RESEARCH IN ENGLISH LANGUAGE EDUCATION JOURNAL

Volume 4, Issue 1- August 2025
ISSN 3041-8909

The Effect of Mapping Note-taking Method on Iranian Intermediate EFL Learners' Reading Comprehension Ability

Afsaneh Baharloo[1], Saeede Almasi Shourije[2]
[1]English Department, Hafez Institute of Higher Education, Shiraz, Iran.
afsaneh.baharloo@hafez.ac.ir
[2]*Corresponding Author:* English Department, Hafez Institute of Higher Education, Shiraz, Iran.
almasi.d77@gmail.com

ABSTRACT

This study was an attempt to enlighten the wave of teaching English reading comprehension in Iranian EFL classrooms. Thus, the current study aimed to explore the effect of using mapping note-taking method on the reading comprehension ability of Iranian intermediate EFL learners as well as gender differences. To do so, a quantitative design was tested in a quasi-experimental study. To collect data, two intact classes consisting of 15 learners in each class of a language institute in Shiraz were selected through convenience sampling. The instruments used to collect data were two parallel tests: pre-test and post-test. The data collection procedures lasted for about three months including 22 sessions. Besides, the data were analyzed through the use of the 26th version of SPSS software, and by running descriptive statistics, tests of homogeneity of variances (Levene's test), tests of normality, and T-tests (Independent Samples T-test and Paired-Sample T-test). The results revealed that the learners who were exposed to the mapping note-taking method (experimental group) differed significantly from the control group who were taught through the conventional method, taking notes just in the learners their own way, and writing the words and their meaning without using any specific method of note-taking. In other words, the learners who were in the experimental group outperformed those in the control group concerning their reading comprehension ability but the learners' gender made no difference.

ARTICLE INFO:
Received: 2024-07-21
Reviewed: 2025-06-01
Accepted: 2025-07-12

Keywords:
mapping note-taking method, reading comprehension ability, EFL learners, gender

1. Introduction

Nowadays, learning the skill of reading and taking notes is very necessary. Learners reading ability can be enhanced through teaching reading methods (Lau & Chan, 2003). Effective note-taking methods will help students to keep in mind all the knowledge that

Citation: Baharloo, A. & Almasi Shourije, S. (2025). The effect of mapping note-taking method on Iranian intermediate EFL learners' reading comprehension ability. *Research in English Language Education Journal*, 4(1), 76-92 DOI: 10.48210/relej.2025.16765.1109

is presented in the classroom and of course, the result will be satisfactory for both teachers and students.

Note-taking has various ways and methods and selecting the appropriate method depends on the age, level, and knowledge of students. It is a timeless skill that has been employed for centuries to capture and retain valuable information. An effective note-taking method plays a pivotal role in enhancing the learning process and facilitating comprehension (Vashist, 2023). She also said that note-taking methods are essential for academic success as these methods help to grasp complex concepts, retrain information, and surpass in examinations. Therefore, the note-taking method will be beneficial but little attention has been paid to the actual organization of the note-taking method (Korbut, 2018). Teachers give the impression that taking notes is not just writing down what they write on the board. The true note-taking method is an art form that the teachers do not have time to teach and have even less time and ability to enforce (Raid, 2021). Thus, by learning and using note-taking methods, notes will be taken in the style of the professionals and the result of the study will be fantastic, arguments and concepts in the form of notes give learners a better understanding of the material and also put goal more on understanding the texts.

This study contributes to understanding effective reading comprehension strategies for Iranian EFL learners. It specifically investigates the effect of the mapping note-taking method on the reading comprehension ability of intermediate-level Iranian EFL learners- a topic not previously explored- and examines gender differences in response to this method in group settings. The significance of this research lies in its potential to enhance reading comprehension, inform pedagogical practices, and contribute to the existing literature on note-taking and reading comprehension in EFL contexts. The findings have practical implications for educators, curriculum designers, and learners alike.

The study explores the benefits and challenges of this method, considers gender differences in its application, and provides practical recommendations for EFL teachers and curriculum designers. By addressing these objectives, the following research questions were posed:

Research Question 1: Does mapping note-taking method have a significant effect on Iranian EFL learners' reading comprehension ability?

Research Question 2: Do Iranian male and female EFL learners significantly differ in their reading comprehension ability through the use of mapping note-taking method?

2. Review of Literature

Reading has often been taken into account as a basic and complementary skill in language learning. Miller (2005) characterized reading comprehension as the capacity to respond to logical inquiries regarding a text that one has either listened to or read. Furthermore, Klingner et al. (2007) stated that reading comprehension encompasses a range of factors and the interactions between readers and the text, including prior knowledge, reading strategies, and techniques, in addition to the attributes of the text itself, such as the reader's interest and the understanding of various text types. Similarly, McNamara (2007) asserted that reading represents a remarkable accomplishment, particularly when one reflects on the multitude of levels and elements that need to be mastered. He also suggested that reading comprehension involves an intricate interplay between the characteristics of the text and the background knowledge that readers bring to their reading experience.

