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A Comparative Study on the Effect of Blended and Flipped Teaching Strategies on Vocabulary Learning and Retention: Evidence from Iranian Intermediate EFL Learners

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Abstract

With the growing advancements in educational technology and its integration into learning, there has been a rising interest among language education experts in effectively implementing innovative approaches such as flipped and blended classrooms, especially during the COVID-19 pandemic. However, there is limited evidence to substantiate the impact of these blended and flipped teaching methods on vocabulary learning and retention. The study compares the effects of blended and flipped learning strategies on Iranian intermediate EFL learners' vocabulary learning and retention. This study used a quasi-experimental, pretest-posttest control group research design through a convenience non-random sampling method. This research included 120 intermediate EFL learners from a Language Institute in Iran. The paired samples t-test and one-way ANOVA results indicated that blended and flipped learning strategies significantly affected learners' vocabulary learning and retention. However, the control group did not improve in the post-test. The results also revealed that blended and flipped groups outperformed the control group in the vocabulary post-test. The findings indicated that the blended group outflanked the flipped group. The study's findings offer valuable insights for language teachers, researchers, and curriculum designers, encouraging them to reevaluate the role of educational technology tools in enhancing classroom-based learning. By comparing blended and flipped learning strategies, the research improved the vocabulary knowledge of intermediate EFL learners and shed light on the distinct effects of these strategies within Iranian English Language Institutes.

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Introduction

The state of the COVID-19 pandemic has suspended all activities that have the potential to generate large crowds, including teaching and learning activities in schools and university campuses. For this reason, the learning process is completely done online. Digital technology significantly impacts the scope of education worldwide, including in Iran. One example is blended learning, a teaching style that combines traditional educational methods with technology to produce better student learning outcomes (Boe, 2018). Blended learning is generally applied to the practice of a new approach using both classroom learning and in-person face-to-face interactions with virtual teaching and learning experiences. Blended learning provides an overview of how to combine two strategies, referred to as blended learning. Laster et al. (2005) define blended learning as a course integrating online learning with traditional face-to-face class activity. It is a traditional and modern classroom activity that implements a learner-centred approach using an innovative way of learning. Aldosemani et al. (2018) stated that the lack of teacher training and support, language barriers, and weak promotion of motivations for starting blended learning are among the challenges teachers face in using blended learning. Incorporating blended learning into the classroom motivates teachers to adapt their teaching approaches, shifting learning towards a student-centered rather than a teacher-centered model. Susan and Chris (2015) claim that blended learning is more efficient than traditional classroom time utilization, entertaining students, allowing students to be more creative, and being involved in their education.

Another new method used during the COVID-19 pandemic is flipped instruction, a new teaching strategy that aims to get students to do exercises outside of the classroom environment, often by some electronic means. As explained by Stanley (2013), the term “flipped classroom” (FC) suggests teachers reverse the usual teaching model by delivering instruction at home, allowing them to spend more time in class for practice with the idea of creating a more collaborative learning environment. Namely, students are assigned to study recorded content online, which they should study at home or before the in-class session (Roehl et al., 2013). The classroom becomes a place where students can ask questions, collaborate with peers, practice, and receive feedback through tasks or activities. In an FC, the emphasis shifts from the teacher to the student and their progress, allowing more time for discussion and collaboration (Tucker et al., 2017).

According to Bergmann and Sams (2012), the FC offers a solution to the time constraints of active learning. It deals with content delivery through multimedia resources or written materials outside the class and frees teachers and students for dynamic activities in the classroom. This also ensures the personalization of learning and autonomy. Students take responsibility for their learning at their own pace. A range of previous studies in English as a foreign language (EFL) courses employing this

instructional method revealed positive student learning outcomes and improvement, including in perceptions. Students exposed to the flipped instruction performed better, and their language skills improved (Alnuhayt, 2018).

Vocabulary knowledge is considered an essential component of the learner's competence and contributes to the learning process. It is widely accepted that a lack of vocabulary knowledge limits students' comprehension of texts and hinders their ability to engage in listening, reading, writing, and communication skills (Enayati & Pourhosein Gilakjani, 2020; Gheitasi Azami, 2024; Noprianto & Purnawarman, 2019; Shamsi & Rahimy, 2017; Vaseghi et al., 2024). Blended and flipped instructions can be applied to improve Iranian EFL learners' vocabulary learning and retention.

Considering the importance of vocabulary in learning English, the present study investigated the effect of blended and flipped teaching strategies on strengthening Iranian EFL learners' vocabulary learning and retention. This study is significant because it compares the effectiveness of two different instructions on the vocabulary learning of 120 Iranian EFL learners during the COVID-19 pandemic. The present study compares the impact of blended and flipped teaching strategies on EFL learners' vocabulary learning and retention to fill the gaps in the previous research studies. The study addressed the following three research questions:

- Does blended learning affect students' vocabulary learning and retention?
- Does the flipped teaching strategy affect students' vocabulary learning and retention?
- Is there a statistically significant difference between the effects of blended vs. flipped learning strategies on learners' vocabulary learning and retention?

