

Research Article

The Investigation of Iranian EFL learners' Retention of Grammar Knowledge and their Course Satisfaction based on Flipped Classroom Strategies

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Abstract

As teaching approaches continue to evolve, the integration of technology and digital tools in language learning has increased. Moreover, it is essential to consider pupils' satisfaction with the implementation of these technological resources to ensure effective learning experiences. To this end, the purpose of this inquiry was to examine the Iranian EFL learners' Retention of Grammar knowledge and their Course Satisfaction based on flipped classroom strategies. This quasi-experimental research was carried out in the twelfth grade of Alvand private school in Tabriz city, East Azerbaijan, Iran. Forty high school learners were chosen from two intact classes as the research participants whose homogeneity was checked through the Oxford Quick Placement Test. Subsequently, the participants were randomly assigned into two groups: the experimental group (n = 20) and the control group (n = 20). The pre-, post-, and delayed post-tests utilized in this research were from the Grammar in Use book, to assess the initial grammar knowledge, possible gained knowledge, and retention of acquired knowledge. Additionally, a questionnaire was administered to evaluate the participants' satisfaction with the course. The independent-samples t-test revealed that the experimental group illustrated considerably higher proficiency in terms of their grammar knowledge than the control group in both post-test and ANCOVA scores. Moreover, the result of the questionnaire's descriptive statistics showed a high level of satisfaction among learners. The study presents practical implications for teachers, researchers, and learners.

Keywords: flipped classroom strategies, retention of grammar knowledge, course satisfaction

Introduction

The field of English language instruction has been globally recognized as both highly significant and a top educational priority (Chen Hsieh et al., 2017). Furthermore, since 1960s, the integration of technology has been a primary focus in teaching foreign and second languages (Blake, 2008; Warschauer & Healey, 1998). The behavioral viewpoint emphasized the utilization of digital media in education, namely by encouraging the use of computers, smartphones, and tablets (Warschauer & Healey, 1998). The behavioristic method was dismissed in the period between the years 1970 and 1980 in favor of the socio-cognitive view, which asserts that language skills should be taught in a genuine environment using a range of technological tools rather than relying on weekly visits to the computer lab (Warschauer & Healey, 1998; Kalin, 2012).

The Flipped Classroom, which is additionally recognized as the Inverted Classroom, was first proposed by Jonathan Bergmann and Aaron Sams in 2007. Flipped teaching classroom is a form of active learning that has gained popularity among educators and researchers due to its ability to meet the evolving needs of the modern era. The literature study demonstrates the application of the FTC technique in many domains, such as engineering (Karabulut et al., 2018), mathematics (Lo et al., 2017), teacher training (Turan & Goktas, 2018), and health curriculum (Hew & Lo, 2018). Furthermore, concept of FTC has gained significant attention in the domain of foreign language instruction, as shown by Wang et al. (2018) and Cetin Koro Oglu and Cakir (2017).

Furthermore, the FTC program has a direct impact on teachers' pedagogical methods and their interactions with students and parents. The primary distinction between FTC and a Traditional classroom is in the transformation of the teacher's function. In FTC, the teacher relinquishes their position as a speaker and controller of the teaching process, instead assuming the role of a guide and facilitator of the learning process (Noroozi et al., 2021). The FTC provides adaptable teaching time, fosters a dynamic and engaging learning setting, and enables in-depth exploration of abstractions (Amiryousefi, 2017; Chen Hsieh et al., 2017; Francl, 2014). FTC empowers students to maintain control over the educational process through the ability to pause and rewind audio/video files. By providing students with the opportunity to repeatedly listen to or watch instructional materials, individuals with varying degrees of skill can assume accountability for their learning (Mehring, 2018). According to Clark (1994) and DeLozier & Rhodes (2017), pre-class activities like reading, watching movies, and

listening to audio are considered part of FTC. These activities place learners at the heart of the learning process and require a high level of Course Satisfaction from learners. Failing to meet this requirement may lead to poor learning outcomes. For example, as Alias (2010) stated, the application of FTC in the grammar classroom offers several advantages. It promotes more effective active learning, strengthens the role of the teacher, optimizes time usage, enhances peer learning, allows for greater control of content delivery, facilitates the observation of knowledge assimilation, and enables students to learn on demand.

Grammar provides a systematic explanation of how a language is organized and how its elements, such as words and phrases, form sentences. Typically, one must take into account the significance and purpose of these sentences within the entire language system. According to Richard and Schmidt (2002), it is unclear if it contains explanations of the audio aspects of a language. According to Astrid (2011), the primary issue in English language acquisition is students' insufficient understanding of English Grammar, particularly in sentence construction and verb usage in different tenses. This issue has the potential to lead to misinterpretation during the process of communication. Hence, we require an educational model that can facilitate the comprehension and proficiency of English for individuals learning the language by utilizing instructional resources. In addition, simply acquiring knowledge of Grammatical rules through explicit formal representation is insufficient for effectively utilizing Grammar (Bergmann & Sams, 2012). Therefore, the teaching of Grammar should incorporate an online activity that allows for the exploration of various scenarios to enhance understanding of a certain Grammatical structure, such as conditional sentences.

