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Research Paper

The Comparative Impacts of Modified Visual and Oral Input on the Vocabulary Retention of Iranian EFL Undergraduate Students

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Abstract

Poor vocabulary retention is one of the major difficulties experienced by English as a foreign (second) language (EFL/ESL) students. To tackle this problem, the current study explored the impacts of the modified visual input and the modified oral input on the short-term and long-term vocabulary retention of Iranian EFL students and their perceptions regarding implementing these two types of input in their classes. The initial population consisted of 90 male and female students from Islamic Azad University, Science and Research Branch in Tehran, Iran. The convenience sampling method was implemented to select the participants. After administering the Oxford Placement Test (OPT), 60 students were chosen to serve as the participants, and they were randomly divided into two groups of 30 learners, namely the experimental groups A and B, which received instructions based on the modified visual input and the modified oral input, respectively. Later, the participants received ten 60-minute treatment sessions. Next, the learners' short-term vocabulary retention was assessed using the same vocabulary test as the posttest. One month later, the same test was given to students to check their long-term vocabulary retention as the delayed posttest. The results showed that the two types of input had significant impacts on the vocabulary short-term and long-term retention of the Iranian EFL students to varying degrees. Moreover, the qualitative findings indicated that the learners adopted a significantly positive view toward implementing oral and visual input modifications in their classes. In the end, the implications of the study are provided.

Keywords: EFL Learners, Modified Oral Input, Modified Visual Input, Retention, Vocabulary

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Vocabulary acquisition plays a significant role in second language (L2) education. Based on Milton (2013), vocabulary knowledge is multifaceted, hence, language instructors may face challenges in teaching vocabulary effectively. How vocabulary is learned and what the most effective procedures are to develop efficient vocabulary learning could be valuable lines of research in the second language acquisition (SLA) field. Indeed, the primary reason that great attention is paid to vocabulary acquisition is that students experience multiple difficulties facing enormous new words during comprehension and production processes (Namaziandost et al., 2020), and in this regard, some scholars (e.g., Lane & Allen, 2010; Shin & Nation, 2007; Stahl, 1990) showed that a strong command of vocabulary knowledge can result in text comprehension. Moreover, vocabulary learning is regarded as a necessary element of L2 acquisition (Kargar Behbahani & Razmjoo, 2023). According to Lane and Allen (2010), "Vocabulary knowledge is one of the best predictors of comprehension, reading performance, and achievement" (p. 364).

Poor vocabulary retention is one of the significant difficulties experienced by English as a foreign (second) language (EFL/ESL) students (Wei, 2007). Indeed, the lack of vocabulary knowledge of ESL/EFL students continues to be a critical stumbling hurdle during the reading and writing processes. Thus, vocabulary retention is believed to be an integral factor during vocabulary acquisition (Su et al., 2021). Moreover, Wei (2007) noted that vocabulary retention has become a new line of research. Based on Richards and Schmidt (2010), retention is defined as "the ability to recall or remember things after an interval of time" (p. 498), and the effectiveness of the instruction, the quality of the materials, and learner motivation all play a significant role in this ability. However, it is different from recall since it is defined as the ability to remember things, such as an idea or a word, which "is usually measured immediately after performing the task that is supposed to lead to retaining some information, after a short intervention. (Laufer, 2007, p. 29). Concerning the definition of retention, the definition proposed by Laufer (2007, p. 30) stated that "some people administer a test a week or two later, some a month or even three months, some people repeat a measurement several times to check how much learners retain at different point of time" was used in this research. Based on Gairns and Redman (1986), although constant exposure to new vocabulary items helps learners acquire new words and their meanings to their short-term memory, vocabulary retention—generally known as the capacity to successfully retrieve appropriate vocabulary items from long-term memory—needs more sophisticated strategies. To address these issues, teachers in most classes used the common methods of vocabulary

instruction, such as pronouncing new words while providing their definitions and spelling, followed by an explanation of the new words' grammatical functions (Zoghi & Mirzaei, 2014). However, providing vocabulary through these traditional techniques has no positive effects on vocabulary retention of L2 learners (Abbasi Bagherian Poor & Serati, 2021; Zoghi & Mirzaei, 2014); therefore, several techniques and methods, such as oral and visual input enhancement, have been suggested to help students acquire and retain new vocabulary (e.g., Kim, 2006; Lee & Benati, 2007; Rezvani & Khanzadeh, 2022).

Research in settings where learners had access to comprehensible input (Krashen, 1985) indicated that input alone was not sufficient for SLA (e.g., Barcroft, 2003; Javadi & Cheraghi Shehni, 2020; Kim, 2006). Learners provided with modified input receive more input than those learners who get unmodified input; therefore, input modification facilitates both comprehension and vocabulary acquisition (Lee & Benati, 2007). When the input is modified for the learners orally and visually, they can interact with the vocabularies after modification (Mackey, 2012). Gass (2003, as cited in Rashtchi & Porkar, 2019) contends that language input can be comprehensible through modification. Various input modification techniques include typographic implementation, input-flooding, explicit explanation, translation (semantic improvement), and corrective feedback (Dastjerdi & Farshid, 2011).

The significance of the present study lies in the fact that vocabulary retention could strongly affect EFL learners' success in learning and mastering English language skills (Su et al., 2021); therefore, exploring the efficient techniques and strategies of vocabulary instruction seems necessary in the Iranian EFL context. As a result, this research aimed to examine the impacts of modified visual and oral input on the vocabulary retention of Iranian EFL students and to investigate their perceptions regarding the effectiveness of these instructions.