Literature Review

Blended Learning

Some researchers have studied the impact of blended learning at various levels of language learning. Some researchers have argued that learners could not only obtain flexible learning experiences with novel materials (Albiladi & Alshareef, 2019) and achieve increased learning performance (Yang & Kuo, 2021) but also actively engage in active learning activities in a self-paced or collaborative way (Wang et al., 2015). However, others (Ferriman, 2013; Kocoglu et al., 2011) have reported some limited effects of blended language learning on language performance. In fact, blended instruction significantly improved students' English writing ability at Ankang College, Shanxi, China (Zhou, 2018). Blended learning improved students' English listening, speaking, and critical thinking skills in China (Yang et al., 2013). Blended learning could also enhance higher-order communication, problem-solving, and reasoning skills. Blending a class video blog with face-to-face instruction can improve oral language proficiency in China (Liu, 2016). Blended learning can facilitate communication skills

and improve nursing students' learning outcomes in Singapore's tertiary education (Shorey et al., 2018). Blended learning can lead to much higher academic achievement than traditional face-to-face learning in Canada (Bazelais & Doleck, 2018).

Numerous studies have shown that learners' vocabulary knowledge improves with blended learning (Djiwandono, 2013; Katasila & Poonpon, 2022; Krishnan & Yunus, 2019). For example, Djiwandono (2013) assessed the effectiveness of blended learning methods on Indonesian students' vocabulary acquisition and gathered their feedback on the experience. Similarly, Krishnan and Yunus (2019) explored how well low-proficiency learners acquire vocabulary through blended learning, finding positive effects on EFL students' vocabulary knowledge. Katasila and Poonpon (2022) also examined the impact of blended learning on vocabulary knowledge, with results indicating that post-test scores were higher than pretest scores, demonstrating an improvement in students' vocabulary knowledge.

Despite the popularity of blended learning as a teaching method, its effect on academic achievement has yielded mixed results. For example, a study in China revealed that although students felt blended learning positively influenced their achievement, empirical data did not significantly improve (Chang et al., 2014). Likewise, research in Hong Kong, China, showed no notable differences in learning outcomes between blended and traditional teaching methods (Yick et al., 2019). Additionally, a study in the United Arab Emirates found no significant differences in students' attitudes toward blended versus traditional approaches, which might be influenced by internal or external factors (Al-Qatawneh et al., 2020). However, a study in the USA found no significant differences between blended and traditional teaching methods, with students spending less time learning in blended courses (Botts et al., 2018). Similarly, research in Alberta, Canada, indicated that students in blended learning courses showed no significant differences in self-efficacy and knowledge scores compared to those in traditional courses, even though they had a positive perception of blended learning (Berga et al., 2021).

Teik Hong and Stapa (2023) investigated how blended learning impacts students' vocabulary growth. The findings showed that students who engaged in blended learning outperformed those who followed traditional learning methods in vocabulary development. Similarly, Aslan and Tütüniş (2024) explored the impact of Blended Mobile Learning (BML) on the vocabulary growth of EFL preparatory students. The control group learned vocabulary by reading texts in the classroom and following the textbook. In contrast, the experimental group received additional vocabulary instruction outside the classroom through a virtual classroom on Google Classroom. The study concluded that BML enhances vocabulary development and motivates students to learn vocabulary.

Flipped Learning

Over the past decade, research has explored the positive impact of the FC on English language courses in general (Lee & Wallace, 2018), students' vocabulary achievement (Al-Hamdani & Al Breiki, 2018), classroom engagement (Seereekissoon, 2018), and teacher-student interaction (Sun & Wu, 2016). The literature indicates that flipped learning is a promising method for EFL classes, enhancing students' English learning (Arslan, 2020; Lee & Wallace, 2018). Researchers have found that FC teaching improves students' critical reading (Fatemeh et al., 2020), writing achievement (Sukerti et al., 2020), vocabulary retention (Rezaei Fard et al., 2021), speaking ability (Amiryousefi, 2019; Chen & Hwang, 2020), and listening comprehension (Namaziandost et al., 2020).

Numerous studies have explored the use of flipped learning with EFL (English as a Foreign Language) and ESL (English as a Second Language) learners (Chen-Hsieh et al., 2016; Hung, 2015; Mundir et al., 2022). Hung (2015) researched how the flipped learning environment affects English language learners' academic performance and attitudes toward learning. The study found that this environment fostered a more positive attitude toward language learning. Additionally, Chen-Hsieh et al. (2016) examined the impact of flipped classes on students' acquisition of English idioms. The results showed that the FC dramatically improves students' understanding of English idioms and boosts their learning motivation. In a more recent study, Mundir et al. (2022) compared the effects of traditional, online, and flipped instruction on enhancing EFL learners' vocabulary knowledge. The study found that the flipped instruction group outperformed the online instruction group.