Also, note-taking is a method constantly employed by scholars to gather information during classes (Broe, 2013). Furthermore, getting in the habit of taking notes at the same time helps make learning a new language simpler and more structured. One of the primary challenges that scholars encounter is the lack of effective note-taking methods to use (Zentar, 2017). In addition, Hamed (2024) which is used the mind mapping note-taking method announced that using the mind mapping method of note-taking is effective to improve the students' reading comprehension.

2-1. Note-taking Method

Note-taking method in classes has appeared to increase academic achievements (Boyle, 2007; Boyle, 2010; Kiewra, 1985; Kiewra & Benton, 1988). Notes can function as a framework of the material gathered through listening and observing during the lecture, and the act of taking notes can also enhance understanding through the internal connections established during the lecture. (Faber et al., 2000; Luo et al., 1991; Piolat, 2004). Taking notes can enhance learning due to the generative impact that students hold information superior when they create materials themselves (Piolat, 2004). Note-taking supports processing information and serves as an implication of outside capacity for later review of English learning (Kiewra, 1991; Piolat, 2004; Titsworth, 2001). Students who successfully record notes, ordinarily handle the address data at a more profound level (Kiewra et al., 1995; Titsworth, 2001) and this preparation of encoding, or making associations between the unused fabric and past information, encourages comprehension (Cohn et al., 1995; Faber et al., 2000; Kiewra, 1991). When the new material is joined with earlier information, the encoding level is fruitful (Faber et al., 2000; Kiewra et al., 1991; Piolat et al., 2004). Encoding leads to more profound meaning, superior understanding, and way better comes about in assessment (Baker & Lombardi, 1985; Kiewra, 1985).

The note-taking method has six different methods including the Cornell method, outlining method, mapping method, charting method, sentence method, and boxing method. This innovative method, mapping method of note-taking which is also known as "Mind mapping", was developed by British psychologist Tony Buzan in the early 1970s (Trevino, 2005). Buzan noticed that the education system primarily favored left-brain abilities, such as language, logic, numbers, sequencing, attention to detail, thinking, symbolic representation, and judgmental characteristics (Wycoff, 1991).

2-1-1. Mapping Note-taking Method

Mapping note-taking method (mind map) has been utilized in a diverse range of fields to create successful outcomes since its beginning (Muchhal et al., 2018). Moreover, they asserted that mind mapping is a highly valuable technique that students should learn and incorporate into their learning process regularly. They also pointed out that this method allows individuals to create a visual map with a central image surrounded by main themes, key images, and keywords branching out from it, creating a connected nodal structure.

Trevino (2005) added that this design can be created to encompass the topic around the theme. Also, in her opinion, the mind map creator can make their creation unique by adjusting colors, symbols, patterns, images, and text sizes to show connections using arrows or directionality, and vary the number of words used.

2-2. Instructional Sequences to Develop the Mapping Method of Note-taking

According to (Buzan and Buzan, 1993; Buzan, 2002), the process of creating a mapping note-taking followed the following steps:

- Keep in the center of the page as the central theme main idea or controlling point. It might

  be simpler to position the page horizontally for drawing tasks.

- Utilize various visual elements such as lines, arrows, speech bubbles, branches, and different colors to illustrate the relationship between the central theme main idea and the ideas that branch off from it. The relationships are significant, as they can shape the content of essay paragraphs.

- Try not to focus on creating a perfect piece of art; instead, sketch rapidly without long breaks or making significant changes. Chances are, the initial idea was good and placed in the direction the user believed was most logical or on the branch that made the most sense. It is crucial to explore all options and ideas in the early stages of mind mapping, including ones that may not end up being utilized.

- Select various hues to represent varied concepts such as choosing blue for elements that must be included in the paper, black for additional good ideas, and red for items that require further research or confirmation from a tutor/lecturer. Try to stay consistent so that a more accurate reflection can be achieved on the mind map later on.

- Make sure to leave some empty space on the page (size of A5, A4 or A3). The reason for this is that one can keep adding to the diagram for a prolonged period

2-3. Empirical Studies

One of the most recent research studies on the contribution of the mapping method to the reading comprehension skills of Palestinian twelve-grade students carried out by Hamed (2024) which is used the mind mapping note-taking method. In this study, the mind mapping method worked on 16 students of a high school. The results revealed that the effect of using the mind mapping method of note-taking is statistically significant in the reading comprehension of Palestinian twelve-grade students.

A research study conducted by Namaziandost et al. (2023) examined the effects of mind mapping and concept mapping techniques on the reading motivation, reading comprehension, and willingness to communicate (WTC) of Iranian EFL students. The study involved 78 intermediate EFL students who were selected through non-random sampling and then divided into two experimental groups and one control group. The experimental groups received instruction using either the mind mapping or concept mapping method, while the control group did not receive any specific technique. The results indicated a significant difference in the scores of the experimental groups compared to the control group, with the experimental groups showing better outcomes. Overall, the study findings suggested that both mind mapping and concept mapping methods were effective in improving reading motivation, reading comprehension, and WTC among the experimental participants.