Several studies, including those by Löfnertz (2016), have examined the attitudes of high school students regarding the FTC approach in the context of the EFL classroom and Grammar teaching in Sweden. The findings disclosed that the pupils exhibited a positive viewpoint towards the execution of FTC and perceived FTC Grammar teaching as less stressful. In another study, Tune et al. (2013) found that flipping the classroom can escalate students' motivation levels. Moreover, Al-Harbi and Alshumaimeri (2016) conducted research to investigate how the use of FTC affects secondary school students' academic performance, views, and attitudes toward learning English Grammar on their own. The findings indicated that implementing the FTC technique seems to contribute to the improvement of students' Grammar proficiency. Furthermore, it was discovered that their views towards employing the FTC approach in the EFL class were encouraging. While some studies have highlighted the benefits and positive impacts of FTC,

Subsequent research has indicated that there are no noticeable differences between FTC and Traditional models (Davies et al., 2013).

As discussed earlier, with the advancement of teaching approaches, the role of technology in learning has increased. However, it is not sufficient just to have suitable tools and instruments for the procedure of teaching and acquiring knowledge; the Satisfaction of pupils with the implementation of these tools should be taken into account too. So, to the best knowledge of the researchers in the language classroom, some investigations tried to examine the impact of FTC on some components of English, like speaking, vocabulary, and grammar in the Iranian context, but retention of the g

rammar knowledge concerning learners' course satisfaction is somewhat ignored. In other words, it is far from clear whether or not FTC has an impact on the retention of Grammar knowledge among Iranian EFL pupils in terms of their satisfaction degree from the Courses or not. In a nutshell, this examination is an attempt to analyze the consequences of FTC on Iranian EFL learners' retention of Grammar knowledge by considering their satisfaction with these kinds of courses. Accordingly, the following research questions were posed:

- 1: Does Flipped classroom teaching have significant effect on Iranian EFL learners' grammar knowledge?
- 2: Does Flipped classroom teaching have significant impact on Iranian EFL learners' retention of grammar knowledge?
- 3: To what extend are Iranian EFL learners satisfied with flipped classroom teaching?

Research null hypotheses:

H01: FTC teaching does not have any significant effect on Iranian EFL learners' grammar knowledge.

H02: FTC teaching does not have any significant effect on Iranian EFL learners' retention of grammar knowledge.

Method

Participants

The current study was conducted at the Alvand private school in Tabriz City, East Azerbaijan, Iran, in the academic year 2023-2024. All of the participants in the research were male students selected from among 70 students in two classes, 40

were selected, based on the results of OQPT as the main participants of the study, 20 in each class. The rest of the students participated in their classes but they were excluded from the analyses. Afterwards, they were randomly assigned to one experimental group and one control group.

Instruments and Materials

In order to carry out this investigation, the following instruments were utilized:

Oxford Quick Placement Test (OQPT)

The OQPT was conducted at the first stage of the research to ensure a uniform sample in terms of language competency. The study participants were classified as intermediate-level according to the OQPT score criteria. That's a test comprising 60 multiple-choice questions that assess vocabulary (30 questions) and grammar (30 questions). The listening component was excluded due to considerations of practicality and alignment with the research objectives. The justification for using this test was based on several factors. Firstly, it seemed more suitable for upper secondary and adult learners compared to other tests. Secondly, the study participants were supposed to have a greater level of familiarity with the format of this test. Lastly, this test was chosen to ensure that the participants in the research were homogeneous, thus aiding the researcher in achieving more consistent results (Allen, 1992).

Researcher-made Grammar Diagnostic Test (Pre-Test)

The English grammar diagnostic test, employed as the pre-test of the study, was conducted to assess the initial comprehension of conditional phrases by the participants. The preliminary examination included 25 intermediate-level multiple-choice questions on conditional phrases taken from the 'Grammar in Use' (2009) textbook. Each accurate response had a value of one point.

To assess the reliability of the provided pre-test, a pilot study was carried out with 20 participants who shared the same characteristics as the main participants from another private school called Zoha. The reliability was evaluated using the KR-21 formula. Moreover, the current test was validated by four faculty members of the university in the department of Foreign Languages, who had more than 20 years of experience.

WhatsApp

WhatsApp is a messaging application that allows users to send text messages, make audio and video conversations, and share other forms of content, including photographs and videos. Moreover, the platform enables group communication and provides capabilities such as end-to-end encryption to guarantee the security of interactions. WhatsApp is available on several mobile operating systems and may be used with either Wi-Fi or mobile data networks. This technology is widely accepted in both personal and professional domains for communication purposes. In addition, based on the fact that, participants of the current study are teenagers, there is a need for an application, which is considered by experimental group members as both acceptable and appropriate application which is easy to use and accessible at the same time, The WhatsApp is applied within this research as the main application.

Satisfaction Questionnaire

To evaluate the degree of satisfaction among students, the researcher utilized modified versions of two questionnaires sourced from Johnson (2013) and Sari and Wahyudin (2019) titled Student Perceptions of the Flipped Classroom. These questionnaires consisted of 20 Likert-scale items, which were employed to evaluate four specific elements, included how engaging FTC is, what kind of communicating opportunities FTC provides, how much FTC fosters motivation and time aspects. The Flipped classroom teaching survey includes various components to assess students' overall perceptions of the method, such as its level of engagement, communication opportunities, and motivational impact. It also includes questions about the amount of time students dedicate to course-related work at home, how they utilize their additional classroom time, and their feelings towards taking quizzes. Students are allowed to complete tests at their speed, regardless of their preferences or the level of difficulty they perceive. Additionally, technology disposition questions are used to assess students' willingness to utilize technology in their educational pursuits.