In the Iranian context, research has demonstrated the positive effects of the FC on the learners' speaking and listening skills (Jafarigohar et al., 2019) and their intensive and extensive reading comprehension (Neisi et al., 2019). Zarrinfard et al. (2021) examined the impact of FCs on EFL learners' general English course performance, revealing that the experimental group performed significantly better in grammar and vocabulary. Farrah and Qawasmeh (2018) found that students perceived the FC as "exciting, motivating, and engaging" (p. 275). Likewise, Shahani et al. (2021) found that female EFL students had a favorable attitude towards FC. Yousofi and Bashiri (2023) investigated the impact of FC on the vocabulary learning of Iranian EFL students. The experimental group's results outperformed the control group in the post-test and demonstrated significant improvement from their pretest. Namely, using FC enhanced the experimental group's vocabulary knowledge, class participation, interaction, and engagement, although some participants preferred traditional teacher-led instruction and individual classroom activities. Cheraghi and Omranpour (2023) examined the effectiveness of combining gamification with a flipped approach on EFL learners' receptive vocabulary learning. They posited that the experimental group outperformed the control group. The significant improvement in post-test scores indicated that both approaches were highly effective in enhancing EFL learners' vocabulary development.

Fard et al. (2021) investigated the impact of flipped learning on vocabulary achievement in an ESP context and found significant results. In another study, Fathi and Rahimi (2020) explored the effect of the FC on learners' writing complexity, accuracy, and fluency. The study revealed that learners' writing improved with the FC approach, although there was no significant impact on the complexity and accuracy of their writing. In a different study, Shahnama et al. (2021) compared the effectiveness of flipped and lecture-based classrooms on student achievement, finding that flipped learning had a positive impact. Additionally, flipped and blended learning positively influenced students' perceptions and satisfaction with EFL classes (Fisher et al., 2018).

In a recent study, Khanahmadi and Nasiri (2022) explored the impact of flipped learning in an online setting on EFL learners' course performance. Their findings indicated that online flipped instruction significantly enhanced EFL learners' performance. Similarly, Fathi and Rahimi (2022) investigated EFL learners' views and experiences with a flipped writing program, revealing that the flipped group showed superior writing performance and increased post-educational ability beliefs. Additionally, Retnaningsih et al. (2022) examined the effect of flipped instruction on vocabulary learning among EFL students, finding notable improvements in the experimental group's vocabulary acquisition and positive attitudes towards flipped language instruction.

Despite the significance of blended and flipped teaching strategies, they are less used in teaching and learning English in Iranian EFL contexts. Most English classes are held in person rather than online. Despite the growing body of research on blended and flipped learning, these methods remain underexplored in Iranian EFL classrooms, where traditional face-to-face instruction dominates. Given the inconsistent findings in previous studies and the need for effective vocabulary teaching strategies, this study aims to examine the impact of blended and flipped learning on Iranian EFL learners' vocabulary acquisition and retention.

Method

Design

The current study used a quasi-experimental design to collect the needed data to answer the research questions. A quasi-experimental design is a research method used to examine the effect of independent variables on dependent variables when complete experimental control is impossible. It falls between controlled experiments, where variables are tightly controlled, and purely observational studies, where researchers have little control. A quasi-experimental design mimics some aspects of experimental research but lacks randomization (Thomas, 2024).

Participants

The study's target population consisted of institute students who had studied English at the Kish Language Institute for at least two years. The original population that had the chance to participate in the study consisted of 150 learners at the low to high intermediate level and 17-29-year-olds from Kish Language Institute in Rasht, Guilan, Iran. The students took a language proficiency test called Michigan Language Proficiency (MLP), and based on their performance on the test, 120 intermediate learners were selected and assigned into three groups: two experimental ones and a control one (each group consisted of 40 learners). The learners who scored 53 to 63 were selected as intermediate language learners and entered the experiment. They were all female learners, and their age range was between 17 and 29 years. Their mother tongue is Farsi, and all of them are learning English as a foreign language.

Instruments

In order to investigate and identify the effect of blended and flipped teaching strategies on Iranian intermediate EFL learners' vocabulary learning and retention, two instruments were employed in this study: MLP and two vocabulary tests for the pre and post-test. The MLP Test of English Language Proficiency consists of 100 multiple-choice questions: 40 English Grammar questions, 40 Vocabulary questions, and 20 Reading Comprehension questions. If you test at a timed site, you will be given 75 minutes (One hour and fifteen minutes) to finish the entire test. After completing the Michigan Test, you must also provide a Writing Sample on an assigned topic. The test used for this study is a concise version of the original test, which consisted of 10 English Grammar questions, 10 Vocabulary questions, and 5 Reading Comprehension questions. An answer key is at the end of the test to check students' answers to the Michigan Test. The Michigan Test consists of several valuable tests for evaluating the English Language proficiency of students whose first language is not English. Michigan Test scores serve as the basis for course placement. The student must take appropriate preparatory coursework if the test results indicate deficiencies in standard written English. For this study, the learners who scored 53 to 63 out of 100 (based on the MLP score guide) were selected as intermediate language learners.