Sinambela et al. (2022) carried out a study to investigate that whether mind mapping and semantic mapping have any significant effect on reading comprehension

of eleventh graders of senior high school or not. They considered 105 students including 35 students in each three group. The results approved the effectiveness of these methods on reading comprehension of eleventh graders of senior high school students. In other words, both semantic mapping and mind mapping significantly affect the achievement of students' reading comprehension in narrative text.

In 2019, Puji Siswanto conducted a study to find the effectiveness of a note-taking strategy on reading comprehension at one of the Public Vocational High Schools in Banten. So, she selected 40 students of both genders with 20 students in each of the groups. The results indicated that the note-taking is greatly affected on reading comprehension. Meanwhile, there is no difference between males and females who were taught by using note-taking strategy and those who were not taught by using note-taking strategy on their reading comprehension achievement.

In 2017, Bahrami and Nosratzadeh considered note-taking to explore its effect on reading comprehension of Iranian EFL learners that were 40 learners of a language institute in Karaj, and 40 students were cases who put into two separate groups, 20 numbers of them in the experimental group and others in the control group. The results indicated that there was a statistically significant difference between the mean score of the treatment group in the pretest and post-test administration of reading skills in favor of the post-administration.

In 2015, Malekzadeh and Bayat conducted a study aimed at finding the effectiveness of mind mapping in comprehending implicit information in EFL reading texts. As the participants, 130 Iranian intermediate EFL learners of an institute in Tehran were selected. This quasi-experimental study results approved the vital discrepancy between the test scores of experimental and control classes. In other words, the effectiveness of using mind mapping on reading comprehension of Iranian intermediate EFL learners.

Moreover, in 2014, Indrayani did an undergraduate thesis to know whether using mind mapping has any significant effect on students' improvement of reading comprehension or not. In this study, 70 second-grade students of a high school participated. This study results that the mind-mapping method was effective to be used in teaching reading comprehension of narrative text. In other words, this method improved the reading comprehension ability of those second-grade students.

In the realm of note-taking and its impact on reading comprehension, numerous research studies have been conducted worldwide. Differences in findings may arise because of unique situations and variables within individual research studies. This means that a variety of factors, including physical and situational ones, can impact how effective note-taking is for EFL learners' reading comprehension in diverse educational settings.

Thus, considering the mapping method of notetaking and as far as the researcher knows, no researchers have talked intensively about the performance of Iranian EFL learners in the intermediate level of institutes in the context of Iran, especially Shiraz. Therefore, the goal of the research was to determine if using a mapping method for taking notes improved the learners' reading comprehension skills.

3. Methodology

3-1. Research Design

To address the research questions posed earlier, a quantitative approach was adopted. The study employed a quasi-experimental design, as there was no random assignment to treatment groups-intact groups were used instead, meaning true randomization was not possible. Additionally, the study spanned one semester, giving it a longitudinal aspect. The dependent variable was reading comprehension ability, while the independent variable was the mapping note-taking method.

3-2. Participants (or Sample)

Due to the objectives of the study, two intermediate-level intact classes of an English institute in Shiraz were selected through non-probability sampling, a convenience one. It means that after the agreement of the institute manager, among the intermediate-level classes, two intact ones were selected. The population of this study included thirty intermediate-level students of an institute in Shiraz, aged 12-15, and Persian native speakers. In other words, this population who studied Family and Friends Four (2nd ed.) as the material was assigned to two groups; the control group and the experimental group, each consisting of 15 Iranian EFL learners (8 males and 7 females). Moreover, the researcher did not work on social status.

3-3. Data Collection Instruments and Materials

The instruments and materials used in this study to collect data included two parallel tests as the pre-test and post-test, the book Oxford Primary Skills: Reading and Writing 4, and Family and Friends Four (2nd edition).

In addition, the pre-test includes two reading comprehension parts and one vocabulary part; Reading Test A which is selected from the learners' book, Family and Friends Four as the seen material, Reading Test B is selected from the book 'Oxford Primary Skill-Reading and Writing 4' as the unseen part, and related vocabulary parts of reading. This test has 37 questions (20 questions from reading comprehension and 17 vocabulary questions from vocabulary). This test was applied at the beginning of the treatment with a time limit of an hour and a half (90 minutes) to do it, that is a whole session. In addition, as a pilot study, the test's validity was confirmed through expert checks by 10 English teachers from various institutions. Similar to the pre-test, the post-test had the same issues and approved through the correlation between these two tests scores. Moreover, using the KR 21 formula, pre- and post-test's reliability was determined to be 0.803 and 0.802 respectively. Regarding the parallelism checking, using Pearson correlation, the results approved the parallelism of the pre-test and post-test ($r = 0.886$). In detail, each groups' pre-test and post-test had a statistically significant large positive correlation ($r(control) = 0.998$, $r(experimental) = 0.983$).

Besides, the current study involves some instruments, pre-test, and post-test which are paralleled and chosen as the material related to Family and Friend Four (2nd ed.) to collect data. 'Oxford Primary Skill 4, Reading and Writing' was written by Tamzin Thompson and published in 2013. This book introduced teenagers to reading skills by collecting various topics. It involves clear unit structure, cross-curricular topics, pre-reading tasks, reading for gist, and reading for detail.