Literature Review

Theoretical Background

Schmidt (1990) mentioned two factors that could accelerate the learning process: input attention and input noticing. Based on Sharwood Smith (1991, 1993), the input type that learners receive could facilitate their EFL/ESL comprehension. He hypothesizes that 'input enhancement' (IE) is a method to improve input processing by enhancing input quality. EI is characterized as a process in which the saliency of linguistic features is increased by textual modifications, like boldfacing concerning visual input, and

phonological modification, such as repetition concerning aural input. The fundamental premise is that noticing is perceived as a requirement for intake (Schmidt, 1990). In this respect, Gascoigne (2006) noted that IE could be the most effective strategy in vocabulary instruction, which was emphasized recently in language teaching and learning. Lee and Benati (2007) pointed out that IE could be advantageous for language improvement. However, if students can not notice the input, implementing input enhancement is not a guarantee for transforming input into intake. In this sense, Schmidt (1990, 2001) proposed the Noticing Hypothesis, which holds that input for language acquisition does not become intake unless noticed or consciously registered. According to Robinson (2003), noticing is the part of input or knowledge that, after receiving a specific amount of attention, is stored in a learner's working memory. According to Schmidt (1995), conscious attention to linguistic form is necessary for successful second language acquisition. In addition, he stated that learning L2 requires both noticing, which denotes a lower degree of awareness, and paying attention to the new target form. Schmidt (1995) believed that "attention and awareness at the level of noticing are flip sides of the same coin" (p. 18). Noticing can be attained by appropriate attention-drawing activities, which are the main focus of consciousness-raising activities or input enhancement (Nation, 2001).

According to Doughty and Williams (1998), IE has two forms, including oral and visual input. In this category, visual enhancement is associated with presenting input enhancement through some strategies, like boldfacing, underlining, and highlighting L2 language characteristics (items). According to Loewen and Inceoglu (2016), visual IE (VIE) could provoke students to notice specific characteristics of the L2 by "manipulation of the written input" (p. 90). Several researchers confirmed the positive impacts of VIE on the recognition and subsequent intake of language items (e.g., Lee, 2007; Mohammadi & Amjadiparvar, 2022; Namaziandost et al., 2020; Shook, 1994; Simard, 2009; Zarei & Esfandiari, 2016). In comparison, oral input enhancement is the presentation of enhanced oral input through aural elements, such as intonation or pitch variations. SeyedTajaddini (2014) stated that oral IE relies on modifying spoken materials to highlight and draw the learners' attention to particular linguistic elements, and his results showed that oral IE had significant effects on the EFL students' grammar learning. Several studies proved the positive impacts of oral IE on the acquisition of language items (e.g., Naseri & Khodabandeh, 2019; Rezvani & Khanzadeh, 2022). In addition, interactionally modified input is another input-oriented teaching technique that could be used to accelerate the L2 acquisition process via oral communication, and syntactic structures could be improved through communication (Chaudron, 1988). According to the Interaction Hypothesis

(Long, 1982), as a communication issue occurs and learners engage in negotiation of meaning and interactional modifications, interaction develops learning.

Empirical Studies

There is some empirical research on the effects of oral and visual input modifications on EFL/ESL vocabulary learning. In this regard, Kim (2006) explored whether lexical elaboration (LE) and typographical enhancement (TE) or (a) combination and (b) explicit or implicit LE can improve Korean EFL students' vocabulary learning. Three levels were present in the LE: explicit, implicit, and unelaborated; the TE featured two levels: enhanced and unenhanced. The findings showed that explicit LE alone aided in the meaning recognition of vocabulary, and TE alone did not aid in the form and meaning recognition of vocabulary. In addition, LE and TE combined did not aid in form recognition of vocabulary; however, both explicit and implicit LE assisted in meaning recognition of vocabulary. Moreover, explicit and implicit LE were identical in their effect on form and meaning recognition. All in all, the results indicated that the learners could acquire the vocabulary more efficiently using both explicit and implicit lexical elaborations.

In addition, Rott (2007) compared the lexical gain of words that appeared once or four times in the input text to determine the impact of increasing the frequency of target words (TWs). The combined impact of frequency and lexical or visual elaborations was also examined. Reading conditions that were compared included: (a) TWs glossed four times in the text (four-gloss: 4G); (b) TWs glossed once, then retrieved in the native language and bolded twice (gloss-retrieval: GR); and (c) TWs glossed once and then bolded three times (gloss-bolding: GB). The study also evaluated the impact of these treatments on text comprehension and long-term retention (4-6 weeks) of lexical knowledge. The results showed that when readers met a TW only once, or when they read under the GB form, they gained fewer words productively than when they read under the GR and 4G conditions. Word encoding does not appear to be strengthened by repeated visual elaborations. When the text was glossed four times, followed by the gloss-bolding reading condition and the gloss-retrieval practice, the comprehension of the main idea significantly improved.

Barcroft (2003) studied the impact of IE on the lexical acquisition of English students learning Spanish as their L2 while examining the nature and direction of elaboration effects (the distinctiveness role). The participants were taught 24 new Spanish words and their English equivalents. In the first experiment, nine out of the twenty-four-word lists were enhanced, while the other list remained unenhanced. Three of the twenty-four words

in the word list of the second experiment were enhanced, while the remaining list was unenhanced. To measure L1-to-L2 and L2-to-L1 recall both in immediate and delayed forms, four posttests were given. The findings revealed that at the first stage of the research, neither the nine enhanced vocabulary nor the unenhanced ones had any effect on the pace of acquisition. Only the results of the second experiment showed the significant effects of lexical elaboration, indicating that distinctiveness could somewhat moderate the impacts of lexical elaboration. In addition, the results of the second experiment showed that the participants performed better on enhanced items and performed poorer on unenhanced ones.

Petchko (2011) investigated how IE affected the vocabulary acquisition of EFL students. Under one of two conditions-with or without textual enhancement of the target words-47 intermediate EFL learners have read an English story with 12 nonwords. The experimental group received passages with 12 non-words modified, while the control group did not get the enhanced texts. Word noticing, word meaning recognition, and word meaning recall tests were administered to the participants. The findings indicated that both groups exhibited significant improvements regarding the results of the three tests, and there were no significant differences between the groups, suggesting that IE had no impact on noticing and learning new vocabulary. In addition, the interviews revealed that many of the new words had been noted by the learners in both groups.

Lee and Lee (2012) undertook a research study that explored the impacts of visual IE, lexical modification, and input flooding on Korean EFL students' vocabulary learning. Three reading classes were taught using different input enhancement strategies, including input flooding, visual enhancement, and lexical enhancement. Regular texts were used to instruct the fourth class, with no IE. Even though these three types of input enhancement strategies did not influence delayed meaning recognition, they positively influenced immediate meaning recognition to varying degrees.