Before and after the treatment, two vocabulary tests were administered to the participants to determine their vocabulary knowledge. The pre-and post-tests are ready-made tests extracted from the pool of vocabulary tests in Read's (2000) book *Assessing Vocabulary* (Cambridge University Press). The internal consistency of pre-and post-test items of the vocabulary test and MLP Test was estimated through a pilot study on 8 EFL learners. The reliability analysis of the tests showed that the internal consistency of the items for the pretest (.92) and the post-test (.94) for all of them was "acceptable" for this particular sample. The Cronbach alpha coefficient was found to be ($\alpha = .90$) for the MLP Test.

The pretest administered before the treatment was to find the initial knowledge of English vocabulary recall ability between the three groups. In so doing, a vocabulary test was used to examine the participants' vocabulary recall. The test was derived from Read's (2000) book, *Assessing Vocabulary*, Cambridge University Press. It consisted of thirty multiple-choice questions. The time allocated for answering the questions was 20 minutes. The post-test, administered after the treatment sessions, consisted of 30 multiple-choice questions. Another version of the vocabulary test examined the participants' vocabulary recall after the interventions. The experimental groups and control groups participated in the post-test. The post-test was also extracted from Read's (2000) book, *Assessing vocabulary*, Cambridge University Press. It also consisted of thirty multiple-choice questions. The time allocated for answering the questions was 20 minutes.

Data Collection Procedure

Data collection was conducted after designing the research and developing the required research materials and instruments. During data collection, 120 Iranian EFL students previously selected for this study were divided into three groups -two experimental groups and one control group- all of which received 10 sessions of vocabulary learning classes. However, only the students in the two experimental groups were taught special strategies in their classes; other learners in the control group had not been exposed to such strategies before. None of the participants was informed about the aim of these classes. After ensuring their homogeneity, the students were informed about groups and were told which class they had to attend. They were put into two experimental groups and one control group. All the classes consisted of forty participants. All groups received the same amount of materials, but the treatment differed.

Participants in experimental group A, who used a blended learning strategy, received training in e-learning using a combined teaching strategy. The teacher created and added a class code on the www.remind.com platform, mainly for the mixed group participants. Each week, three days before the first treatment session, the teacher shared a reading passage and five predetermined vocabulary words with the group. After reading the skimming technique, the teacher shared two files with the group. Participants were asked to read files carefully and then read the shared reading text while following the teacher's prompts to review the text. Then, they shared and discussed their understanding of the text. The other learners worked together to find an appropriate answer or explanation if everyone asked a question.

Finally, the teacher shared questions about the text, some of which focused on the skimming technique, and the participants worked together in groups to complete the exercise after class. The participants were required to find out the meaning of each word and explain it in the group, as well as give examples and share it. Participants were told that they needed to use their time to find other parts of speech, conjunctions, and phrasal verbs from the vocabulary provided and shared them with others in the group. Hybrid

group training will not be limited to the cooperation and communication activities of the participants in the e-learning environment. After reading and reviewing the reading text, participants worked in pairs to summarize their understanding of the text. Finally, the participants were asked to do the following exercises related to reading and vocabulary, as well as examples with new vocabulary in pair exercises or group work under the supervision of their teacher.

The participants in the flipped group also received the same instructional materials. The participants read the text according to the instructions given, shared and discussed their thoughts, observations, and understanding in the group, assisted one another if any of them had any questions, and then responded to the teacher's questions in the group. The teacher also introduced new predetermined vocabularies, which the participants were required to research on their own, share, and provide examples for participants. Additionally, the participants shared and added details about each word, such as other parts of speech, collocations, phrasal verbs, etc.

Participants in the control group received skimming technique and vocabulary training. The researcher first explained what the skimming technique is and then started teaching the skimming technique. Next, participants were instructed to learn how a text should be performed. These instructions included changing the title of the reading text to a question, reading the text while trying to find the main idea in the opening paragraph, rereading the text by looking at it and focusing on the headings and topic sentence, and then summarizing the text focusing on visual and verbal cues when reading a text quickly. After completing the explanations, the instructor asked the participants to read the text and tried to follow his instructions. Then, he asked them to understand the main idea of the reading and required them to discuss and share their ideas. In the last part of skimming technique training, the participants did exercises related to the book, some of which focused on the skimming technique. The predetermined vocabulary was taught to the participants by explaining their meanings and using them in some sentences as examples. After explaining and presenting examples, the participants were supposed to do exercises and make sentences with new words under the teacher's supervision.

At the end of these ten sessions, all three groups participated in a vocabulary test to evaluate the effects of the treatment used for one of the groups in this study. A vocabulary test was conducted at the beginning and end of the treatment procedure. The time given for the test was twenty minutes, and the researcher was present during the process to ensure the accuracy of the test. All participants were informed in advance about the characteristics of the vocabulary test to avoid any confusion that might strongly affect the outcome of this research.

