Hindawi
Education Research International
Volume 2021, Article ID 3798033, 9 pages
https://doi.org/10.1155/2021/3798033

Research Article

The Effect of Flipped Classroom on Iranian Adolescents: Elementary EFL Learners' Vocabulary Recall and Retention

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Received 13 August 2021; Accepted 19 November 2021; Published 6 December 2021

Academic Editor: Edward M. Adlaf

Vocabulary as an inseparable part of language learning has a vital role in communication, which requires to be taught in new approaches. A quasi-experimental method was used to achieve the aims of the current study. In doing this, 48 Iranian female adolescent elementary learners (13–17) were assigned based on the Oxford Quick Placement Test from 70 female students to take part in 4 sessions of treatment. The participants were randomly divided into two groups: an experimental group ($n = 24$) and a control group ($n = 24$). The experimental group was taught using the flipped classroom, while the control group was exposed to the conventional methods. Research instruments involving an English language placement test, vocabulary pretest, immediate posttest, and delayed test (the study lasted for 9 weeks). A list of 28 target words was given to both groups. Words were selected by the Lawshe content validity ratio (CVR) and content validity index (CVI) to have validity. The findings of ANCOVA indicated that conducting the flipped classrooms has significant impacts on Iranian adolescent elementary students' vocabulary recall and retention. Hence, it is an applicable approach that carries important implications for teachers, foreign language syllabus designers, and curriculum planners.

1. Introduction

Throughout in EFL (English as a foreign language) history, many studies have been conducted to investigate the best way of teaching vocabulary and learner's vocabulary recall and retention. Vocabulary is an essential part of a language that communication cannot be created without it [1]. Thus, the role of vocabulary in a language is undeniable. Thus, the effective and innovative model of teaching for vocabulary learning, recall, and retention is essential. Learning a foreign language is a gradual process and requires a lot of effort. In this context, learning new words is one of the most important essential skills for learners [2]. Vocabulary is an essential component of learning a foreign language and understanding another culture [3]. One of the most challenging topics in language learning is lexis, which means learning the word of a particular language. Researchers in foreign language learning have increasingly become accustomed to learning the word because they believe that learning a word is of fundamental importance for learning a language in the first language and whether it is a second or foreign language [4,5]. Recently with the advent of technology provided positive learning and teaching opportunity [6]. Teachers tried to incorporate digital literacy into their classes [7]. Among these innovations, the flipped classroom is one of the teaching models applied by teachers and educators recently ([8, 9], January). The flipped classroom is a type of blended learning approach where the responsibility of learning goes back to learners [10, 11]. In a flipped classroom, technology applied to deliver the content and material before the class through videos, meanwhile, the class time used for discussion tasks [12]. The main feature of

the flipped classroom is that prepares a more dynamic and flexible environment [13, 14] for learners and they feel more inclined to ask their questions during class time.

In addition, in the domain of English language teaching and learning, vocabulary is a pivotal part of foreign language learning ([15, 16], January). Teaching methods and techniques should employ ways to acquire, recall, and retain new vocabulary knowledge rather than merely learn new words [1, 17]. Thus, the implementation of an effective model is still a key problem. Moreover, since there is a rare opportunity outside the classroom in a foreign language context to develop vocabulary knowledge, it is crucial to find innovative solutions to engage, motivate, and boost vocabulary knowledge and improve recall and retention of them.

These problems strongly recommend that teachers need to employ a quick shift in the English language teaching methodology and foster new strategies [18–20] Hence, the flipped classroom can be considered one of the alternative strategies to recall and retain vocabulary. Supposedly, the incorporation of technology into the flipped classroom provides students with opportunities to prepare out of the class and utilize the class time learning to boost their linguistic knowledge [21]. Moreover, according to the context of Iran, English is a foreign language and English learners' exposure just occurs in a classroom environment in which many learners usually try to memorize word lists and thus have rote learning. It is crucial for learners to be presented with some engaging and innovative ways of vocabulary teaching to be able to learn, recall, and retain words in a proper way.