Ertürk (2013) compared the impacts of pushed output, input processing, and visual IE on learning and retention of English language items in a quasi-experimental study with three experimental and one control group. The subjects were selected from among intermediate-level (B-Level) students at a Turkish public research university. The participants of all groups were given identical language items, and data were gathered through the pretest and the posttest. The results indicated that the pushed output group showed improvements in learning English Type 3 Conditionals; nonetheless, the learners are not drawn to the Type 3 Conditionals in visually enhanced input.

Homayounmehr and Pishdadi Motlagh (2015) explored the impact of various IE strategies, including boldfacing, underlining, and capitalizing on EFL students' lexical acquisition, adopting a quasi-experimental design. The experimental groups consisted of three classes, each taught by one of the input enhancement strategies. The progress of the students was assessed through answering the vocabulary test. The findings showed that these inputs were efficient in the L2 lexical acquisition; however, the bolding group outperformed the others. In addition, bolding L2 vocabularies was more helpful in developing EFL students' vocabulary acquisition, and implementing bolding as an IE technique significantly improved students' awareness of vocabulary acquisition. Moreover, the capitalizing strategy is the least effective input.

In a common direction, Fazlali and Shahini (2019) conducted a study to determine how IE as an implicit technique and consciousness-raising as an explicit method affect the Iranian EFL learners' knowledge of grammar and lexical collocation. The participants were divided into two experimental groups and one control group at random. Throughout the six treatment sessions, the same material was given to each group along with a different teaching strategy. According to their findings, input enhancement had a significant effect on the development of lexical collocation knowledge; however, it had no significant effect on the learners' grammatical collocation knowledge. Furthermore, it was found that the consciousness-raising training significantly improved the Iranian EFL learners' lexical and grammatical collocation knowledge. Additionally, the consciousness-raising group outperformed the other groups.

Naseri and Khodabandeh (2019) looked into how audio-visual input enhancement teaching methods could help EFL students learn collocations more effectively and correctly when using them in narrative writing. Additionally, it examined the effects of audio-visual input enhancement in two different learning situations: traditional and mobile learning contexts. To do so, 120 Iranian EFL students were divided into two experimental groups and two control groups at random. The experimental groups were taught the enhanced target collocations through IE techniques, while the control groups received the instructions through the conventional vocabulary instruction method. The findings showed that modifying audio-visual input had a positive impact on EFL learners' acquisition of collocations, and it improved their accuracy in using collocations in narrative writing. Regarding the study's second objective, the findings showed that audio-visual input enhancement teaching methods were much more effective in a mobile learning setting for collocation learning than in a traditional learning context.

Rashtchi and Porkar (2019) investigated the impact of modifying lexical input on the Iranian EFL learners' incidental vocabulary acquisition. In doing so, 60 Iranian EFL students in two intact classes were assigned to a control group (The Text Unmodified Group) and an experimental group (The Text Modified Group). Two vocabulary tests were used to collect the data. The findings indicated that lexical IE techniques, such as lexical and typographical elaboration, can effectively develop incidental L2 vocabulary.

Javadi and Cheraghi Shehni (2020) explored the impact of vocabulary instruction implementing auditory IE on L2 students' lexical acquisition and retention. In this regard, 56 students were assigned to an experimental group and a control group. The experimental group received the instruction using auditory input via WhatsApp, and the control group was taught by applying a conventional teaching method. The results showed that auditory IE via WhatsApp significantly impacted Iranian L2 students' lexical acquisition and retention.

In a similar line of studies, Namaziandost et al. (2020) examined the impacts of visual input enhancement, semantic input enhancement, and input flooding on L2 vocabulary learning of Iranian intermediate EFL learners. In doing so, 92 EFL students were divided into three experimental and one control group. The experimental groups received three input enhancements, including visual input enhancement, semantic input enhancement, and input flooding, and the control group was taught using the unenhanced input. The findings demonstrated that all three experimental groups performed better on posttests than on pretests. Furthermore, the results showed no significant differences among the three input enhancement strategies employed in this investigation.

For a similar purpose, Sulaiman and Salehuddin (2022) looked into the impact of input improvements on undergraduate ESL students' incidental academic word learning while reading academic materials written in English. The participants included 79 Malaysian ESL undergraduate students. Twelve academic words were chosen from Coxhead's Academic Word List (AWL), and three vocabulary tests were utilized to evaluate academic vocabulary concerning form, meaning recognition, and recall. A gloss, a contextual clue, and no clue are all compared in the study. According to the results, those who were more proficient than those who were less proficient recognized more target terms. Gloss also makes the target words more noticeable, at least in form recognition. According to the study's findings, vocabulary learning would benefit more from input enhancement if it were included in a reading assignment or made easier by vocabulary learning instruction.

Furthermore, Rezvani and Khanzadeh (2022) examined the comparative impacts of textual elaboration on Iranian EFL students' lexical noticing. The participants included 30 learners from a general English course. Using the Telegram app, participants received an extended paragraph during a term that had eighteen target words. They were either kept unenhanced or had their perceptual qualities enhanced by boldfacing and Emoji stickers. Then, the participants were required to enter their responses to a series of post-reading vocabulary questions over Telegram and return them to the examiner. The findings indicated that both textual elaboration procedures had a significant positive impact on the students' lexical noticing.

According to the researchers' review of the relevant literature, no research has been conducted on the effects of modified visual input and modified oral input on Iranian EFL students' short- and long-term vocabulary retention, as well as on how these two types of input are perceived by these students. Therefore, the purpose of the current research was to bridge this gap in the existing literature. As a result, the research questions are as follows,

1. Does oral input modification have any statistically significant effect on the short-term vocabulary retention of Iranian EFL students?
2. Does oral input modification have any statistically significant effect on the long-term vocabulary retention of Iranian EFL students?
3. Does visual input modification have any statistically significant effect on the short-term vocabulary retention of Iranian EFL students?
4. Does visual input modification have any statistically significant effect on the long-term vocabulary retention of Iranian EFL students?
5. Is there any significant difference between the effects of oral input modification and visual input modification on the short-term vocabulary retention of Iranian EFL students?
6. Is there any significant difference between the effects of oral input modification and visual input modification on the long-term vocabulary retention of Iranian EFL students?
7. What are the perceptions of Iranian EFL students toward the implementation of oral input modification and visual input modification in their Advanced Reading classes?