Data Analysis

Quantitative techniques were applied during the data analysis because of the comparative nature of this investigation and the quasi-experimental, pretest-posttest control group

research design. The vocabulary test results were scrutinized through inferential analysis to find the difference between the performances of the control group and the two experimental groups after the treatment procedure. Hence, to investigate whether the strategies made a difference in the vocabulary knowledge of students in the two experimental groups and to provide the answers to the research questions that the researchers initially put forward, a one-way Analysis of Variance (ANOVA) was run. Thus, after collecting sufficient data, they were analyzed based on the study's objectives. In order to check the quality of data normality, the Kolmogorov-Smirnov (K-S) test was used. After that, statistical tests like paired samples t-test and One-way ANOVA were used to determine the impact of the treatment on the participants' receptive skills enhancement.

Results

The results from the tests were summarized, and the descriptive statistics procedures (comprising means and standard deviations) were followed by inferential statistics, namely one-way ANOVA and paired-samples T-test. Before running the main statistical analyses, normality, the main assumption of parametric tests, was established for all distributions by running Levene's, Scheffe's, and mean plots. First, MLP was held to get a homogenized set of learners. Then, once all the scores of 150 participants were obtained, the data of pretest and post-test scores were entered into SPSS. The statistical technique assumed normality of the data and homogeneity of the variances of the groups. Table 1 demonstrates the results of MLP in choosing 120 participants out of 150.

The obtained data from MLP scores were collected from respondents, with a mean of (55.64) and a standard deviation of (16.37). Then, 120 EFL learners who gained the appropriate score in MLP were assigned to the three groups (experimental A, experimental B, and control groups). After that, all three groups sat for a pretest to check for differences between their initial vocabulary learning and retention capabilities. Each learner's score was calculated from 100. The differences in the mean of the pretest and post-test scores in the experimental and control groups are exhibited in Figures 1 and 2 accordingly.

Figure 1

Pretest Scores in All Three Groups

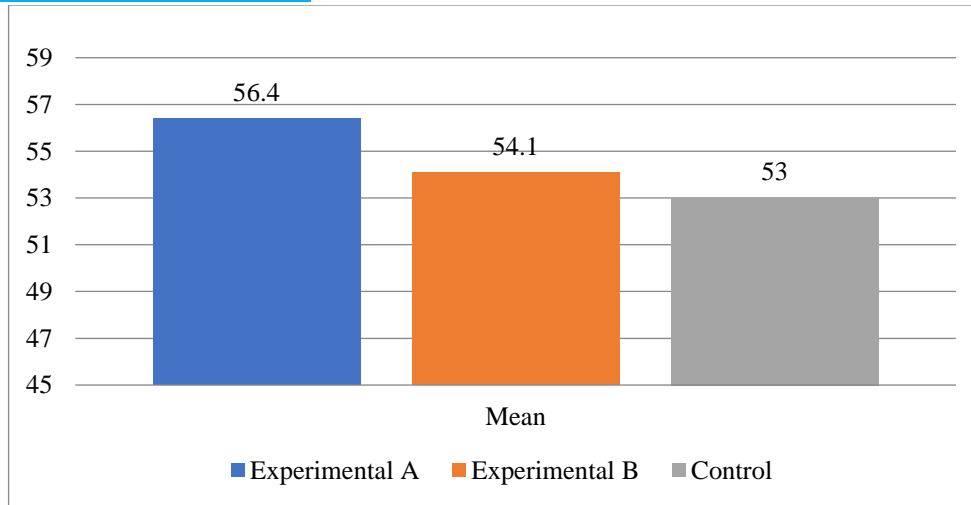
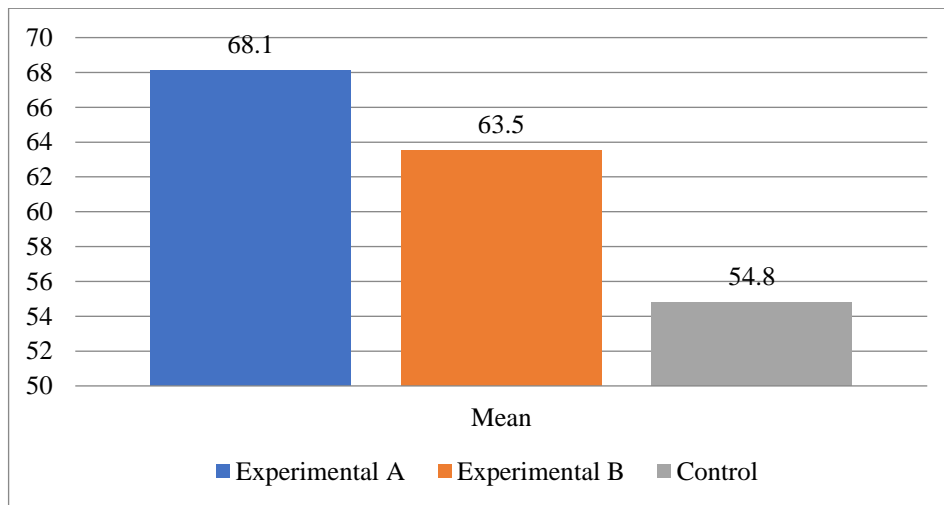


Figure 2

Post-test Scores in All Three Groups



As shown in Table 1, the average effect sizes for ANOVA, paired t-tests, or the post-hoc Scheffe Test are 0.954, which indicates that the effect size is high.