Although a growing number of studies have been done in a flipped classroom model in different fields such as skills, subskills, affective factors, and vocabulary learning, there are not ample studies to check the effect of the flipped classroom on vocabulary recall and retention rather just learning. Therefore, in order to explore this, the current study aims to investigate how Iranian EFL adolescent elementary learners will be able to recall and retain new vocabularies arising in their course books with the intervention of flipped classrooms.

1.1. Literature Review. Recently, the movement from a teacher-centered approach to the learner-centered approach and incorporation of digital literacy into teaching methods can be considered a positive attitude toward teaching and learning models [22, 23]. Therefore, the flipped classroom is an approach that many teachers and educators have turned to employ in their teaching in recent years [24, 25]. Moreover, the model of education has changed around the world because of the COVID-19 pandemic and the flipped classroom has been applied more than before in this era for teaching in various fields [26].

1.2. Importance of Vocabulary Knowledge. Vocabulary learning is a pivotal factor for communication. In SLA (second language learning), many learners have problems with vocabulary learning such as pronunciation, memorizing the meaning, as well as recalling and retention [26, 27]. Thus, recall and retention of knowledge is one of the significant aspects to reach learning achievement in different subjects such as mathematics [28] and English language [29–31]. It is obvious that without retention and recall, learners will find it difficult to reach their pedagogical aims and feel demotivated during the learning process, and additionally, it shows that the teaching method was ineffective. For example, Panijpan et al. [32] stated that learners faced problems such as long pauses and unclear answers when asking questions about the concept of the unit that showed they had issues with knowledge recall and retention. Many factors lead to learners' vocabulary recall and retention such as the teacher's role, the input's role in vocabulary lessons, and the amount of engagement and interaction in vocabulary lessons [17, 33].

1.3. Flipped Classroom in Education for the 21st Century Learners. The flipped classroom is not totally a novel phrase [34, 35]. The flipped classroom was started in 2006 by two chemistry teachers who were Jonathan Bergmann and Aaron Sams from Colorado. They prepared recordings, and students had an opportunity to watch several times at their own speed and time. Moreover, Fulton [21] noticed that students had better examination results than in previous years. In this model, learners interact with each other more actively ([36, 37]; McLaughlin and Rhoney, 2015). Additionally, in this approach, contents and materials are delivered in advance, and learners have a chance to rewind and pause information several times [38] to promote the teacher and students' interaction in-class time. In line with this, each learner has responsibility for his learning, and consequently, the learner's autonomy will be increased [39]. However, there is not sufficient evidence that flipped classrooms can improve vocabulary recall and retention.

Conversely, some studies showed the negative points of the flipped classrooms. For instance, Herreid and Schiller [40] implemented a flipped classroom's efficiency in their study and mentioned the computer access and the Internet connection issues for learners. Students may feel an underlying fear of added workload and uncertainty of success [41].

Although there are negative results in some studies, the outcomes of more studies seem to suggest that flipped classrooms provide a creative, enjoyable, and motivating environment that can enhance language learning. According to Chen Hsieh et al. [42], "The key to the success of the flipped instruction is whether the students do the preparation work outside the class. If they do not, the teacher cannot engage them at an advanced level inside the class" (p. 17).

In addition, despite recent experimental studies, there are not many empirical kinds of research to investigate the role of the flipped classrooms on vocabulary recall and retention. In response to this, the purpose of this study is not to compare and evaluate different teaching methods to each other but to find the best way that would work better for the variables of this research. Therefore, the present study attempted to flip the classroom for English language learners

in an institute in Iran to investigate its educational capability on recall and retention of vocabulary. To figure out the impact of these variables in the research, these two research questions and hypotheses were raised in order to respond to the aims of this research:

(1) Does flipped classroom instruction have any significant effects on vocabulary recall and retention by adolescent elementary EFL learners?