Moreover, Family and Friends Four written by Naomi Simmons as the material is an English course for primary with strong training in skills and unique phonics. The new Family and Friends series, the second edition, combines brand-new fluency,

culture, assessment, and digital resources and concludes civic education and comprehensible testing. (Simmons, 2018).

3-4. Data Collection Procedure

The experiment process had, two 90-minute sessions per week, 22 sessions, two sessions were assigned to fulfill the pre-test and post-test, and the other 20 sessions were designated to the treatment which a session was to make them familiar with the materials.

As the next step, the process of checking the pre-test and post-test was run one month before starting the study. As explained in the previous parts, these two tests were parallel ones related to the 'Family and Friends Four' and 'Oxford Primary Skill-Reading and Writing Four'. To approve the validity of the tests, a team of English teachers including 10 English teachers from institutes of Shiraz checked them. In the next step, one of the two selected groups was assigned to be the control group and the other as the experimental, then at the first session of the semester, the familiarization process was taken place. Then, to know how well the participants were at the beginning of the study, the pre-test was assigned to both groups. Afterwards, the control group followed the conventional method; including studying the same reading comprehension parts, taking notes just in the students their own way, and writing the words and their meaning without using any specific method of note-taking. However, the experimental group followed the treatment sessions based on the mapping method of note-taking. First, they had six reading comprehension parts and after that, the new words and their meanings wanted to be highlighted and asked; moreover, in this way, the related words were clarified. Now according to what Buzan (1993; 2002) pointed out about instructional sequences to develop the mapping method of note-taking, the process of treatment, and the creation of the mapping note-taking method, were done.

3-5. Data Analysis

Using Statistical Package for the Social Sciences (SPSS) version 26, all data collected from the pre-test and post-test were analyzed .

After utilizing the pre-test, the reliability of collected data was analyzed through the KR-21 formula after computing the descriptive statistics. As the next step, tests of normality were done, and as Shapiro and Wilk (1965) stated the Shapiro-Wilk test of normality can be more appropriate for small sample sizes ($n < 50$ samples); so, the results were reported based on this test as the number of participants were less than fifty. Then, the test of homogeneity of variances, using Levene's test, was run to know whether the participants were homogenous at the beginning of the study, in other words, whether they were at the same level of language proficiency. It should be said that all the aforementioned procedures also were run for the post-test which was at the end of the treatment.

Based on the results of the normality and homogeneity of variance tests, parametric inferential tests were conducted to address the research questions. For the first research question, an Independent Samples T-test was used to compare the two groups at both the beginning and the end of the study. This was followed by a Paired-Sample T-test to determine whether the differences in test scores within each group were statistically significant. Together, these analyses helped assess whether the treatment sessions had a significant effect on the reading comprehension ability of

Iranian EFL learners. Similarly, for the second research question, the same inferential tests were applied to examine gender differences within the groups. The Independent Samples T-test compared male and female learners at the start and conclusion of the study. If significant differences were found, the Paired-Sample T-test was then used to identify whether the changes in reading comprehension scores between genders in each group were statistically significant.

4. Results

First, the obtained data were probed by running descriptive statistics, tests of normality, and homogeneity of variances. Then, considering the results of the aforementioned tests, the appropriate inferential tests were run to reach an answer to the research questions.

4-1. Descriptive Statistics

Descriptive statistics of the pre-test scores were used and the results are presented in Table 1.

Table 1

Descriptive Statistics of the Groups' Pre-test Scores

Descriptive Statistics

Group		N Statistic	Minimum Statistic	Maximum Statistic	Mean		Std. Deviation Statistic
					Statistic	Std. Error	
Control	Male	8	20	35	27.375	1.917	5.423
	Female	7	19	34	28.71	2.347	6.210
	Total	15	19	35	28.00	1.454	5.631
Experimental	Male	8	19	35	27.87	2.215	6.266
	Female	7	19	34	28.00	2.104	5.567
	Total	15	19	35	27.93	1.481	5.737
All the Participants	Total	30	19	35	27.97	1.019	5.586

As Table 1 shows, the pre-test descriptive statistics of the groups were calculated and these calculated statistics for the control group are equal to (*Range = 19-35, Mean (M) ± Std. Deviation (SD) = 28.00 ± 5.631*), for the experimental group (*Range* = 19-35, *M ± SD* = 27.93 ± 5.737), and for all the participants (*Range = 19-35, M ± SD = 27.97 ± 5.586*). Besides, considering the genders in Table 1, calculated statistics for the males in the control group are equal to (*Range = 20-35, M ± SD = 27.375 ± 5.423*) and for the males in the experimental group are equal to (*Range = 19-35, M ± SD = 27.87 ± 6.266*). Also, according to Table 1, calculated statistics for the females in the control group are equal to (*Range = 20-35, M ± SD = 28.71 ± 6.210*) and for the females in the experimental group are equal to (*Range = 19-34, M ± SD = 28.00 ± 5.567*).