Table 1

Effect Sizes for ANOVA, Paired t-Tests, and Post-hoc Scheffe Test

Partial Eta Square	Sig.
0.954	0.000

The normality assumption was assessed using the Kolmogorov-Smirnov (K-S) test. By comparing the Sig. (p) values with the alpha level, decisions were made to either reject ($p < \alpha$) or retain ($p > \alpha$) the null hypothesis. The Kolmogorov-Smirnov (K-S) test was

employed to examine each group's normality of pretest scores. The results indicated that the pretest scores for the "control group" did not significantly deviate from normality ($p = .186$). In contrast, the pretest scores for both the "BLG" ($p = .016$) and "FLG" ($p = .021$) showed significant deviations. Additionally, the p-values for post-test scores were as follows: "control group" ($p = .077$), "BLG" ($p = .033$), and "FLG" ($p = .036$). Based on the K-S test results and a significance level of $\alpha = .01$, the vocabulary scores were found to follow a normal distribution.

The assumption of equal variances was then tested using Levene's test to assess homogeneity. The results revealed no significant difference in variance for pretest and post-test scores: F pretest scores (2, 117) = .208, $p = .813$; F post-test scores (2, 117) = 1.822, $p = .166$, with a significance level of .05. Thus, the sample met the assumption of equal variance, and the Levene statistics supported the hypothesis of equal variance across the groups.

One-way ANOVA and three paired sample t-tests (one for the control group and two for the experimental groups A and B) were run to scrutinize the extent of the learners' progression between and within groups. These tests showed the participants' progress from the pretest to the post-test. Table 2 displays the results of one-way ANOVA for the pretest scores of students' writing tests.

Table 2

One-Way ANOVA of Three Groups for the Pretest Scores of Vocabulary Test

		Sum of Squares	df	Mean Square	F	Sig.
Pre test	Between Groups	52.49	2	31.46	0.156	0.754
	Within Groups	4354.89	37	115.848		
	Total	4407.38	39			

The results of the one-way ANOVA in Table 4 indicated that there was not a significant difference in the pretest scores among the three groups because the significance value of the F test in the ANOVA table was greater than (0.05) for the pretest scores ($F = (2, 37) = .156$, $\text{Sig.} = 0.754 > 0.05$). This means that the groups were equal at the beginning of the study in terms of their vocabulary test scores. Furthermore, inferential statistics were also run on the results of the post-test of vocabulary. So, another ANOVA was run to examine the null hypotheses and to see if the differences among the three groups were statistically significant at the end of the study based on the data obtained from the post-test scores. The results of the post-test scores are illustrated in Table 5.

Table 3

One-Way ANOVA statistics of three groups for the post-test scores

		Sum of Squares	df	Mean Square	F	Sig.
Post-test	Between Groups	54.13	2	33.58	4.136	0.0011
	Within Groups	4486.78	37	118.033		
	Total	4540.91	39			

The results of Table 5 revealed that the three groups were different at the end of the study ($F = (2, 37) = 4.136$, $Sig. = 0.0011 < 0.05$). This result indicates that the groups were statistically different at the end of the study with respect to their vocabulary test score. It can be concluded that the educational methods were effective since the three groups worked on three different types of vocabulary learning and retention strategies, which improved from the pretest to the post-test. Scheffe’s test was conducted to provide information about the location of the differences among the three groups. The following table made multiple comparisons among the three groups based on the results of Scheffe’s test.

Table 4

Post-Hoc Scheffe Test for the Post-test of Writing Test

(I) Groups	(J) Groups	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Control	Experimental A	-5.65	0.00	-21.09	11.21
	Experimental B	-3.22	0.01	-23.94	13.11
Experimental A	Control	5.65	0.00	-18.29	17.81
	Experimental B	1.57	0.03	-21.13	15.91
Experimental B	control	3.22	0.01	-16.79	19.3
	Experimental A	-1.57	0.03	-16.79	15.5

When the reference is made to the mean difference of the three groups on the post-test writing test, it can be seen that the positive influence of “Experimental A” has made the largest difference between the mean scores of the control group and the experimental B group (mean difference = 5.65). On the other hand, the lowest mean difference was seen between the Experimental A group and the Experimental B group (mean difference = 1.57). Therefore, it can be concluded that all three null hypotheses of this study have been rejected. In other words, these results show that the blended vs. flipped learning strategy has a statistically significant effect on learners’ vocabulary learning and retention, even though the blended learning strategy has a better impact on learners’ vocabulary learning

and retention at the 0.05 level. After that, to investigate the participants' possible development within groups, paired-samples t-tests were also run for three groups, which showed that the participants progressed from the pretest to the post-test. The results are shown in Table 7.