(2) Is there any significant difference between adolescent elementary EFL learners' vocabulary recall and retention in the experimental and control groups?

2. Method

2.1. Design of the Study. The design of the research was quasi-experimental. In the current study, a pretest, a posttest, and a delayed posttest were used. The participants were randomly adopted into two groups: the control and the experimental group. The main independent variable was flipped classroom, and the dependent variables were recall and retention of vocabulary.

2.2. Participants. A number of 70 female students were chosen as a population who were enrolled for the General English course in Daneshgah Language Institute in Tehran, Iran, 2021. All participants started learning English in private institutes in Iran, and no one was native in English. In the Iranian context, English is mandatory at governmental schools from 12; however, students can start learning in private language centers from childhood. At the time of the study, they were being taught the Teen2Teen 2 course book, which was published by Oxford. Classes were held once a week. To make sure about the actual level of participants of the study, 48 participants were chosen based on the results of OQPT. Teenagers in Iran are mainly eager to learn English as a foreign language because of various reasons such as education, immigration, an entrance exam for university, parent's advice, and intrinsic motivation. Thus, it was tried to choose those language learners group who were within the age range of 13 to 17. Learners were at the elementary level of proficiency. Participating students were randomly formed into two groups: experimental and control. In the experimental group, instructions were implemented through the flipped classroom; however, the control group received the instruction through a conventional way of teaching vocabularies such as wordlist and repetition. The experimental group compromised 24 students ($n = 24$), and the control group compromised 24 students ($n = 24$). One of the researchers was the instructor of both groups during the research time.

Sample size is calculated using the following equation:

$$n = \frac{\left(z_{1-\alpha/2} + z_{1-\beta}\right)^2\left(S_1^2 + S_2^2\right)}{\left(\mu_2 - \mu_1\right)^2}. \quad (1)$$

Here, assuming z_(1-α/(2)) = 1.96 and z_(1β) = 0.8 and considering the values of $S_1^2 = 2.100$, $S_2^2 = 2.898$ and $\mu_2 = 26.100$, $\mu_1 = 24.900$, the sample size for each group (control and experiment) was calculated to be 26, which due to the loss of 2 persons in each group, the sample size for each one was calculated to be 24.

2.3. Instruments. A number of tests were implemented in the current study. First, at the beginning of the study, OQPT was administered to check the homogeneity and level of the English language learners. This paper and pen test included 60 items, and they were allowed to take it for 40 minutes. The reliability of the original test was reported as 0.9 for the 60-item test and 0.85 for the 40-item test [43]. It took approximately 40 minutes for participants to finish the test. According to the results of this test, elementary learners were identified based on their language knowledge as the target participants of the present research.

Selecting the words was the second step. Twenty-eight lexical items that learners were asked to recall and retention during the treatment were considered. In fact, all of the target words from lessons were 50 items. Twenty authorized teachers chose 28 items as valid according to the Lawshe CVR and CVI formula. In order to select target words, content validity was evaluated using the Lawshe CVR and CVI. The Lawshe formula is as follows:

$$CVR = \left(\frac{Ne - N/2}{N/2}\right). \quad (2)$$

According to the Lawshe CVR, an item should gain a CVR of higher than 0.42 in order to be validated. Then, the CVI of the words was calculated using Waltz and Bausell (1981). The CVI formula was as follows:

$$\begin{aligned} \text{CVI} &= \frac{\text{Number of experts who scored items 3 or 4}}{\text{Total number of experts}}, \\ \text{Ne} &= \text{Number of experts who voted for the item}, \\ \text{N} &= \text{Total number of authorized teachers}. \end{aligned} \quad (3)$$

It should be mentioned that the acceptable index of CVI equals 0.79, and if there is an item with a CVI lower than 0.79, the item should be removed.