Method

Design

The current study applied an explanatory sequential mixed-methods design (Creswell, 2012). The objective of the quantitative section, which consists of the pretest, posttest, and delayed posttest, was to evaluate the impact of the treatments on the vocabulary short-term and long-term retention of EFL students. To complement the quantitative findings, the qualitative section contains participants' interviews.

Participants

The initial participants were 90 (38 males and 52 females) EFL students from Islamic Azad University, Science and Research branch in Tehran, who were studying English Language Teaching (ELT) at B.A. level and took Advanced Reading course. The convenience sampling method was implemented to select the participants. A convenience sample is one that is drawn from a source that is conveniently accessible to the researcher (Ary et al., 2019). The participants were selected randomly from four Advanced Reading course classes to overcome the limitation of this type of sampling. Therefore, the researchers of the present study used this type of sampling due to the accessibility and availability of the participants. The Oxford Placement Test (OPT) was employed to harmonize the initial population's language proficiency. Following OPT administration, 60 (22 males and 38 females) intermediate students were selected as participants, whose OPT scores fell within the range of mean score plus minus 1 SD. Then, they were randomly split into two groups of 30 students, namely experimental group A and experimental group B. Their ages ranged from 15 to 25 years old (mean = 19.6). They all shared the same L1 and L2 in the study since Persian was the mother tongue of the participants, and English was their second language. Moreover, the researchers obtained the learners' consent via consent forms before starting the study. Table 1 displays the OPT results.

Table 1.
Descriptive Statistics of the Homogeneity Test

N	Minimum	Maximum	Mean	Std. Deviation
90	31.00	57.00	44.37	5.85

The mean and SD of the OPT are 44.37 and 5.85, respectively. The final participants were 60 EFL students with OPT scores one standard deviation above and below the mean score ($38 \leq s \leq 49$).

Instruments

Oxford Placement Test (OPT) was applied as the language proficiency test to homogenize the participants. It includes three parts: Section 1 evaluates learners' grammar knowledge, section 2 tests learners' vocabulary repertoire, and section 3 examines their writing skills. It takes 90 minutes. In addition, the OPT reliability index was computed through Cronbach's Alpha. A value of Cronbach's alpha higher than 0.7 is an acceptable indicator of reliability (Hair et al., 2012); therefore, the OPT reliability was in the acceptable range (r=.83). Moreover, Wistner et al. (2009) confirmed the construct validity of this test. This test was used since the advantages of this test are the precise placement of English learners and its validity. Moreover, the researchers obtained the learners' consent via consent forms before administering the test.

A vocabulary test was developed by the researchers to employ as the vocabulary pretest, posttest, and delayed posttest, and it had 45 multiple-choice questions. The vocabularies were selected from the *Active Reading 2* coursebook. Three TEFL Ph.D. holders confirmed the test's content validity. The test's reliability was assessed, and the results were within an acceptable range (r=.82). The vocabulary test was employed to check the vocabulary knowledge of the participants before and after treatments. To check the construct validity of the test's items, item facility (IF) and item discrimination (ID) were checked through a pilot study with 15 students who were similar to the study participants regarding their proficiency level and age. Table 2 shows the results of the IF value for each item.

Table 2.
Item facility Values of Vocabulary Test Items

IF	Criteria	Frequency	Item numbers
0.00-0.30	Difficult	4	5, 18, 29, 39
0.31-0.70	Moderate	35	1, 2, 3, 4, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 19, 21, 22, 23, 24, 26, 27, 28, 30, 31, 32, 33, 35, 36, 37, 38, 40, 41, 42, 43, 44, 45
0.71-1.00	Easy	6	8, 10, 20, 25, 34

Table 2 shows that the majority of items were deemed to have a moderate degree of item facility, ranging between .31 and.70, based on the results. Furthermore, four items have been determined to be difficult. These items can be difficult for high achievers, and

they do not appear to have negative washback effects on the participants because this number is not particularly large (Brown, 2004). Five items were also deemed to be simple based on the results. These simple items can serve as warm-up exercises and motivate low achievers, as Brown (2004) proposes. In other words, these things might provide the learners with a sense of accomplishment.

The second analysis of construct validity of test items was item discrimination (ID), which seeks to reveal the discriminating power of the test items. Table 3 shows the ID of the test items.

Table 3.

Item Discrimination Values of the Vocabulary Test Items

Item Discrimination	Criteria	Frequency	Item numbers
0.71-1.00	Excellent	6	2, 6, 21, 26, 33, 44
0.41-.070	Good	18	1, 4, 8, 10, 12, 15, 16, 19, 23, 24, 27, 28, 30, 34, 35, 39, 41, 43
0.21-0.40	Satisfactory	17	3, 5, 9, 13, 14, 18, 20, 25, 29, 31, 32, 36, 37, 38, 40, 42, 45
0.00-0.20	Poor	4	7, 11, 17, 22
Negative	Rejected	-	-

Table 3 indicates that there was no item with a negative item discrimination value. Moreover, there were 18 and 17 items with good and satisfactory levels, respectively. Additionally, four items had poor item discriminating power, and these items might have negative washback (Hughes, 2003) on high-ability learners; therefore, poor items were revised to improve their discriminating power.

The semi-structured interview was conducted to triangulate the quantitative data. The rationale behind using semi-structured interviews was to elicit more in-depth data about students' perceptions of the effects of treatments on their vocabulary knowledge. Fifteen EFL learners, including seven males and eight females, were randomly selected from two groups to be interviewed regarding their perspectives on the effectiveness of using modified visual and oral input instructions. There were nine open-ended interview questions, which were made by the researchers. The interview's content validity was confirmed by three TEFL Ph.D. holders. Three participants were interviewed in a pilot phase to improve the reliability (dependability) of the questions. Before conducting the interviews, the researchers took the consent of the participants through consent forms, and only those students who filled consent forms took part in the interview sessions.