As the next step, according to Table 2, these statistics for the control group are equal to (*Range = 19-35, M ± SD = 28.20 ± 5.492*), for the experimental group (*Range = 26-37, M ± SD = 32.20 ± 3.688*), and for all the participants (*Range =19-37, M ± SD = 30.20 ± 5.026*). Besides, considering the genders in Table 2, calculated statistics for the males in the control group are equal to (*Range = 20-35, M ± SD = 27.75 ± 5.175*)

and for the males in the experimental group are equal to (*Range = 26-37, M ± SD = 32.25 ± 4.026*). Also, according to Table 2, calculated statistics for the females in the control group are equal to (*Range = 19-35, M ± SD = 28.71 ± 6.210*) and for the females in the experimental group are equal to (*Range = 27-36, M ± SD = 32.14 ± 3.579*).

Table 2
Descriptive Statistics of the Groups' Post-test Scores

Descriptive Statistics

Group		N Statistic	Minimum Statistic	Maximum Statistic	Mean		Std. Deviation Statistic
					Statistic	Std. Error	
Control	Male	8	20	35	27.75	1.829	5.175
	Female	7	19	34	28.71	2.347	6.210
	Total	15	19	35	28.20	1.418	5.492
Experimental	Male	8	26	37	32.25	1.423	4.026
	Female	7	27	36	32.14	1.352	3.579
	Total	15	26	37	32.20	.952	3.688
All the Participants	Total	30	19	37	30.20	.917	5.026

4-2. Tests of Normality

To know whether both groups' pre-test and post-test scores were normally distributed, normality tests were run and the results are presented in Table 3.

Table 3
Tests of Normality of Groups' Pre-test and Post-test Scores

Group		Shapiro-Wilk		
		Statistic	df	Sig.
Control	Males' Pre-test	.967	8	.873
	Females' Pre-test	.812	7	.054
	Pre-test (Total)	.908	15	.125
	Males' Post-test	.954	8	.749
	Females' Post-test	.812	7	.054
	Post-test (Total)	.896	15	.082
Experimental	Males' Pre-test	.905	8	.319
	Females' Pre-test	.903	7	.351
	Pre-test (Total)	.894	15	.077
	Males' Post-test	.907	8	.334
	Females' Post-test	.899	7	.328
	Post-test (Total)	.915	15	.164
All the Participants	Pre-test	.940	30	.092
	Post-test	.935	30	.067

As Table 3 demonstrated, Normality tests (Shapiro-Wilk) indicated that data were normally distributed ($p > 0.05$).

4-3. Test of Homogeneity of Variances

To recognize whether the participants were at the same level of language proficiency or not, using Levene's test, the homogeneity of variances was evaluated.

Table 4

Test of Homogeneity of Pre-test and Post-test Scores

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Males' Pre-test	Based on Mean	.580	1	14	.459
Females' Pre-test		.175		12	.683
Pre-test (Total Participants)		.007		28	.936
Males' Post-test		.250		14	.625
Females' Post-test		2.570		12	.135
Post-test (All the participants)		2.850		28	.098

The table shows the Levene statistics and p-values clearly. Levene's test indicated homogeneity of variances across groups ($p > 0.05$).

4-4. Results Related to the First Research Question

Therefore, the results of the Independent-Samples T-test (to probe whether the difference between the two groups in their pre-test scores was statistically significant) of the tests' scores are presented in Table 5.

Table 5

Independent Samples T-test of Groups' Pre-test Scores

Independent Samples Test							
	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Pre-test	.032	28	.975	.066	2.075	-4.185	4.318
Post-test	-2.342	28	.027	-4.000	1.708	-7.521	-.500

Based on Table 5 and considering the normal distribution of homogeneous data; the Independent Samples T-test showed no significant difference between groups on the pre-test ($p = 0.975$), but a significant difference on the post-test ($p = 0.027$).

As Table 5 designates, there is a mean difference between the performance of both groups on the post-test. To compare each group's test results separately before and after the treatment, and considering the normality tests' results, the Paired-Sample T-test was also employed.

Table 6
Paired-Sample T-test of Control Group's Score

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair	Post-test (Control Group) Pre-test (Control Group)	.200	.414	.106	-.029	.429	1.871	14	.082

As Table 6 illustrated, no significant difference was found in the control group's pre- and post-test scores ($p > 0.05$, $p = 0.082$).

Thus, as a result of the treatment sessions, the experimental group was the group that made a statistically significant difference ($p < 0.05$, $p = 0$) in the experimental group's pre- and post-test scores and the statistics are presented in Table 7.

Table 7
Paired-Sample T-test of Control Group's Score

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair	Post-test (Experimental Group) Pre-test (Experimental Group)	4.266	2.218	.572	3.037	5.495	7.447	14	.000

4-5. Results Related to the Second Research Question

At first, the Independent-Samples T-test was employed to examine differences between the two genders within the groups at both the beginning and end of the study, taking into account the normal distribution of homogeneous data. Consequently, the findings from the Independent-Samples T-test regarding the pre-test scores are detailed in Table 8.