The third step was the vocabulary knowledge pretest. This test was piloted on 15 students from another institute. The reliability value of the pretest as calculated through the KR-21 formula was $r = 0.82$. This teacher-made test was included 28 multiple-choice (MCQ) questions format. Learners were supposed to choose the proper answer that fit the sentence as a context among four options. The pretest was implemented a week before the treatment to measure learners' vocabulary knowledge. The target words were selected from the Teen2Teen 2 course book, which learners were supposed to recall and retain during the treatment. Vocabularies were nouns and verb phrases that were extracted from the mentioned book. Each week learners are exposed to seven new words, according to Wallace [44], between five and seven new lexical items per lesson remain in the active vocabulary as shown in Table 1.

The fourth step was a posttest to determine the impact of treatment for both the experimental and control groups. The

Table 1: Word list.

Weeks	Vocabulary Items
Week 1	Uncle, aunt, child/children, a son/a daughter, a cousin, teammate
Week 2	Talk on the phone, play with dog, eat breakfast, eat lunch, eat dinner, babysit my little brother, help my mom/dad
Week 3	Taking singing lessons, play in the school orchestra, play in the school band, play on the soccer team, learn a new language, collect money for charity, go to movie theater
Week 4	A banana, a peach, a strawberry, a tomato, a potato, a mango, a bean

content of the immediate posttest was differentiated in question order variations of the pretest and conducted immediately after the treatment. The last instrument was delayed posttest, administered four weeks later after the final session of treatment, to examine the learners' vocabulary retention. It is worth mentioning that the interval time between pretest and delayed posttest was about 9 weeks; therefore, it will remove the possibility of remembering pretest questions.

The reliability and validity of the test were also investigated in a piloting session before embarking on the study with a group of 15 adolescent elementary school students other than the major participants using the Kuder-Richardson formula (KR-21), and it was found to be 0.82. Furthermore, validity, assessment, and appropriateness of the test content were determined by experts in this field, and it was found to be satisfactory.

3. Procedures

This study was implemented among adolescent elementary learners in the abovementioned institute in Tehran. OQPT was applied to homogenize the learners of this study. Then, 48 participants were selected based on the OQPT output. As the next step, participants were randomly divided into experimental ($n = 24$) and control groups ($n = 24$). A week before the treatment, a teacher-made pretest vocabulary knowledge was conducted for both the experimental and control groups. The pretest was intended to gauge the initial vocabulary knowledge of learners. Moreover, fifteen minutes is considered to answer the questions and the maximum score was decided to be 28 (1 score for a true answer and zero for unanswered or false ones). In the experimental phase, instruction was implemented through the flipped classroom. A teacher who was one of the researchers generated videos about target lexical items for each unit with photos, examples, explanations, and PowerPoint screenshots. These digital materials were uploaded two days earlier before the session on the learning management system (LMS), which is utilized for the mentioned institute. Participants were supposed to watch the video and do their assignments, and afterward, the participants were provided with different tasks and follow-up activities to have more interaction with words in the class time. The lengths of videos were 10–12 minutes [45, 46]. Learners received feedback during the class activity by the teacher, while the control group depended on classroom teaching (face to face instruction) through conventional methods [47]. The control group was taught through the teacher's introduction of the new words in context by flashcard, realia, and gesture in the treatment session and asked learners to repeat them several times. There was not ample time to have communication activities due to most of the time spent to present new vocabularies in the class time. The treatment duration was 4 weeks, and the whole process of research lasted for 9 weeks. Each treatment session was held for 90 minutes.

After the last session treatment, the immediate posttest was conducted on 28 items questions that were provided by the teacher. Only questions order variations differentiated the pretest from immediate posttest and delayed posttest. The posttest measured the learner's vocabulary recall and retention. To measure participant's vocabulary retention, delayed posttest was carried out for both groups after four weeks of the last treatment session. As Kvam [48] gauged his subjects' retention rate after a month or more, the current study administered a delayed posttest four weeks after the posttest.