Data Collection

Quantitative Phase

The initial population was 90 EFL learners who were selected from the Islamic Azad University, Science and Research branch in Tehran. Sixty intermediate learners were selected based on OPT scores as the participants. After that, they were randomly split into two groups of 30 students: experimental groups A and B. The experimental A group was instructed based on modified visual input, and the experimental B group received instruction through modified oral input. Before starting the instructions, the learners in both groups took the vocabulary test as a pretest. After that, the participants received ten 60-minute treatment sessions. Two groups were exposed to *Active Reading* 2 as the reading coursebook. At the beginning of the sessions, the instructors in the experimental groups reviewed the target vocabularies of the reading texts.

Following Schmidt's (1995) noticing hypothesis and Sharwood Smith's (1993) IE hypothesis, both experimental groups were taught based on input modification procedures. In the visually modified input group, the reading texts were made salient using input modification (enhancement) strategies; however, in the auditory modified input group, the learners studied the same reading texts, including the ten first units of the *Active Reading* 2, without visual modifications. They received the instruction through oral modifications of the input using repetition and the instructor's intonation.

For the experimental A group, modified visual input was implemented via applying PowerPoint, boldfacing, highlighting, underlining, and italicizing the L2 words in the passage. Based on Norris and Ortega (2000), in the visual input modification, students were given passages made salient via underlining, bolding, italicizing, and other techniques, like color coding or implementing various font sizes or types. Therefore, the teacher modified the target vocabularies of the passages and enhanced the input through boldfacing, highlighting, underlining, and italicizing and provided the students with the modified versions. In addition, the PowerPoint of the reading texts was provided in which students can study the target words on the PowerPoint screen and paper (Ghafouri & Masoomi, 2016). Afterward, the teacher explained the target words on the PowerPoint screen. The experimental B group was provided with repetition and the instructor's intonation. The teacher implemented the computer to repeat the target words several times. Then, she read the reading comprehension text aloud, applying a rising intonation and higher pitch as she encountered the target vocabulary. She paused before and after them in the text for a few seconds.

Upon finishing treatment sessions, to assess participants' short-term vocabulary retention, the same vocabulary test was given to both groups as a posttest. After one month, the delayed posttest, the same vocabulary test, was given to both experimental groups to evaluate the learners' long-term vocabulary retention.

Qualitative Phase

The semi-structured interviews were conducted once the posttest had been administered. The purpose of the interview was to elicit more in-depth data about students' perceptions of the treatments. The semi-structured individual interviews were administered to 15 participants (seven male and eight female) who were selected from the experimental groups. The participants were purposefully chosen from high achievers, medium achievers, and low achievers according to their posttest and delayed posttest performance. Before conducting the interviews, the learners were told about the goal and the time of the semi-structured individual interview. Each interview session took 10 to 15 minutes, and with the interviewees' consent, every interview was audio recorded and then transcribed. Within a month, interviews were conducted. They took place face-to-face in the university teacher's room. Interrater dependability (reliability) was utilized to increase the trustworthiness of the coding process (Ary et al., 2018). Consequently, the researchers chose at random one transcript from each interview, and they then asked a subject-matter specialist to code it using the descriptive qualitative content analysis method (Creswell, 2012). The detected codes were compared to the original ones to specify interrater dependability once the expert had finished the coding process. The results showed that the extracted codes mostly matched the original ones. Data saturation took place in the process of data collection and data analysis, so there was no new code. To reduce the affective barriers and students' concerns, they were assured that the interview results did not affect their marks.

Data Analysis

Descriptive statistics and inferential statistics were used to analyze the data. The 24th version of SPSS software was used to analyze the quantitative data. The skewness and kurtosis indices and their ratios over standard errors were applied to probe the normality of the present data. To answer the questions, a paired-sample t-test and an independent-samples t-test were employed. To analyze the qualitative data, the descriptive qualitative content analysis technique (Creswell, 2012) was implemented. All of the answers to each of the nine interview questions served as the unit of analysis for coding purposes. To

identify the categories and subcategories, the transcripts were read several times and then coded. The key themes were determined after several reviews of the categories and subcategories.

Results

Data Normality Testing

A paired-sample t-test was applied for data analysis, presuming that the variances of the groups were homogeneous and the data were normal. As shown in Table 4, absolute values were smaller than 1.96 for the ratios of skewness and kurtosis over their respective standard errors. Thus, the normality assumption was retained on the vocabulary pretest, posttest, and delayed posttest.

Table 4.

Descriptive Statistics; Testing Normality of Pretest, Posttest, and Delayed Posttest

		N	Skewness			Kurtosis		
Group		Statistic	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio
Experimental A	Pretest	30	-.009	.378	-0.02	-1.140	.741	-1.54
	Posttest	30	.392	.378	1.04	-.617	.741	-0.83
	Delayed P	30	.324	.378	0.86	-.543	.741	-0.73
Experimental B	Pretest	30	-.299	.501	-0.60	-1.092	.972	-1.12
	Posttest	30	.118	.501	0.24	-.844	.972	-0.87
	Delayed P	30	.090	.501	0.18	-.731	.972	-0.75

Quantitative Results

Answering the First Research Question

This question addressed "the effect of oral input modification on the short-term vocabulary retention of Iranian EFL students." It is hypothesized that oral input modification has a statistically significant impact on the short-term vocabulary retention of Iranian EFL learners. To test the first hypothesis, the vocabulary pretest and posttest scores of participants who received modified oral input were compared. The participants' vocabulary scores before and after receiving modified oral input were compared using the parametric paired-sample t-test. In addition, the effect size was calculated by applying the following formula,

- Eta squared = $t^2 / t^2 + (N - 1)$ (Pallant, 2011, p. 247)

Table 5.

Descriptive Statistics of the Participants' Scores on the Pretest and the Posttest

	Mean	N	Std. Deviation	Std. Error Mean
Posttest	13.58	30	2.191	.485
Pretest	9.26	30	2.287	.462

Table 6.