To verify the reliability of the stated questionnaire, a pilot test was carried out using the same method as the pre-test. The reliability was assessed using Cronbach's alpha.

Researcher-made Grammar Achievement Test (Post-Test)

To examine the impact of FTC on the pupils' comprehension of conditional

sentences, a post-test was conducted to assess their scores after the treatment and evaluate their progress. This test, similar to the pre-test, comprised 25 multiple-choice questions extracted from the intermediate edition of the 'Grammar in Use' (2009) book. The examination was centered around conditional phrases.

The reliability value of the post-test was determined by administering the post-test to identical individuals who had previously participated in the pilot study for the pre-test. The consistency of the post-test scores was checked by the KR-21 formula. The validating process for this test was performed the same as the validating process of the pre-test.

Delayed post-test

Two weeks after the post-test a delayed post-test on grammar was given to evaluate the pupils' ability to retain what they had learned about grammar. The delayed post-test questions were identical to the post-test questions, but their order was altered to decrease the possible impact of practice effects.

Procedure

The study was conducted throughout the academic year 2023-2024. The participants in this study were chosen through convenience sampling. Specifically, 40 male learners were chosen from a group of 70 students according to their level of knowledge. The decision to exclusively include males in the current study was chosen based on the opportunity presented, as gender segregation in schools is a prevalent practice in Iran. The researchers employed random assignment to assign the entire student population into two distinct groups: an experimental group including 20 learners and a control group including 20 learners. The high school students in twelfth grade were studying English using the course book Vision 3, accompanied by an educational supplementary book called 'Grammar in Use' (2009) at an intermediate level.

The study was undertaken at Alvand Private School in Tabriz, East Azerbaijan, Iran. At the beginning of the research, the QOPT was delivered to final participants to assess their proficiency level and select intermediate learners. Specifically, those pupils whose results deviated by 1 standard deviation higher or lower than the mean score were categorized as intermediate learners. And assigned in to two experimental and control groups. Before administering the pre-, post-, and delayed-post-tests of grammar and the satisfaction level questionnaire, a pilot study was undertaken. This involved 20 individuals who had the same

characteristics as the main participants from another private school called Zoha in Tabriz city, East Azerbaijan. Subsequently, the grammar pre-test was conducted to assess the pupils' basic understanding of conditional phrases. Next, the experimental group obtained 12 sessions of FTC grammar instruction using WhatsApp. Each session lasted for one and a half hours. The instruction focused on directing the learners' attention to the grammatical assignments and directions given by the teacher. Detailed descriptions of the treatment sessions are offered both on WhatsApp and in the classroom.

During the initial session on the WhatsApp platform, the participants were presented with a comprehensive description of the research's goal and were instructed to remain online at specified designated times. The teacher issued a request to the participants, instructing them to organize virtual sessions by establishing a group and inviting specifically chosen individuals. To foster the active contribution of the students, the instructor notified them that they would be available for a supplementary reward if they demonstrated exceptional performance in the WhatsApp group. The students were assigned grammatical tasks to assist direct teaching of certain conditional forms utilizing the accompanying audio and video files, which were subsequently discussed in the classroom. The instructional videos indicated were taken from the YouTube website and contained several techniques for treating the researcher's particular area of concern. The teacher ensured that all the participants comprehended the duties and implemented them while also expecting them to seek clarification for any ambiguities they encountered. WhatsApp likely aimed to offer formal grammar teaching by displaying different examples of conditional sentences to the pupils (see Figures 1&2). The instructor furnished written feedback to address the pupils' problems on the assignments. Nevertheless, the instructor endeavored to explain the conditional phrases by explicitly explaining the guiding principles of conditional statements and motivating the pupils to generate their instances. Participants were provided with input directly, without any discussion or contact, on grammatical tasks that challenged the learners. This input was given within the educational space. It is worth mentioning that the grammar assignments were gathered from the pupils' workbooks and additional materials included in their course. Following each virtual session, the subsequent face-to-face session of the virtual class occurred in a real classroom. The objective of this session was to deliberate on the uploaded material, with a particular emphasis on conditional phrases.

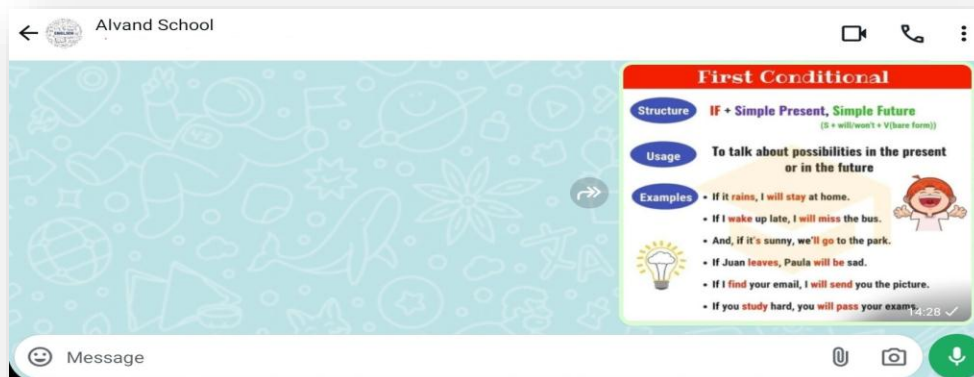


Figure 1. Overview of Different Types of Conditional Sentences with Examples, as Discussed in the WhatsApp Group