3.1. Data Analysis. After data collection, in order to respond to the research questions, SPSS (Statistical Package for Social Sciences) version 22 was utilized to analyze the data in the pretest, immediate posttest, and delayed posttest of the study. Afterward, The Kolmogorov–Smirnov test of normality was conducted to obtain the normality of data. Moreover, ANCOVA tests were run. The researchers selected ANCOVA for avoiding the preexisting differences among groups, variables, as well as the results of posttest to be clear. Moreover, data screening failed to identify any ill-behaved distributions or aberrant cases.

4. Results

Checking the normality of distributions is totally pivotal prior to carrying out any analysis on a pretest and posttest. Therefore, the Kolmogorov–Smirnov test of normality was run (Table 2).

4.1. Results of Normality Test. According to Table 2, all the P values (lower the Sig.) were higher than 0.05; thus, it could be inferred that the distributions of scores for pretest, immediate posttest, and delayed posttest of both groups (control and experimental) were normal. Thus, parametric tests (i.e., analysis of covariance in this case) were safe to use for comparing the groups.

Table 3 indicates the descriptive statistics of the vocabulary scores on the pretest, posttest, and delayed posttest for two groups (experimental and control).

Based on Table 3, the mean of the experimental group on the pretest was 22.75 ± 2.45 and the mean of the control

Table 2: One-sample Kolmogorov–Smirnov test.

Variable		Kolmogorov–Smirnov	Sig.
Pretest	Experiment	0.124	0.200
	Control	0.115	0.200
Posttest	Experiment	0.173	0.061
	Control	0.166	0.086
Follow	Experiment	0.142	0.200
	Control	0.129	0.200

Table 3: Descriptive statistics of variables in experimental and control groups' pretest, immediate posttest, and delayed posttest.

Variable	N	Experimental		Control		T-test	Sig.
		Mean	Std. deviation	Mean	Std. deviation		
Pretest	24	22.75	2.45	24.08	1.89	−2.110	0.040
Posttest	24	26.49	1.61	24.58	1.84	3.753	0.001
Delayed posttest	24	26.04	1.43	24.79	1.89	2.587	0.013

group on the pretest was 24.08 ± 1.89. To see whether the difference between these mean scores, and thus these groups on the pretest, were statistically significant or not, the researchers had to examine the p-value lower the Sig. (2-tailed). There was a significant statistical difference (Sig. = 0.040) between the two groups in the pretest.

The mean of the experimental group on the immediate posttest for recalling vocabulary was 26.49 ± 1.61, and the mean of the control group on the immediate posttest was 24.58 ± 1.84. To see whether the difference between these mean scores, and thus these groups on the pretest, were statistically significant or not, the researchers had to examine the *p-value* lower the Sig. (2-tailed). There was a significant statistical difference (Sig. = 0.001) between the two groups in the pretest.

The mean of the experimental group on delayed posttest for retaining vocabulary was $26.04.79 \pm 1.43$, and the mean of the control group for retaining vocabulary was 24.79 ± 1.89. To find out is there any difference between these mean scores and thus these value groups on the pretest or not, as well as is there statistical significance or not, the researchers had to measure the p-value lower the Sig. (2-tailed). There was a significant statistical difference (Sig. = 0.013) between the two groups in the pretests.

4.2. Inferential Statistics

4.2.1. Homogeneity of Variances. Participants should be homogeneous in terms of variance. In this research, the Levene test was applied to explore the homogeneity of the variance, the results of which are presented in Table 4.

Table 4 depicts that the theory of homogeneity of variances through the Levene test was accepted (Sig. > 0.05).

4.2.2. Homogeneity of Regression Slope. In order to verify the homogeneity of the regression slope, there is a need to measure the F value of the relation between the covariate and the independent variable; if there is no statistical difference (Sig. > 0.05), this default is met. The results are shown in Table 5.

Table 4: Test of homogeneity of variances.