Table 5

Paired-Samples T-tests of Three Groups for the Pretest and the Post-test Scores

Groups	Paired Differences		95% Confidence Interval of the Difference	t	df	Sig. (2-tailed)			
	Mean	SD							
	Lower	Upper							
Control	pretest-posttest	400	4.935	1.104	-1.910	2.710	.362	19	.721
Experimental A	pretest-posttest	-4.700	4.305	.963	-6.715	-2.685	-4.882	19	.000
Experimental B	pretest-posttest	-6.450	5.316	1.189	-8.938	-3.962	-5.426	19	.000

As depicted in Table 7, except for the control group, both experimental groups progressed in the post-test. Based on the results of paired-samples t-tests, this development was significant from a statistical standpoint simply for both of the experimental groups ($p \leq .05$). In other words, both of the experimental groups made a considerable improvement in the post-test of vocabulary. However, this gain for the “experimental group A” was higher than the “experimental group B.”

Overall, regarding the effects of the skimming technique, blended learning strategy, and flipped learning strategy on vocabulary learning and retention. The results indicated significant differences between the three groups in their vocabulary learning and retention. While all the groups were equal in terms of the materials, teacher, and amount of instruction, except for the types of strategies for their treatment procedure during the study, there were significant differences in their post-test. Likewise, the blended and flipped learning strategies significantly affected learners' vocabulary learning and retention. However, the control group, which used the skimming technique, had little improvement in the post-test. Thus, the first and second null hypotheses of the study were rejected. The study's statistical results also revealed that the extent of improvement was different for both experimental groups; that is, the blended learning strategy group outperformed the group that received the flipped learning strategy. Furthermore, the

statistical result of the post-hoc Scheffe test revealed a significant difference between the experimental groups. So, the third null hypothesis of the study was also rejected.

Discussion

This study aimed to compare the effects of blended and flipped learning strategies on vocabulary learning and retention among Iranian EFL learners. The test scores of the three groups were analyzed to assess the effectiveness of these strategies. The results of the current study support Alipour's (2020) findings, which indicated that online and blended learning positively impact students' vocabulary acquisition. These results align with previous research in the fields of blended learning and learning management systems (Djiwandono, 2013; Katasila & Poonpon, 2022; Krishnan & Yunus, 2019; Qiu et al., 2022), all of which highlight the beneficial effects of online and blended learning on various skills and sub-skills, contributing to academic success. Additionally, blended learning was found to be more effective for vocabulary acquisition compared to spending the same amount of time on vocabulary instruction through online learning alone. It can be concluded that blended learning boosts students' motivation to study English and increases their enthusiasm for activities involving technology-based resources in the classroom. Additionally, blended learning encourages greater engagement in English classes. In summary, it is reasonable to suggest that students achieve higher post-test scores because technology-enhanced blended learning improves motivation and makes the class more engaging. These findings are consistent with previous studies by Krishnan and Yunus (2019) and Djiwandono (2013), indicating that blended learning positively impacts students' vocabulary knowledge.

The improved performance of blended and online learning groups can be attributed to students' appreciation and need for technology in their education, as it makes learning more enjoyable and engaging. This aligns with Qiu et al. (2022) and Means et al. (2013), who found that blended content engages, supports, inspires, and attracts students to course activities. Hamilton (2017) also noted that today's digital-native learners require technology in their education because it is an essential part of their lives. Additionally, online and blended content allows students to learn at their own pace, as highlighted by Riadil (2020) and Edwards (2021), who stated that students can learn at any speed they prefer. This is further supported by Horn and Staker (2011) and Wang (2017), who emphasized that blended learning facilitates accelerated learning for gifted students, enhances individual learning skills through personalized environments, and provides extra support for less skilled students who struggle with traditional classroom learning.

The experimental group, which used blended materials, outperformed the control group that received only traditional classroom instruction. This suggests that blended learning is beneficial. Krishnan and Yunus (2019) found that students using a mobile app in blended learning successfully improved their grammar skills and showed increased

engagement in learning activities. Blended content motivates students to learn and encourages their participation. Additionally, blended learning allows students to concentrate on what they have learned and work harder on areas they find challenging, addressing the issue of limited classroom time that restricts practice and engagement in related activities.