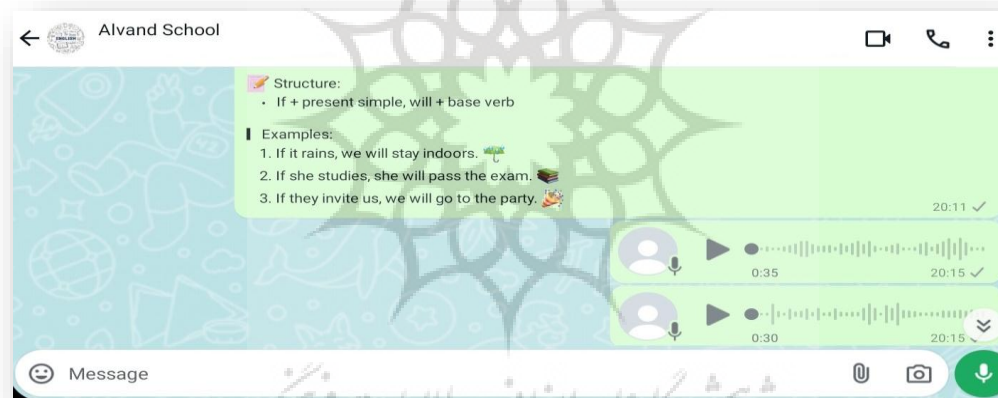


Figure 2. Examples of Conditional Sentences Shared and Analyzed by Students in the WhatsApp Group Discussions

In the educational space, the instructor began the lesson by conducting a warm-up activity and directing the students' focus to the assignments given on WhatsApp to start the interactive grammar training. The students were obligated to participate in verbal communication with other pupils by explaining their points of view. This warm-up activity is designed to improve the learners' ability to actively concentrate on the target forms through interactive engagement. The

grammar problems, which were also available in printed formats, featured highlighted, bold, italicized, and underlined conditional statements. These formatting techniques were used to implicitly remind learners to pay attention to the target grammar. Also, the grammar tasks were the ones that were uploaded to WhatsApp. The teacher provided a period for the students to independently engage with the assignments before subsequently exchanging their overall comprehension of the subject matter. The educator made an effort to direct the learners' attention towards the specific tasks by posing numerous questions to gather information and seek clarification. Additionally, the teacher engaged the majority of participants in classroom discussions to address the topic at hand and generate the desired conditional sentences without explicitly explaining the underlying rule. The teacher provided immediate verbal corrective feedback to the learners' responses to enhance their understanding of conditional phrases.

The pupils were also prompted to engage in peer discussion while completing the designated grammar exercises. Through the teachers' questions, participants engaged in meaningful engagement, which focused the pupils' attention on the target grammar forms and made the manufacturing process easier. The main aim was to create a learner-centered classroom where learners could engage in oral interaction with their classmates and the teacher. The position of the educator changed from being a distributor of knowledge to that of a facilitator, using pre-prepared materials in the online environment. This approach aimed to enhance the quality of grammar learning.

After the treatment sessions, we distributed a questionnaire to the students. The modified version of two questionnaires, created by Johnson (2013) and Sari and Wahyudin (2019), aimed to collect feedback from the learners regarding their experience with the FTC model. The questionnaire included 20 multiple-choice items designed to evaluate the learners' Satisfaction level with the FTC strategy. We underscored the significance of providing truthful answers and guaranteed participants that their replies would be confidential. Furthermore, to gather the necessary information, the questionnaire was sent to their WhatsApp group, and they responded to the questionnaire using an online application. However, the control group did not receive a combination of technology-enhanced instruction and face-to-face educational experiences. Instead, they only received face-to-face instruction for grammar without the use of mobile applications or FTC. In a nutshell, the teacher utilized a whiteboard to present the guidelines for constructing conditional sentences. This was followed by providing relevant examples and prompting learners to generate their claims.

The learners' incorrect responses were not challenged, but rather, they were given either affirmative or adverse feedback regarding their answers.

After 12 treatment sessions in WhatsApp and in a classroom environment, the participants completed a post-test on grammar. The test included 25 multiple-choice questions taken from 'Grammar in Use' (2009), specifically at an intermediate level. Three weeks after the initial post-test, pupils underwent a delayed post-test to evaluate the retention of Grammar learning in both groups. The delayed post-test closely resembled the instant post-test.

Design

The research used a Quasi-experimental research methodology, specifically adopting a pre-, post-, and delayed post-test with a control group design. This design required the inclusion of two groups of students: an experimental group and a control group. The study utilized pre-test, post-test, and delayed post-test assessments from the Grammar in Use book to evaluate the participants' initial knowledge, potential knowledge gained, and retention of acquired knowledge. Additionally, a questionnaire was administered to examine the level of satisfaction with the course in the experimental group, which obtained instruction according to FTC approaches. Nevertheless, the control group was given conventional teaching and also completed all of the tests mentioned above. FTC techniques were treated as independent variables, while the retention of grammar knowledge and course satisfaction degree were treated as dependent variables.