Table 8
Independent Samples T-test of Males' and Females' Pre-test Scores

Independent Samples Test						
	t-test for Equality of Means					
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference

							Lower	Upper
Pre-test	Males	-.171	14	.862	-.500	2.929	-6.784	5.784
	Females	.227	12	.825	.714	3.152	-6.154	7.583

The analysis presented in Table 8 indicated that no significant gender differences were found in pre-test scores ($p > 0.05$). Consequently, it can be concluded that there is no significant difference between the genders in either group regarding their pre-test performance.

Table 9

Independent Samples T-test of Males' and Females' Post-test Scores

Independent Samples Test								
t-test for Equality of Means								
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Post-test	Males	-1.941	14	.073	-4.500	2.318	-9.500	-.500
	Females	-1.265	12	.230	-3.428	2.709	-9.331	2.474

The analysis presented in Table 9 indicated that no significant gender differences were found in pre-test scores ($p > 0.05$). Consequently, it can be concluded that gender did not make difference in reading comprehension ability through the use of mapping note-taking method.

5. Discussion

The results of this quasi-experimental research indicated that the utilization of note-taking, specifically the mapping method, significantly impacted the enhancement of reading comprehension skills among Iranian EFL students, resulting in improved performance on assessments. So, it is deduced that both the experimental and control groups differed in terms of the post-test and the treatment brought about this difference. Those students who utilized the mapping method for note-taking demonstrated notably higher reading comprehension scores compared to their counterparts in the control group. In other words, learners of the experimental group who were exposed to the mapping method for note-taking exhibited statistically significant improvements in reading comprehension scores compared to those in the control group. This suggests that the mapping method played a crucial role in enhancing the reading comprehension abilities of Iranian EFL learners. Thus, it can be inferred that the mapping method of note-taking has the potential to positively influence the reading comprehension skills of Iranian EFL students, ultimately fostering a deeper understanding and increased engagement in the learning process. Moreover, the findings suggest that there was no statistically significant difference in the reading comprehension ability between male and female participants within both the control and experimental groups after implementing the mapping note-taking method.

To put it in a nutshell, considering all the aforementioned results, the answer to the first research question is clear. As the research question was to probe into the effect of mapping note-taking method on the reading comprehension ability of Iranian EFL learners and the obtained results make it clear that there was a statistically significant difference in the reading comprehension ability scores of those students who took notes through the teaching and implementing the mapping method of note-taking.

On one hand, the findings of this study are against some research studies posed earlier. One of the most recent research studies on the contribution of the mapping method to the reading comprehension skills of Palestinian twelve-grade students carried out by Hamed (2024) which is used the mind mapping note-taking method; the results revealed that the effect of using the mind mapping method of note-taking on reading comprehension of Palestinian twelve-grade students is statistically significant. Besides, in what Narjaikaew et al. (2023) conducted, the guided note-taking method was examined on 353 students of a high school, and the results revealed that the effect of using the guided method of note-taking is statistically significant in the reading comprehension of Indonesian eleven-grade students. Also, in 2017, Bahrami and Nosratzadeh considered note-taking to explore its effect on reading comprehension of Iranian EFL learners who were forty learners of a language institute in Karaj and reached the same results. In addition, Chang and Ku (2014) who aimed to investigate the effect of note-taking skills instruction on elementary students' reading comprehension, used 349 fourth-grade students from two elementary schools in Taiwan as the participants; and approved the results of earlier studies. Then, Rahmani and Sadeghi (2011) carried out a study with 108 Iranian intermediate undergraduate EFL learners; the results approved the effectiveness of note-taking on reading comprehension. Moreover, some other studies have reached the same results on the effectiveness of mind-mapping on reading comprehension including Namaziandost et al. (2023), Hazaymeh and Alomery (2022), and Malekzade and Bayat (2015) in the context of Iran and the United Arab Emirates .

On the other hand, the findings of the current studycontradict the results of some other studies. In a study conducted by Kiewra (1987), who proposed that students who are generally incompetent note-takers, are unable to critically record ideas. This adds to the idea that note-taking as a skill is seen, by this scholar and others, as a complicated critical study skill that is far from being teachable. Some other studies found no or little significant effect of note-taking on students' achievement of listening and reading, among these are Gee (2011), and Hale and Courtney (1994) in the context of the USA and China. Besides, the result of this research is not similar to those of Shaw and McMillion, (2008) who conducted L2 reading research and found that one major obstacle to students in achieving high scores appeared to be time. Also, in a study carried out by Riley and Dyer (1979), a text containing 2.000 words was read by a group of participants while it was listened to by another group of participants. As a result of the study, it was found that note-taking provided some advantages for the listeners, yet it did not cause any differences for the readers.

All in all, considering the obtained results which were presented and the results of existing literature; this issue, the effect of the mapping method of note-taking on the reading comprehension ability of EFL learners, needs further investigation to confirm and clarify the issue and draw more constant and accurate conclusions.