Results of the Paired-Sample T-test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
4.325	.875	.164	3.620	4.345	22.564	29	.000

- r = .95

The impact of oral input modification on Iranian EFL students' short-term vocabulary retention was examined using a paired-sample t-test. From the pretest (M = 9.26, SD = 2.28) to the posttest (M = 13.58, SD = 2.19), there was a statistically significant rise in posttest scores (t (20) = 22.56, p .05 (two-tailed). With a 95% confidence interval of 3.62 to 4.34, the mean increase in vocabulary scores was 4.32. A very substantial effect size was provided by the eta squared statistic (.95). As a result, the first hypothesis, which hypothesized that oral input modification had a statistically significant impact on Iranian EFL students' short-term vocabulary retention, was confirmed.

Answering the Second Research Question

This question addressed "the effect of oral input modification on the long-term vocabulary retention of Iranian EFL students." It is hypothesized that oral input modification has a statistically significant effect on the long-term vocabulary retention of EFL learners. To test the first hypothesis, the vocabulary pretest and delayed posttest scores of participants who received modified oral input were compared. The parametric paired-sample t-test was used to compare the participants' vocabulary scores before and one month after receiving modified oral input.

Table 7.

Descriptive Statistics of the Participants' Scores on the Pretest and the Delayed Post-test

	Mean	N	Std. Deviation	Std. Error Mean
Posttest	11.85	30	1.852	.362
Pretest	9.26	30	2.287	.462

Table 8.

Results of the Paired-Sample T-test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
2.116	.567	.088	1.851	2.451	23.564	29	.000

- r = .92

Iranian EFL students' long-term vocabulary retention was examined using a paired-sample t-test to determine how oral input modification affected it. Between the delayed posttest (M = 11.85, SD = 1.68) and the pretest (M = 9.26, SD = 2.28), there was a statistically significant rise in vocabulary scores (t (35) = 23.56, p .05 (two-tailed). A 95% confidence interval of 1.85 to 2.45 was used to calculate the mean increase in vocabulary scores, which was 2.59. The eta squared statistic (.92) showed a very large effect size. This supported the second hypothesis, which hypothesized that modifying the oral input has a statistically significant impact on Iranian EFL students' long-term vocabulary retention.

Answering the Third Research Question

This question addressed "the effect of visual input modification on the short-term vocabulary retention of Iranian EFL students." It is hypothesized that visual input modification has a statistically significant effect on the short-term vocabulary retention of Iranian EFL students. To test the third hypothesis, the vocabulary pretest and posttest scores of participants who received modified visual input were compared. The parametric paired-sample t-test was used to compare the participants' vocabulary scores before and after receiving modified visual input.

Table 9.

Descriptive Statistics of the Participants' Scores on the Pretest and the Posttest

	Mean	N	Std. Deviation	Std. Error Mean
Posttest	12.26	30	2.121	.464
Pretest	8.95	30	2.145	.446

Table 10.

Results of the Paired-Sample T-test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
1.885	.312	.074	1.651	2.324	27.985	29	.000

- r = .96

A paired-sample t-test was applied to measure the impact of visual input modification on the short-term vocabulary retention of Iranian EFL learners. The vocabulary scores showed a statistically significant improvement from the pretest (M = 8.95, SD = 2.14) to the posttest (M = 12.26, SD = 2.12); t (22) = 27.98, p .05 (two-tailed). The 95% confidence interval for the mean score increase ranged from 1.65 to 2.32, with a mean score increase of 3.31. The eta squared statistic (.96) showed a very substantial effect size. As a result, the third hypothesis, which hypothesized that modifying the visual input had a statistically significant effect on EFL learners' short-term vocabulary retention, was confirmed.

Answering the Forth Research Question

This question addressed "the effect of visual input modification on the long-term vocabulary retention of Iranian EFL students." It is hypothesized that visual input modification has a statistically significant effect on the long-term vocabulary retention of Iranian EFL students. To test the fourth hypothesis, the vocabulary pretest and delayed posttest scores of participants who received modified visual input were compared. The parametric paired-sample t-test was used to compare the participants' vocabulary scores before and one month after receiving modified visual input.

Table 11.

Descriptive Statistics of the Participants' Scores on the Pretest and the Delayed Posttest

	Mean	N	Std. Deviation	Std. Error Mean
Posttest	11.86	30	2.426	.434
Pretest	8.95	30	2.145	.446

Table 12.

Results of the Paired-Sample T-test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
2.923	.270	.043	2.842	3.121	67.021	29	.000

- r = .98

A paired-sample t-test was used to measure the effect of visual input modification on the long-term vocabulary retention of Iranian EFL students. The vocabulary scores significantly improved from the pretest (M = 8.95, SD = 2.14) to the delayed posttest (M = 11.86, SD = 2.42); t (39) = 67.02, p .05 (two-tailed). With a 95% confidence interval ranging from 2.84 to 3.12, the mean rise in vocabulary scores was 2.91. The eta squared statistic (.98) showed a very substantial effect size. Thus, the fourth hypothesis, which hypothesized that modifying the visual input had a statistically significant impact on Iranian EFL students' long-term vocabulary retention, was confirmed.

Answering the Fifth Research Question

This question addressed “the difference between the effects of oral input modification and visual input modification on the short-term vocabulary retention of Iranian EFL students.” It is hypothesized that there is a significant difference between the effects of oral input modification and visual input modification on the short-term vocabulary retention of Iranian EFL students. To test the hypothesis, the vocabulary posttest scores of the two groups were compared. The parametric independent-sample t-test was used to compare the two groups after treatments.

Table 13.

Results of the Independent-Samples T-test

T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
1.253	59	.216	.72000	.57454	-.43562	1.87558

An independent-sample t-test was conducted to compare the scores of the two experimental groups on the posttest. The results showed that there was no significant difference in scores for the participants of experimental group A (M = 12.26, SD = 2.12) and experimental group B (M = 13.58, SD = 2.19) *t* (59) = 1.25, *p* = .216 (two-tailed).