Data Analysis

To conduct statistical analysis on the gathered data, the researchers inputted the data into SPSS 24. As a preliminary stage, the researcher performed descriptive statistics to identify and select participants who were homogeneous. Subsequently, the normality of the OQPT results was assessed. The following step involved conducting an independent sample t-test to examine any variations amidst the control group and experimental group in the pre-test. Subsequently, to assess the potential effect of the treatment on the experimental group, a posttest was undertaken using an independent sample t-test. Therefore, to assess the extent to which the treatment was retained, a delayed post-test ANCOVA was done to determine any potential variations among the control and experimental groups in both the post-test and delayed post-test. A bar graph will display the data for each of the 20 questions, along with the corresponding proportion of students that selected each response.

Result

The study's research questions focused on examining how flipped instruction impacted learners' scores on the, post, and delayed post-tests. The descriptive statistics of the participants' pre-test, post-test, and delayed post-test grammar scores between experimental and control groups are indicated in Table 1.

Table 1.
Descriptive Statistics

Groups		N	Mean	Std. Deviation
Pretest Grammar Scores	Experimental Group	20	17.55	1.57
	Control Group	20	17.45	1.63
Post-test Grammar Scores	Experimental Group	20	21.60	2.14
	Control Group	20	19.75	1.86
Delayed Post-test Grammar Scores	Experimental Group	20	22.40	1.90
	Control Group	20	20.55	1.99

Table 1 indicates the descriptive statistics, that the experimental group's average score in grammar learning ($M = 17.55$) was somewhat superior than the average score of the control group ($M = 17.45$). Findings suggest that the pre-test scores in grammar were similar among the two groups before the treatment sessions. On the other hand, the average score of grammar acquisition for pupils in the experimental group ($M = 21.60$) was superior on the post-test in comparison to the average score of the control group ($M = 19.75$). These findings suggest that the experimental group, which got the FTC intervention, had superior grammar learning in comparison to the control group by the conclusion of the study. Therefore, it seems that there is a substantial disparity in the acquisition of grammar between the two groups. Similar to the pretest and immediate post-test mean scores, the average score of the pupils in the experimental group ($M = 22.40$) was greater on the delayed post-test compared to the average score of the control group ($M = 20.55$), suggesting that FTC learners demonstrated superior grammar retention in comparison to the control group on the delayed post-test.

Besides, a Test of Normality was undertaken to check whether the points of the pupils in both the experimental and control groups followed a normal distribution throughout all assessments. Please refer to Table 2 for more information.

Table 2.
Tests of Normality

	Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	Df	Sig.
Pretest	Experimental	.187	20	.066	.931	20	.161
	Control	.195	20	.055	.946	20	.313
Posttest	Experimental	.124	20	.200*	.932	20	.166
	Control	.159	20	.199	.935	20	.191
Delayed posttest	Experimental	.161	20	.189	.934	20	.183
	Control	.157	20	.200*	.948	20	.334

The insignificant p-values (>0.05) obtained from Table 2, which include the Shapiro-Wilk test, suggest that the scores in both the experimental and control groups were normally distributed for the pre-, post-, and delayed post-tests. Consequently, the data could be analyzed using parametric tests.

Results of the First Research Question

The first research question dealt with the significant effect of FTC on Iranian EFL learners' grammar knowledge. Before conducting ANCOVA, it is essential to check some initial presumptions, one of which is that the normality assumption was met. In addition, to see whether the homogeneity of regression slopes was met or not, the test of between-subjects effects was used. The results of this test are displayed in Table 3.

Table 3.
Homogeneity of Regression

Dependent Variable: Post-test Grammar Scores					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14.376 ^a	3	4.792	.976	.415
Intercept	102.826	1	102.826	20.946	.000
Groups	.025	1	.025	.005	.944
Pretest Grammar Scores	2.161	1	2.161	.440	.511
Groups * Pretest Grammar Scores	.185	1	.185	.038	.847
Error	176.724	36	4.909		
Total	12232.000	40			
Corrected Total	191.100	39			

a. R Squared = .075 (Adjusted R Squared = -.002)

As it is illustrated in Table 3, since $F=.038$, $P=.847>.05$, it was displayed that there was not a significant interaction between the independent variable and intervening variable (groups and pretest grammar scores). So, the presumptions of homogeneity of regression slopes were met. Also, to see whether there was a significant difference among the error variances of the participants' post-test grammar scores, the researcher used Levene's test of homogeneity of variances. Table 4 indicates the results.

Table 4.

Levene's Test of Homogeneity

F	df1	df2	Sig.
5.285	1	38	.127

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

As Table 4 identifies, there was no statistically significant difference among the error variances of the participants' immediate post-test grammar scores, so the presumption of homogeneity of variances was met since $F(1,38) = 5.285$, $p = .127 > 0.05$.

After the prerequisite assumptions were met, ANCOVA was used to check whether there was a significant difference among the participants' post-test grammar scores between the control and experimental groups. Table 5 illustrates the results of this One-way ANCOVA test.