Variable	Levene statistic	df1	df2	Sig.
Pretest	1.488	1	46	.229
Posttest	.210	1	46	.649
Follow	1.398	1	46	.243

As can be illustrated from Table 6, the assumption of a linear correlation between the covariate and the independent variable at the level of 0.05 is significant.

4.3. Data Analysis of the First Research Question. The first research question was about the effect of flipped classroom instruction on word recall and retention among elementary EFL learners. To fulfill this aim, the scores of 24 participants for both groups were entered in SPSS version 22. The scores were for 28 vocabulary knowledge questions prepared by one of the researchers who was also a teacher in this study. Moreover, analysis of covariance was applied for this research question. As mentioned before, the analysis of covariance were met.

As displayed in Table 7 the flipped classroom had a significant result on word recall among the experimental group ($F = 31.199$), (Sig. = 0.001). Thus, the mentioned improvement on the mean score (26.49) for immediate posttest among the experimental group (flipped group) in comparison with pretest is crystal clear. According to Table 7, the mean for recalling words in the control group was 24.08 for pretest and was 24.58 for immediate posttest that measured recalling of new words, while the mean for the experimental group (flipped group) was 22.75 for pretest and 26.49 for immediate posttest. Therefore, the significant difference between the mean score of the two groups at immediate posttest is crystal clear; thus, it shows that by excluding the pretest cofactor, scores for new word recall were increased. Furthermore, based on the effect of Eta square, 41 percent of

Table 5: Reception of homogeneous regression slope.

	Variable	F	Sig.
Hypothesis1	Pretest ∗ group	1.088	0.295
Hypothesis 2	Pretest ∗ group	1.498	0.227

The significance level is $P < 0.05$.

Table 6: Correlation pretest and posttest (follow).

	Variable	F	Sig.
Hypothesis 1	Pretest	19.959	0.000
Hypothesis 2	Pretest	10.276	0.002

changes in the experimental group for recalling the new words were the result of flipped classroom instruction.

4.4. Data Analysis of the Second Research Question. The second research question was to explore "Is there a significant difference between the control and experimental group for recalling and retaining new words?" For testing this research question, an analysis of covariance was used, which is shown in Table 8. As stated earlier, participants' vocabulary retention was measured using delayed posttests that were conducted to both groups over four weeks after the posttests.

The result shows that the flipped classroom instruction has a significant impact on retaining new words among adolescent elementary EFL learners ($F = 13.394$, $P = 0.001$). Moreover, the mean score for both groups at posttest after reducing pretest scores had statically significant differences. Table 9 shows that the mean score of the control group for pretest of new words retention was 24.08 and 24.79 for delayed posttest, while the mean score of the experimental group for retention of new words was 22.75 for pretest and was 26.04 for delayed posttest. This shows that by ignoring the pretest result, flipped classrooms improved participant's vocabulary retention. Also, the results of Eta square shows 23 percent of changes were for the experimental group, which was the effect of flipped classroom instruction.

It is worth mentioning that the acceptable index for CVR for twenty experts should gain higher than 0.42 and CVI should be higher than 0.79. As it can be seen in the table, CVR and CVI were shown for each and whole words. CVI and CVR were 0.7 and 0.9, respectively. Thus, they are higher than 0.42 and 0.79 and met the assumption.

5. Discussion

The current research set out to explore whether flipped classroom instruction could promote adolescent elementary EFL learners' vocabulary recall and retention. In the flipped classroom, there is more chance for engagement and interaction, and thus, these features of the flipped classroom instruction along with technology combined with each other improve learners' vocabulary knowledge [49]. Concerning the first research question whether the flipped classroom instruction has any significant effects on vocabulary recall and retention by adolescent elementary EFL learners, the results of analyzing data positively answer the first research question. In fact, the outcomes showed that the experimental group who were taught 28 lexical items in their course book using flipped classroom instruction benefited from this approach and made more progress for recalling target words (measured by immediate posttest) than the control group. The results also explore that the experimental group had a higher mean in posttest than the control group. Besides, the experimental group also outperformed in 4 weeks delayed posttest (i.e., retention test) in comparison with the control group. It is worth mentioning that although the scores in delayed posttest dropped for both groups because of the time gap, the experimental group significantly was better than the control group in recall and retention of target vocabularies in the Iranian context due to various reasons such as more engagement, self-pace, and innovative way that flipped classroom provided for each learner.