6. Conclusion

Following the research goals, the explanation revolved around how the independent variable, mapping note-taking method, impacted the dependent variable, reading comprehension ability and whether genders made any significant difference in reading comprehension ability through the application of mapping note-taking.

Considering the first research question, whether mapping note-taking method have a significant effect on Iranian EFL learners' reading comprehension ability, the results of the present study demonstrated that at the beginning of the experiment, both groups exhibited comparable performances in their language achievement pretest, with no notable distinction between them. However, at the end of the study, the experimental group excelled and achieved superior results compared to the control group. Thus, the study revealed a significant positive effect of the note-taking method (mapping method) on the improvement of EFL learners' reading comprehension ability, as it indicated that learners with higher scores were in the group exposed to note-taking as a treatment.

Besides, as the answer to the second question, whether Iranian male and female EFL learners significantly differ in their reading comprehension ability through the use of mapping note-taking method; the findings suggest that there was no statistically significant difference in the reading comprehension ability between male and female participants within both the control and experimental groups after implementing the mapping note-taking method.

To put it in a nutshell, this study significantly contributes to the existing research on note-taking methods, particularly the mapping method, and offers new insights into its applicability in the EFL context. The conclusions of this research brought about exciting possibilities related to these factors, providing insights into the intricate processes that influence learners' capacity to enhance their reading comprehension ability through mapping note-taking methods but there is no difference regarding the effectiveness of the aforementioned situation between the Iranian male and female learners. Moreover, the utilization of effective note-taking methods and language learning strategies in educational settings plays a crucial role in supporting EFL learners in their language acquisition process and the connection between note-taking methods and reading comprehension ability highlights the importance of utilizing such methods to enhance learning outcomes.

Acknowledgments

We would like to thank Ms. Shahmoradi for their valuable support and contributions to this study. Any opinions, findings, and conclusions expressed in this article are those of the authors and do not necessarily reflect the views of any person and the funding organization.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

Bahrami, F., & Nosratzadeh, H. (2017). The effectiveness of note-taking on reading comprehension of Iranian EFL learners. *International Journal of Applied Linguistics and English Literature*, 6(7), 308-317.

Baker, L. & Lombardi B. R. (1985). Students' lecture notes and their relation to test performance. *Teaching of Psychology*, 12, 28-32.

Boyle, J. R. (2007). The process of note-taking: Implications for students with mild disabilities. *The Clearing House*, 80(5), 227-232.

Boyle, J. R. (2010). Note-taking skills of middle school students with and without learning disabilities. *Journal of Learning Disabilities*, 43(6), 530-540.

Broe, D. (2013). *The effects of teaching Cornell notes on student achievement*. [Master's thesis, Minot State University–Minot]. Repository of Minot State University.

Buzan, T. (2002). How to mind map: Make the most of your mind and learn how to create, organize, and plan. England: Martins The Printers Limited.

Buzan, T. and Buzan, B. (1993). The Mind Map Book: How to Use the Radiant Thinking to Maximize Your Brain's Untapped Potential. London: Penguin Book Ltd.

Chang, W. C., & Ku, Y. M. (2014). The effects of note-taking skills instruction on elementary students' reading. *The Journal of Educational Research*, 108(4), 278-291.

Cohn, E., Cohn, S., & Bradley, J. (1995). Notetaking, working memory, and learning in principles of economics. *The Journal of Economic Education*, 26(4), 291-307.

Faber, J. E., Morris, J. D., & Lieberman, M. G. (2000). The effect of note taking on ninth grade students' comprehension. *Reading Psychology*, 21(3), 257–270. https://doi.org/10.1080/02702710050144377

Gee, K. L. (2011). *The impact of instructor-provided lecture notes and learning interventions on student note taking and generative processing* .(Publication No. 1495051) [Unpublished Master's Thesis, San Jose State University–California]. ProQuest Dissertations and Theses.

Hale, G. A., & Courtney, R. (1994). The effects of note-taking on listening comprehension in the Test of English as a Foreign Language. *Language testing*, 11(1), 29-47.

Hamed, C. (2024). Using Mind Mapping to Improve Reading Comprehension Skills: Exploring its Efficiency in the Palestinian Curriculum for 12th Grade. *GAS Journal of Education and Literature (GASJEL)*, 1(1), 1-6.

Hazaymeh, W. A., & Alomery, M. K. (2022). The effectiveness of visual mind mapping strategy for improving English language learners' critical thinking skills and reading ability. *European Journal of Educational Research*, 11(1), 141-150. https://doi.org/10.12973/eu-jer.11.1.141

Indrayani, S. A. (2014). *The effectiveness of using mind mapping in improving students' reading comprehension of narrative text*. [Undergraduate thesis, Syarif Hidayatullah State Islamic University–South Tangerang]. Institutional Repository of Syarif Hidayatullah State Islamic University.

Kiewra, K. A. (1985). Providing the instructor's notes: An effective addition to student notetaking. *Educational Psychologist*, 20(1), 33-39.

Kiewra, K. A. (1987). Notetaking and review: The research and its implications. *Instructional Science*, 16(3), 233-249.