Table5.

One-Way ANCOVA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	14.191 ^a	2	7.095	1.484	.020	.074
Intercept	105.793	1	105.793	22.126	.000	.374
Pretest Grammar Scores	2.091	1	2.091	.437	.513	.124
Groups	4.544	1	4.544	.950	.000	.225
Error	176.909	37	4.781			
Total	12232.000	40				
Corrected Total	191.100	39				

a. R Squared = .203 (Adjusted R Squared = .160)

Table 5 indicates that, there was a statistically significant difference among the experimental and control groups in the post-test grammar scores, $F(1, 37) = .950$, $p = .000 < .05$. Since pre-test scores was considered as the covariate, this

indicates the FTC had a significant impact on the participants' immediate development of grammar knowledge scores and the answer to the first research question was affirmative. The effect size was a small one based on Cohen's (1988) guidelines ($ES = .225$).

Results of the Second Research Question

The second research question dealt with the significant effect of FTC on Iranian intermediate EFL learners' retention of grammar knowledge. It is necessary to see whether the assumption of homogeneity of regression slopes was met or not. To provide this aim, the researcher used a test of between-subjects effects. Table 6 indicates the results of this test.

Table 6.

Homogeneity

Dependent Variable: Delayed Post-test Grammar Scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	47.376 ^a	3	15.792	11.597	.000
Intercept	218.390	1	218.390	160.372	.000
Groups	1.238	1	1.238	.909	.347
Posttest Grammar Scores	1.280	1	1.280	.940	.339
Groups * Posttest Grammar Scores	3.256	1	3.256	2.391	.131
Error	49.024	36	1.362		
Total	18074.000	40			
Corrected Total	96.400	39			

a. R Squared = .491 (Adjusted R Squared = .449)

The $F = 2.391$, $p = .131 > .05$, in Table 6, showed that there were not any significant differences between the independent variable and the intervening variable (experimental and control groups and immediate post-test scores). So, the assumption of homogeneity of regression slopes was met. Also, to check whether there was any significant difference among the variances of the participants' delayed post-test grammar scores, the researcher employed Levene's Test of Homogeneity of Variances. Table 7 demonstrates the results.

Table 7.

Levene's Test of Homogeneity

F	df1	df2	Sig.
.976	1	38	.406

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Table 7 illustrates that there was no statistically significant difference among the variances of the participants' delayed post-test grammar scores, $F(1,38) = .976$, $p = .406 > .05$. In other words, the assumption of homogeneity of error variances was met. Moreover, to check whether there was a significant difference between the participants' delayed post-test grammar scores in the control and experimental groups, the researcher used One-way ANCOVA. Table 8 indicates the results of this One-Way ANCOVA test.

Table 8.

One-way ANCOVA

Dependent Variable: delayed posttest

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	37.921 ^a	2	18.961	4.713	.015	.203
Intercept	179.916	1	179.916	44.721	.000	.547
Post-test	3.696	1	3.696	.919	.344	.024
Groups	37.219	1	37.219	9.251	.004	.200
Error	148.854	37	4.023			
Total	17285.000	40				
Corrected Total	186.775	39				

a. R Squared = .203 (Adjusted R Squared = .160)

The analysis of covariance (ANCOVA) yielded statistically significant effects for the dependent variable "delayed posttest". The group variable had a substantial impact on the delayed posttest scores ($F(1, 37) = 9.251$, $p = .004$, partial eta squared = .200), showing a notable dissimilarity in the delayed posttest scores amidst the groups. So, considering the immediate post-test as a covariate, it was verified that FTC had a notable influence on the delayed posttest scores. In other words, the answer to the second research question was affirmative. It was revealed that the effect size was small based on Cohen's (1988) guideline ($ES = .200$).

Below are the results of the two modified questionnaires. Four standards were used to evaluate students' overall perceptions of FTC (Figure 3).



Figure 3. Iranian Intermediate Participants' Satisfaction Level for First Standard

Figure 3: Standard 1, which is associated with the question “How engaging is FTC?” measures students' satisfaction level with the technology used in the classroom, clarity of the content presented in the classroom through using FTC strategies, and the aid that technology could provide in successful learning. The outcomes of this standard were predominantly favorable. 50% of surveyed students highly endorse this criterion, while an additional 30% of questioned students also agree. Only 5% responded that they disagreed or strongly disagreed. So, the median score supports a strong agreement with the standard. In following, researchers examine learners' level of perception toward opportunities that FTC provided (Figure 4).

پژوهشگاه علوم انسانی و مطالعات فرهنگی
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Figure 4. Iranian Intermediate Participants' Satisfaction level for Second Standard

Figure 4: Standard 2, which is about the communication opportunities that FTC provides, the importance of online platforms in learning, the high level of freedom that pupils have while learning, and whether they recommend FTC to their counterparts. Again, the results were very one-sided, with only 10% of students disagreeing with this standard and no students strongly disagreeing with the statement. 80% of the students expressed agreement or strong agreement with this standard. In other words, it can be claimed that most of the students are satisfied with this standard, too. Learners' motivation level about learning grammar through using FTC strategies are shown in Figure 5.