The findings indicate that EFL learners in the blended learning environment outperformed those in the flipped learning group. Despite participants in the blended class being responsible for their own learning and receiving instructional materials and exercises before class, the researchers' significant role in training the participants cannot be overlooked. In the blended class, the researchers' traditional authority was preserved while also considering the participants' unique characteristics, such as their different learning styles and paces. By merging the participants' responsibility for their own learning with the teacher's active role as the main trainer, the blended teaching strategy balanced autonomous learning with the teacher's dominant role in the learning process (Khodabandeh & Naseri, 2021). Namely, FCs can enhance student autonomy by providing various pathways to success. These environments enable students to achieve their goals and acquire the skills and knowledge to effectively solve problems and locate relevant information (Zhang et al., 2016). Basaran (2021) also noted that the FC model boosts learner autonomy through online learning and in-class activities. The results related to the second research question align with Shahnama et al. (2021), who demonstrated the significant impact of the flipped learning strategy on vocabulary acquisition. This study's findings also corroborate Basaran (2021), who explored the effectiveness of flipped teaching on learner autonomy. The study revealed that learners exhibited autonomy and high motivation in an EFL writing course using the flipped method combined with computer-assisted language learning (CALL) tools.

According to Yang et al. (2018), whose findings align with the current study, blended and flipped teaching strategies create a collaborative learning environment where participants can use their collaborative skills. These strategies increased participants' engagement with the learning materials and encouraged them to actively participate in their learning. This approach allows participants to review and synthesize content at their own pace outside of class rather than passively receiving instructional material only during class time. However, Alharabi (2015) pointed out that a significant drawback of FCs is the difficulty monitoring learners' progress outside the classroom. He emphasized that the FC is effective only if the teacher can oversee and assess the learners' progress. Addressing this issue, the blended teaching strategy in the current research combines both in-class and online instruction, allowing the teacher to monitor learners' progress. With in-class sessions complementing online instruction, the teacher could observe and understand the challenges that learners face during their online learning.

Based on the findings, it is evident that blended and flipped learning approaches are more effective than traditional methods. Different techniques and strategies in

language teaching can significantly enhance learners' vocabulary knowledge. Technological tools, in particular, have been shown to impact how learners communicate, generate ideas, and manage their interactions. Online resources like English language learning websites, chat and email, games, and media contribute to better learning outcomes. They also create less stressful, more motivating, and enjoyable environments where learners can concentrate on new vocabulary and its usage.

Conclusion

The study compared the effects of blended and flipped learning strategies on Iranian EFL students' vocabulary development. The results showed that the vocabulary development of EFL learners was significantly affected by blended and flipped learning. The outcomes also showed that blended learning enhances EFL learners' vocabulary more than flipped learning. The results showed that blended and flipped learning strategies boosted students' vocabulary achievement. Not only did the students like the innovative blended learning approach to teaching vocabulary and prefer it to traditional classroom-based learning, but they also began researching new vocabulary words outside of class. This study offers a valuable suggestion for teachers to implement vocabulary learning and retention to improve and enhance learners' skimming skills. However, it cannot be concluded that the successful teaching strategy of this study is the only effective teaching strategy to enhance learners' vocabulary learning and retention.

This study has some implications for language teachers, researchers, and curriculum designers. First, this study is significant for EFL teachers because it highlights the impact of blended and flipped learning strategies on their students' vocabulary acquisition and retention. As a result, teachers will continue to move toward integrating technology into the classroom. They will also change from teachers to facilitators, changing their role from knowledge providers to guides. The findings of this study show that the way language teachers present classroom activities can have a different effect on students' engagement in learning. Therefore, it is suggested that teachers be careful in planning and arranging their class strategies. For researchers, in the future, more practical pedagogical approaches for both out-of-class and in-class activities can be implemented in blended and flipped learning in other parts of EFL, such as writing, reading, and oral comprehension, as well as developing new digital tools or using other existing tools to accelerate active learning in student learning.

This research may also be helpful for curriculum designers in the Iranian Ministry of Education as they start to consider how to include technological tools in the curriculum. Additionally, it allows English language teacher training program providers to advance their programs by enabling the integration of technology into their courses. As a result of this study, the Iranian Ministry of Education may be able to provide computer labs and internet access to all schools, which will enhance students' learning from technology.

Nevertheless, it is recommended that blended learning be investigated to determine whether it is more practical for teaching other courses than flipped learning.

Certain limitations should be acknowledged to avoid similar future studies. The first issue that was not addressed in this study was whether age, gender, proficiency level, and educational status have a significant effect on vocabulary learning. Moreover, it is important to note that particular situations, such as students' extracurricular activities or preferred additional language practice, may intervene during the experiment and influence changes in the dependent variables under study. Finally, a small sample size at one institute used in this study may make generalizations to other learners or settings inapplicable. The reader should bear in mind that the obtained results may reflect the context of this study, in which a limited number of participants with distinct learning characteristics and capabilities were assessed in a particular setting.

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First Author: Collected the data and wrote the first draft. Designed and conducted the procedures.

Second Author: Designed and conducted the procedures, reviewed the final draft, and made necessary revisions.

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