Kiewra, K. A., & Benton, S. L. (1988). The relationship between information-processing ability and notetaking. *Contemporary educational psychology*, 13(1), 33-44.

Kiewra, K. A., DuBois, N. F., Christian, D., McShane, A., Meyerhoffer, M., & Roskelley, D. (1991). Note-taking functions and techniques. Journal of Educational Psychology, 83(2), 240.

Klingner. J. K & Sharon V. (2007). Teaching reading comprehension to the students with learning difficulties. New York: The Guildford Press.

Korbut, A. (2019). A preliminary study of the orderliness of university student note-taking practices. *Studentische Praxis und universitäre Interaktionskultur: Perspektiven einer praxeologischen Bildungsforschung*, 69, 119-142.

Lau, K. L., & Chan, D. W. (2003). Reading strategy use and motivation among Chinese good and poor readers in Hong Kong. *Journal of Research in Reading*, 26(2), 177-190.

Luo, L., Kiewra, K. A., & Samuelson, L. (2016). Revising lecture notes: How revision, pauses, and partners affect note taking and achievement. *Instructional Science*, 44, 45-67.

Malekzadeh, B., & Bayat, A. (2015). The effect of mind mapping strategy on comprehending implicit information in EFL reading texts. *International Journal of Educational Investigations*, 2(3), 81-90.

McNamara, D. S. (Ed.). (2007). *Reading comprehension strategies: Theory, interventions, and technologies*. Mahwah, NJ: Erlbaum.

Miller, P. (2005). Reading comprehension and its relation to the quality of functional hearing: Evidence from readers with different functional hearing abilities. *American Annals of the Deaf*, 150(3), 305-323.

Muchhal, M., Patthi, B., Singla, A., Gupta, R., Malhi, R., & Chaudhary, D. (2018). Effectiveness of mind mapping as a learning tool among dental students. *Journal of Indian Association of Public Health Dentistry*, 16(2), 122-126.

Namaziandost, E., Hashemifardnia, A., & Shakibaei, G. (2023). Comparing the Effects of Mind-Mapping vs. Concept-Mapping Techniques on Iranian EFL Students' Reading Motivation, Reading Comprehension, and Willingness to Communicate. *Iranian Journal of Applied Language Studies*, 15(2), 69-90.

Narjaikaew, P., Emarat, N., & Cowie, B. (2009). The effect of guided note taking during lectures on Thai university students' understanding of electromagnetism. *Research in Science & Technological Education*, 27(1), 75-94.

Piolat, A. (2004). What are the most optimal methods of note-taking? Retrieved March 23, 2023, from, http://www.academia.edu/39178549/Note_taking_Instruction_Its_Impact_on_Informationhttp:/www.academia.edu/39178549/Note_taking_Instruction_Its_Impact_on_Information

Rahmani, M., & Sadeghi, K. (2011). Effects of note-taking training on reading comprehension and recall. *Reading*, 11(2), 116-128.

Raid, J. (2021). Taking lecture notes: pre–reading. Retrieved November 3, 2023, from Janereid.substack.com; htpp://patreon.com/janejreid

Riley, J. D., & Dyer, J. (1979). The effects of notetaking while reading or listening. *Literacy Research and Instruction*, 19(1), 51-56. https://doi.org/10.1080/19388077909557514

Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52(3-4), 591-611.

Shaw, P., and McMillion, A. (2008). Proficiency Effects and Compensation in Advanced Second-language Reading. *NordicJournal of English Studies*, 7(3), 123-143.

Simmons, N. (2014). *Family and Frinds 4*. Oxford, NY: Oxford University Press.

Sinambela, E., Padang, I., & Pasaribu, A. N. (2022). The effect of mind mapping and semantic mapping on reading comprehension of the eleventh graders of senior high school. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 10(2), 2100-2112.

Siswanto, P. (2019). Note taking strategy: its effect on reading comprehension. *Journal of English Language Studies*, 4(1), 32-40.

Thompson, T. (2013). *Oxford Primary Skill-Reading and Writing 4*. Oxford, NY: Oxford University Press.

Titsworth, B. S. (2001). The effects of teacher immediacy, use of organizational lecture cues, and students' notetaking on cognitive learning. *Communication education*, 50(4), 283-297.

Trevino, C. (2005). *Mind mapping and outlining: comparing two types of graphic organizers for learning seventh-grade life science*. [Doctoral dissertation, Texas Tech University–Texas]. Repository of Texas Tech University.

Vashist, Sh. (2023, October 31). The art of effective note-taking and study techniques for academic success. Hindustan Times. Retrieved November 11, 2023, from https://www.hindustantimes.com/education/features/the-art-of-effective-note-taking-and-study-techniques-for-academic-success-101698663936100.html

Wycoff, J. (1991). *Mind mapping: Your personal guide to exploring creativity and problem-solving*. New York, NY: The Berkley Publishing Group.

Zentar, B. (2017). *The impact of note taking on listening competence*. [Master's thesis, Guelma University, Guelma]. Repository of Guelma University.