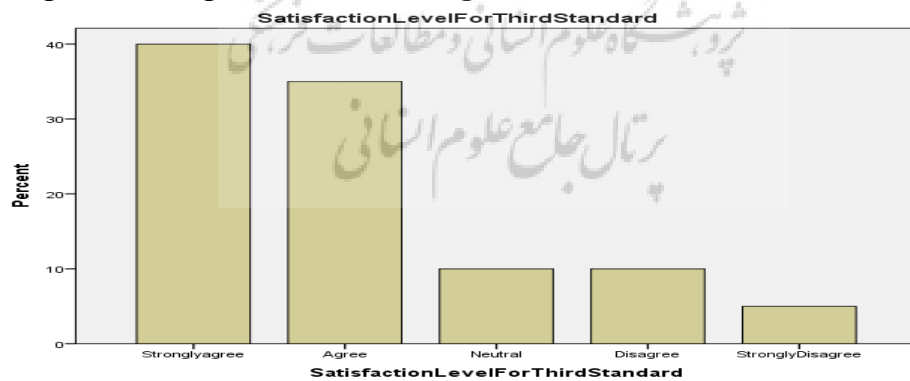


Figure 5. Iranian Intermediate Participants' Satisfaction Level for Third Standard

Figure 5: Standard 3, which is in the field of learner's motivation level about learning grammar through using FTC strategies, whether they agree with the improvement of their language ability and technology literacy after this kind of course and the high amount of advancement in their critical thinking level they felt after the course. While 5% of students surveyed strongly disagreed and only 10% disagreed, 85% of students either agreed or strongly agreed with this standard, and just 10% said that it doesn't care if they attend the class by using FTC strategies or traditional strategies. Figure 6 indicates learners' satisfaction level about time aspects that FTC provided.

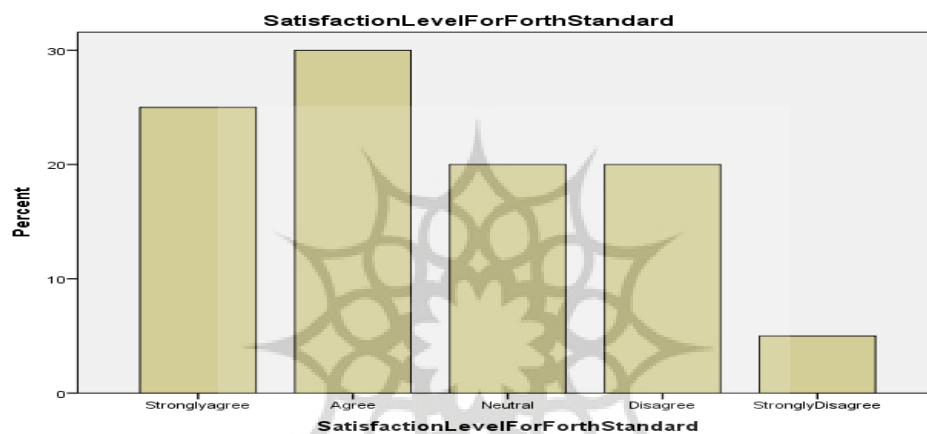


Figure 6. Iranian Intermediate Participants' Satisfaction Level for Fourth Standard

Figure 6: Standard 4, unlike the preceding standards, contains just 3 items that concern the time-saving opportunity that learners may have, the extra time they may have for practicing in the classroom, and their freedom about the flexibility of time for learning. As a result, about 55% of the students strongly agreed or agreed with this standard. On the other hand, 25% of students in eighth grade disagreed or strongly disagreed with this standard, and 20% have chosen the neutral option. In a nutshell, in comparison with the other standards mentioned, in this standard, most students are not convinced that FTC strategies can outperform traditional strategies.

Discussion

As previously mentioned, shifting from traditional language teaching methods to modern approaches has increased the emphasis on integrating technology into the teaching process (Blake, 2008; Warschauer & Healey, 1998). Additionally, it is

claimed that the implementation of technology into the classroom context is both beneficial and easy to use in comparison to traditional ways. Moreover, it can be assumed that through using technology teachers can create the atmosphere that it is not accessible in traditional classrooms, which can cause learners to have a good sense in the educational context and be satisfied with the pedagogical courses. Owing to the aforementioned advantages of technology, the demand for using different types of technology has accelerated. Hence, based on the growing interest in this field, the present study attempted to investigate Iranian EFL learners' retention of grammar knowledge and course satisfaction in flipped classrooms.

Three research questions were posed in this study. Based on the finding, it is revealed that applying flipped classroom strategies in the classroom context not only enhances participants' grammar knowledge but also assists them to retain this knowledge through time. In this way, the current study has demonstrated that flipped teaching can effectively contribute to the teaching of grammar by actively engaging learners in a communicative setting and emphasizing their prior experiences, and also make them satisfied with their course. Furthermore, the dominant ambiance in FTC had a beneficial effect on learners, encouraging them to demonstrate increased attention, participation, and engagement. The analysis of data in the first research question proved that pupils in the experimental group outperformed the pupils in the control group, which is due to the effectiveness of FTC strategies. By this result, the first null hypothesis is void and rejected. So, it can be assumed that technology can act as a booster in the learning process and cultivate distance learning, which is considered a matter of importance in this new world. In the second research question, the result again indicated that the experimental group had better performance in comparison with the control group. So, it can be deduced that learners can take the benefits of flipped classroom strategies to keep their grasped knowledge and have more retention of input rather than their counterparts in traditional classes. The null hypothesis of this question is rejected like the first hypothesis. In the third research question, the result derived from the data displayed that most of the learners were satisfied with the majority of factors contributing to course satisfaction. So, due to the importance of satisfaction in every course, it can be claimed that learners' satisfaction can even assist them in better learning and make them attend the classrooms regularly.