The finding is in harmony with previous studies in flipped classrooms [6, 8, 10, 12, 14], which confirmed that flipped classroom can enhance language learning in various domains and improve vocabulary acquisition. In addition, these researchers believed that flipped classrooms facilitate learning in an innovative way especially in this technology era.

Regarding the second research question whether there any significant difference between elementary EFL learners' vocabulary recall and retention in the experimental and control groups, according to the results of covariance analyses, there was a significant difference between the experimental and control groups in the recall and retention of new words. The results of descriptive data showed the experimental group outperformed the control group both in the recall and retention of target words and facilitated the process of learning. Thus, the researchers arrived at a logical response for the second research question. As a matter of fact, flipped classroom instruction induces learners, moreover, they have a main role in their learning process [50] and learner autonomy, learner's engagement will increase significantly, as well as students can access their learning materials based on their pace and time [51]. In contrast, when participants were taught via conventional methods of teaching new words such as memorizing and parrot-like repeating, many of vocabularies remain passive in their minds [1].

As mentioned earlier in the literature review, a number of studies have proved that flipped classroom instruction enhances vocabulary recall and retention [9, 28, 33, 34, 36, 39]. Additionally, the finding of this study is congruent to [26] who examined the impact of the flipped classroom on Iranian ESP students' vocabulary learning, retention, and attitude. Also, the result of this study is in harmony with [37, 52] who explored that the learner's improvement in listening performance is attributable to the flipped classroom. These findings are in contrast with the current research [53, 54] in terms of the technical and technological problems during flipped classroom instruction. Since flipped classroom is a learning approach, it provides an environment as mentioned earlier in the literature review, and a number of studies have proved that

Table 7: The result of covariance analysis in terms of word recall.

Variable	Mean		Analysis Covariance					
	Experimental	Control	Type III sum of squares	Df	Mean square	F	Sig.	Partial eta squared
Pretest	22.75	24.08	66.180	1	66.180	31.199	0.001	0.409
Posttest	26.49	24.58						

Table 8: The result of covariance analysis in terms of word retention.

Variable	Mean		Analysis covariance					
	Experiment	Control	Type III sum of squares	Df	Mean square	F	Sig.	Partial eta squared
Pretest	22.75	24.08	31.238	1	31.238	13.394	.001	.229
Posttest	26.04	24.79						

Table 9: The results of CVI/CVR of words.

CVI	CVR	n_{E1}	n_E	Word	CVI	CVR	n_{E1}	n_E	Items	CVI	CVR	n_{E1}	n_E	Word
0.95	0.8	19	18	35	0.7	0.1	14	11	18	0.9	5.0	18	15	1
0.7	0.3	14	13	36	0.9	0.7	18	17	19	0.55	0.1	11	11	2
0.90	0.5	18	15	37	0.95	0.8	19	18	20	0.85	0.6	17	16	3
0.95	0.8	19	18	38	0.65	0.2	13	12	21	0.75	0.6	15	16	4
0.60	0.1	12	11	39	0.85	0.5	17	15	22	0.65	0.2	13	12	5
0.85	0.5	17	15	40	0.95	5/0	19	15	23	0.9	0.7	18	17	6
0.7	0.3	14	13	41	0.7	0.3	14	13	24	0.60	0.1	12	11	7
0.9	0.8	18	18	42	0.8	0.6	16	16	25	0.80	0.8	16	18	8
0.75	0.5	15	15	43	0.65	0.4	13	14	26	0.70	0.3	14	13	9
0.65	0.2	13	12	44	0.95	0.7	19	17	27	0.9	0.9	18	19	10
0.90	0.6	18	16	45	0.65	0.3	13	13	28	0.95	0.8	19	18	11
0.6	0.4	12	14	46	0.8	0.5	16	15	29	0.60	0.2	12	12	12
0.90	0.8	18	18	47	0.9	0.7	18	17	30	0.95	0.8	19	18	13
0.65	0.3	13	13	48	0.70	0.40	14	14	31	0.70	0.2	14	12	14
0.9	0.9	0.9	0.9	49	0.9	0.6	18	16	32	0.95	0.7	19	17	15
0.7	0.3	14	13	50	0.65	0.1	13	11	33	0.70	0.40	14	14	16
0.90	**0.80**	**18**	**18**	**Whole**	0.55	0.1	11	11	34	0.95	0.9	19	19	17