Thus, the fifth hypothesis, which hypothesized a significant difference between the effects of oral input modification and visual input modification on the short-term vocabulary retention of Iranian EFL students, was rejected.

Answering the Sixth Research Question

This question addressed "the difference between the effects of oral input modification and visual input modification on the long-term vocabulary retention of Iranian EFL students." It is hypothesized that there is a significant difference between the effects of oral input modification and visual input modification on the long-term vocabulary retention of Iranian EFL students. To test the hypothesis, the vocabulary delayed posttest scores of the two groups were compared. The parametric independent-sample t-test was used to compare the two groups one month after treatments.

Table 14.

Results of the Independent-Samples T-test

T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-1.48	59	.17	-2.26	1.65	-5.48	.95

An independent-sample t-test was conducted to compare the scores of the two experimental groups on the delayed posttest. The results showed that there was no significant difference in scores for the participants of experimental group A (M = 11.86, SD = 2.42) and experimental group B (M = 11.85, SD = 1.68) t (59) = -1.48, p = .17 (two-tailed). Thus, the sixth hypothesis, which hypothesized a significant difference between the effects of oral input modification and visual input modification on the long-term vocabulary retention of Iranian EFL students, was rejected.

Qualitative Results

Addressing the Seventh Research Question

This question addressed the learners' perceptions of using oral and visual input modifications in their classes. The data was gathered through semi-structured interviews to examine the learners' perceptions concerning the effectiveness of instructions, and they were audio-recorded and then transcribed. Afterward, the descriptive qualitative content analysis technique (Creswell, 2012) was implemented to investigate the main themes within the data. Pseudonyms were used in this section regarding ethical considerations (Bakhshi et al., 2019). The main themes were as follows,

Enhancing Noticing Ability

Some participants mentioned that the modified input boosts their noticing ability in the process of reading to acquire new words effectively. They believed that modified input could draw their attention to the new vocabulary throughout the text, and therefore, they could learn them. Amir, in this respect, pointed out,

> *Highlighting the new words in the text by the teacher's intonation and repetition was very helpful for our vocabulary acquisition since we could subconsciously notice the targeted words within the text and keep them in our minds with our teacher's specific voice.*

He noted that the teacher's oral modification was beneficial in acquiring the new words in the text, and he could learn the targeted words unconsciously. Nahid, in this regard, noted, "I could notice the highlighted and bold words while reading the passage and remember their meaning easier later." Thus, input modifications could improve the noticing skills of the students.

Facilitating the Transformation of Input into Intake

Most participants expressed that they could use most of the targeted new vocabulary in their oral and written production, and they perceived that they could learn and use the new words more effectively. Zahra, one of the high-achiever learners, mentioned,

> *One of my problems before this class was vocabulary acquisition in the process of reading comprehension. However, in this class, I could learn the new words meaningfully through the modified texts. I could pay more attention to the highlighted and underlined words and add them to my active vocabulary repertoire.*

She believed that using modified input could facilitate the acquisition of the new words, and she could retain them as her active vocabularies. Farhad, in this regard, pointed out,

> *I am very sensitive to my teacher's voice during class, and when the teacher changed her intonation to focus on the new words, I could learn them meaningfully in the context. I think it is the best way to learn new vocabulary, at least for auditory learners like me.*

He, as a talented auditory student, noted that using oral input modification by the teacher could be very beneficial for him to learn the new targeted vocabulary throughout the reading texts.

Boosting the Learners' Motivation

Some students mentioned that using oral and visual input modifications could develop their motivation to learn the new language items, especially the new targeted words. They believed that through modification of the input, the process of presenting the instructional materials by the teacher became more interesting. Nader noted,

> *Using the PowerPoint in the class was very useful since we could follow the reading passages both from the text and PowerPoint simultaneously, and it could encourage us to pay more attention to the teacher and learn the new items better.*

He believed that using instructional aids, such as PowerPoint for input modification, could enhance the motivation of the learners to draw their attention to the teaching and learning process. Parisa, in this respect, said,

> *When the teacher repeated the targeted words through the computer before starting the reading texts, this repetition motivated me to listen to it carefully and, consequently, look for these words in the reading text. In this way, I could better comprehend both the text and new words.*

She maintained that using oral input modification could motivate her to comprehend the new targeted vocabulary better. Therefore, it can be concluded that implementing input modifications can develop the motivation of the participants to learn the new language items in general and the targeted vocabularies in particular.

Generally, the participants had a significantly positive view of using oral and visual input modifications in their classes.

Discussion

The findings revealed that applying oral input modification had significant impacts on the short-term and long-term vocabulary retention of Iranian EFL students. Furthermore, the results indicated visual input modification had significant impacts on the students' short-term and long-term vocabulary retention. There was no significant difference between the effects of oral input and visual input modification on the participants' short-term and long-term vocabulary retention. However, the students of both groups outperformed in the posttest than the delayed posttest. In other words, oral input modification and visual input modification had more significant effects on the short-term vocabulary retention of Iranian EFL students than their long-term one. The lack of English language exposure outside of the classroom may be the reason that the students could not use their newly learned vocabulary to retain it after one month. In addition, the

qualitative investigation indicated that the students' attitudes on the usage of oral and visual input modifications in their classes were significantly positive, in which quantitative and qualitative findings complemented each other, considering the effectiveness of the instructions on vocabulary retention of Iranian EFL students. Therefore, it could be maintained that the results of this study support Sharwood Smith's hypothesis (1993) since input modification and IE have significant impacts on the vocabulary retention of EFL students. Moreover, the findings lend credence to the premise that explicit lexical modification could enhance unknown vocabulary acquisition within written texts (Rashtchi & Porkar, 2019). The findings also lend support to the Dual Coding (DC) theory (Paivio, 1991), which contends that the oral and visual coding systems in the human brain are responsible for how information is perceived. An oral system refers to the method through which information is vocally and nonverbally (in the form of a picture) coded for human cognition. As it encourages both verbal and nonverbal associations, it suggests that teaching vocabulary to learners in a variety of ways can help to improve vocabulary acquisition (Sadoski & Paivio, 2013). These findings are especially consistent with the DC theory that visual and verbal processes are independent of their impacts on memory. Additionally, the results support the Multimedia Learning (ML) theory, which is a cognitive framework typically used to aid with vocabulary learning. It is primarily predicated on the notion that the human brain has many routes for receiving and processing spoken and visual data in the memory (Mayer, 2009).

