A., & Abedini, A. (2009). The interface between EFL learners' self- efficacy concerning listening comprehension and listening proficiency. *Novitas Royal*, 3(1), 14-28.
- Raofi, S., Hoon Tan, B., & Heng Chan, S. H. (2012). Self-efficacy in second/foreign language learning contexts. *English Language Teaching*, 5(11), 60-73. DOI: 10.5539/elt.v5n11p60.
- Roddy, S., & Bridges, B. (2020). Mapping for meaning: the embodied sonification listening model and its implications for the mapping problem in sonic information design. *Journal on Multimodal User Interfaces*, 1-9.
- Salehi, A. D., Jahandar, S., & Khodabandehlou, M. (2013). The impact of concept mapping on EFL student's reading comprehension. *Indian Journal of Fundamental and Applied Life Sciences*, 3(3), 241-250.
- Schunk, D. H. (2001). Self-efficacy: Educational aspects. *International Encyclopedia of the Social & Behavioral Sciences*, 13820-13822. DOI: 10.1016/B0-08-043076-7/02402-5
- Shakoori, M., Kadivar, P., & Sarami, R. (2017). The effect of concept mapping strategy as a graphical tool in writing achievement among EFL learners. *International Journal of Information and Education Technology*, 7(5), 357-360. DOI: 10.18178/ijiet.2017.7.5.894
- Szyszkka, M. (2017). *Pronunciation learning strategies and language anxiety: In search of an interplay*. Cham, Switzerland: Springer International Publishing AG.
- Uba, E., Oteikwu, E. A., Onwuka, E., & Abiodun-Eniayekan, E. (2017). A research-based evidence of the effect of graphic organizers on the understanding of prose fiction in ESL classroom. *SAGE Open*, 7(2), 1-9. DOI: 10.1177/2158244017709506
- Vakilifard, A. & Armand, F. (2006). The effects of concept mapping on second language learners' comprehension of informative text. *Proceedings of the second international conference on concept mapping*. San José, Costa Rica. Retrieved November 20, 2019 from <http://cmc.ihmc.us/cmc2006Papers/cmc2006-p79.pdf>
- Vandergrift, L. (1999). Facilitating second language listening comprehension: Acquiring successful strategies. *ELT Journal*, 53 (3), 168-176.
- Vandergrift, L. (2003). Orchestrating strategy use: Toward a model of the skilled second language listener. *Language Learning*, 53(3), 463-496. DOI:10.1111/1467-9922.00232
- Vandergrift, L. (2007). Recent developments in second and foreign language listening comprehension research. *Language Teaching*, 40 (3), 191-210. DOI: 10.1017/S0261444807004338
- Vermunt, J.D. (1996). Metacognitive, cognitive and affective aspects of learning styles and strategies: A phenomenographic analysis. *Higher Education*, 31, 25-50. DOI: 10.1007/BF00129106
- Zarei, A. A., & Feizollahi, B. (2018). Concept mapping and brainstorming affecting writing anxiety and accuracy. *Journal of Modern Research in English Language Studies*, 5(1), 117-144.

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