flipped classroom instruction enhances vocabulary recall and retention [28, 33, 34, 36, 39]. Additionally, the finding of this study is congruent to [26] who examined the impact of the flipped classroom on Iranian ESP students' vocabulary learning, retention, and attitude. Also, the result of this study is in harmony with [37] who explored that the learner's improvement in listening performance is attributable to the flipped classroom. These findings are in contrast with the current research [53, 54] in terms of the technical and technological problems during flipped classroom instruction. Since the flipped classroom is a learning approach, it provides an environment for more interaction and engagement, which can enhance EFL learners' vocabulary recall and retention of vocabulary items.

6. Conclusion

This research intended to draw the impact of the flipped classrooms on vocabulary recall and retention. The results of the study have drawn that vocabulary learning in the traditional approaches of teaching such as parrot-like repeating causes rote learning and many words become in a passive form in learners' minds. In new approaches to teaching that integrate technology leads to promote language, their active role in the learning process is to increase learner's autonomy. Nonetheless, some implications can be suggested; first of all, this study can help practitioners to use a new technological approach to language teaching in ESL/EFL context based on learners' needs. Moreover, curriculum developers and material writers can include technology and model flipped activities in the course books to pave the way for boosting learners' skills and subskills such as vocabulary knowledge in order to have better recall and retention. Additionally, it is desirable that the technology approach to language teaching can be considered in teacher training courses for novice and experienced teachers. Finally, the flipped classrooms have a significant impact on learner's autonomy, and they can apply their metacognitive strategies to control their learning. It is clear that this research has some limitations. First, this study was conducted in the Iranian context and with sample size availability. Moreover, only females took part in this study with elementary proficiency levels. Another limitation is that researchers explored the impact of just flipped classrooms on vocabulary learning. Further works need to explore the outcome of the flipped classroom on the other learning skills with a larger sample size in other contexts. Also, forthcoming research can be done with the male group or both genders group. Furthermore, it is desirable to conduct this study with another language proficiency level such as intermediate or advanced learners. Finally, to verify the impact

of the flipped classrooms on vocabulary retention, it is a good idea to consider more interval periods for delayed posttest (more than a month).

The homogeneous sociolinguistic background of the participants is one of the limitations need to be mentioned. Future studies can be conducted among different participants in another ESL/EFL context. Also, another drawback is that the current study was implemented just among the elementary level of participants, and hence another study can be implemented at different proficiency levels for applying flipped classrooms to measure vocabulary recall and retention. Forthcoming studies can carry out this study with larger samples, diverse groups, and mixed gender to reach better outcomes. Finally, this study merely applied one delayed posttest after 4 weeks. Similar studies can apply more than one delayed posttest with longer periods to explore better insights toward vocabulary recall and retention among elementary learners.

Data Availability

The data will be available upon requesting from corresponding author-cyrosizadpanah@yahoo.com.

Conflicts of Interest

There are no conflicts of interest.

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