The findings are in agreement with different studies (e.g., Barcroft, 2003; Homayounmehr & Pishdadi Motlagh, 2015; Javadi & Cheraghi Shehni, 2020; Kim, 2006; Lee & Lee, 2012; Rashtchi & Porkar, 2019; Rezvani & Khanzadeh, 2022; Salehpour et al., 2022) which found out oral and visual modified input had significant impacts on the EFL learners' vocabulary acquisition. The results are in line with those of Fahim and Vaezi (2011), who explored that modified input had a statistically significant impact on collocation acquisition. In addition, the findings support those of Mayén (2013), who found out that applying oral modified input was efficient for the L2 students to learn and recall verbal morphology. Furthermore, the findings support the results of Ghafouri and Masoomi (2016), who investigated the impact of visual and auditory IE instructions on vocabulary acquisition among Iranian university learners. Their results showed that both modified auditory and visual input treatments had a significant impact on the vocabulary improvement of students.

The results are not in agreement with those of Petchko (2011), who explored the effect of textual modification on EFL learners' incidental vocabulary acquisition. The

findings indicated no significant difference between the modified and the unmodified input groups, considering the meanings' recognition and recall. Additionally, the results do not lend credence to the findings of Ertürk (2013), who found that visual input enhancement did not have any privilege for raising the students' awareness toward the forms under investigation. Regarding long-term and short-term vocabulary retention, the findings are not also in line with those of Lee and Lee (2012) who investigated the impacts of visual IE, semantic enhancement, and flooding of inputs on EFL students' vocabulary learning. They found that even though these three types of input enhancement strategies did not influence delayed meaning recognition to varying degrees, they positively influenced immediate meaning recognition. However, the results of the current research showed that the oral and visual input modifications significantly affected both long-term and short-term vocabulary retention to varying degrees.

The qualitative results showed that modified input could develop participants' noticing ability. This finding lends credence to Schmidt's (2001, as cited in Rezvani & Khanzadeh, 2022) claim that intentionally modifying noticeable attributes of the L2 forms within passages could improve students' attention to these forms. In light of the noticing hypothesis proposed by Schmidt (1990), there is a direct connection between noticing (recognition and comprehension) and learning/acquisition, and this hypothesis demands some degree of conscious awareness (attention) to the specific and salient text features. Schmidt (2001) noted that this awareness should be at the level of understanding, which, based on Chapelle (2013), is higher than the noticing level.

The qualitative findings also revealed that implementing oral and visual input modifications could improve the input transformation to intake. Based on Lightbrown and Spada (1990), L2 students could not notice particular structures in naturalistic input even after having been exposed to the structures for a long time. In other words, if L2 students are left on their resources, the input does not transform into the intake (Widdowson, 1990, as cited in Safdari, 2019). Therefore, texts could sometimes be manipulated to attract students' attention and help them turn input into intake. Consequently, they could produce the targeted language items meaningfully and accurately (Ellis, 1997). Moreover, the results indicated that using oral input modification by the teacher could benefit auditory learners. Miller (2006) argues that students with diverse learning styles may benefit from receiving instruction in their preferred learning style. For example, individuals who learn best visually choose illustrations, pictures, photos, etc., whereas those who learn best through auditory means prefer speaking, listening, etc. (Lujan & DiCarlo, 2006).

Conclusion

This research aimed to explore the impacts of modified visual input and modified oral input on the short-term and long-term vocabulary retention of Iranian EFL students and their perceptions regarding implementing these two types of input. The findings of the current research indicated that these two types of input had significant impacts on the short-term and long-term vocabulary retention of Iranian EFL students to varying degrees. Moreover, the qualitative results of this study revealed that the learners had a significantly positive view toward the implementation of oral and visual input modifications in their classes.

The current research may have implications for EFL/ESL teachers, EFL learners, and L2 learning material developers. The teachers could modify the input orally or visually using different strategies to make the intended language items salient in the spoken and written texts. Consequently, they could attract the students' attention to the targeted language items and text features. Moreover, EFL students could use modified oral and visual input to facilitate their learning regarding their learning styles. However, based on the results, EFL students should use the newly learned vocabulary in their language production (writing and speaking) to practice long-term vocabulary retention. Furthermore, EFL/ESL material developers should be aware of the significance of modified oral and visual input and apply them in designing and developing instructional materials. Additionally, when selecting and developing materials, EFL teachers and material developers should consider students' preferred learning styles. To meet the various demands of students about their learning styles, EFL teachers should choose materials that have both visual and auditory means. Moreover, EFL materials developers should include auditory and visual input in the learning materials. In addition, based on Khodashenas Tavakoly et al. (2018), "whether textually enhanced or interactionally modified may provide a positive effect that allows it to become salient and hence noticed, it should not be seen as a cause of acquisition; it can only set the scene for potential learning" (p. 82). Students' cognitive process in L2 acquisition is more complicated and might impact their language education results. Thus, it should be considered when input modification and enhancement are applied in various contexts of instruction (Khodashenas Tavakoly et al., 2018).

This research had some limitations. The first limitation was associated with its small sample size. It was not to include more than 60 participants because of the time and expense restrictions and the accessibility problem. The results could be more generalizable by implementing a larger sample size. As a result, future research might be

conducted by employing more participants to improve the generalizability of the findings. The second limitation was a quantitative design, which was the quasi-experimental pretest, posttest, and delayed posttest, in which the control group could not be applied because of the learners' availability. Therefore, future research could be undertaken by using an experimental design incorporating a control group as a necessary item. The third limitation was related to the instruments employed in the present study, which were tests and semi-structured interviews; thus, future studies could replicate this research using other instruments, such as focus group interviews and observation. Finally, generalizations of the results to other settings, like language institutes, should be made with caution. Therefore, further studies could replicate this one in different contexts, such as language institutes.

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