Due to the importance of this field in the EFL domain, FTC implementation has been the subject of extensive research in recent years. Several published works have emphasized the benefits of this methodology and have shown that it can assist pupils in their educational progress (Blair et al., 2015; Gonzalez-Gomez et al., 2016; Love et al., 2014). So, in this way, Roehl et al.

(2013) and Jensen et al. (2015) have conducted additional research that has uncovered some benefits of the FTC technique in the realm of foreign language acquisition and instruction. The FTC method's propensity to encourage active learning results in the frequently cited advantage of heightened student involvement. The research findings illustrate that the experimental group, which received flipped instruction in teaching conditional sentences, demonstrated a considerable improvement compared to the control group. This suggests that integrating technology into the learning environment was profitable in improving the pupils' grammar skills. These findings are corroborated by prior studies carried out by Ekmekci (2017), Blake (2008), and Warschauer & Healey (1998). Strayer (2012) and Berman (2015) have argued that incorporating online instruction into classroom activities can have a positive impact on language teaching. This integration helps direct learners' attention to tasks and provides feedback, which in turn improves their concentration and increases interaction in the language classroom. As a result, learners have more opportunities to participate in the classroom, leading to greater achievement in the learning procedure (Moranski & Kim, 2016; Bishop & Verleger, 2013). Furthermore, the current research findings indicate that the FTC serves as an intermediary between the pupils and the instructor, creating a stimulating educational space for the pupils. Ultimately, the study uncovered that learners experience high levels of satisfaction due to their ability to flexibly manage their time for learning, repeatedly listen to materials, have ample opportunities to discuss their difficulties with teachers during face-to-face classes, and benefit from user-friendly tools. Consequently, these factors contribute to increased motivation among learners.

Moreover, this study provides empirical evidence that aligns with the findings of Bergmann and Sams (2014) and Prunuske et al. (2012). These studies determined that the combination of face-to-face instruction and technology helps to create an interactive learning environment, enabling pupils to actively participate in the language acquisition and enhance their language proficiencies and subordinate proficiencies. In addition, they claimed that from an alternative perspective, the implementation of FTC education may enhance the learners' ability to retain grammatical knowledge, notably when contrasted with their counterparts in traditional groups. The results also indicated the effectiveness of FTC education in improving the learners' retention of grammar learning. This finding is consistent with Pence's (2016) research, which showed that pupils who received flipped instruction were able to sustain their language achievement over two years. The current study also found that the use of FTC helped learners internalize conditional sentences. This was achieved by promoting frequent

engagement in the classroom through cooperative completion of Chosen assignments, which was in line with the findings of Prunuske et al. (2012).

The third research question is associated with learners' satisfaction level toward FTC strategies. As it was mentioned, the results indicated that there is a high level of satisfaction among learners in the field of how engaging this course can be, the flexibility it provides for them for the time of studying, their motivation toward learning with these strategies, and the kind of communicative opportunity it provides for learners. Aligning with these results, Abeysekera and Dawson (2015) propose that the FTC method can fulfill students' requirements for competence, autonomy, and relatedness, hence increasing motivation (according to self-determination theory, see Ryan & Deci, 2000). Moreover, several empirical studies are in line with the findings of this research and can support it. As an instance, in a study conducted by Gilboy et al. (2015), a total of 142 students were evaluated to assess their engagement in FTC. The findings indicated that a substantial majority of the participants expressed a preference for the flipped classroom approach in comparison to traditional pedagogical strategies. This preference suggests that the FTC method may enhance student engagement and learning outcomes. Furthermore, Tune et al. (2013) conducted tests with 27 participants who were enrolled in either the Mammalian Physiology course (traditional course, n=14) or the Cardiovascular, Renal, and Respiratory Function in Health and Disease course. They suggested that FTC enhances students' motivation to study. They also asserted that the FTC approach has proven to be a highly positive, satisfying, and rewarding experience for both students and instructors in the two courses. Furthermore, Lo and Hew (2017) and Betihavas et al. (2016) discovered contrasting outcomes regarding pupils' opinions toward FTC. Generally, pupils showed a positive attitude towards the learning environment, but some research, like the one by Ferreri and O'Connor (2013), found the opposite. In their study, despite improved grades, students expressed a significantly higher number of negative comments about the flipped model.

Overall, based on the research questions and results of the research, it is found that technology can have a positive effect on the process of teaching and learning. In detail based on the finding of the research, it can be concluded that FTC classrooms not only have positive effect on Iranian EFL learners' grammar knowledge but also it assists them to improve their retention ability of grammar knowledge, and both teachers and students can take benefit of it, moreover it can be announced that, learners didn't report any notable issue by implementing WhatsApp within their instructional course as their main platform and they were pleased by using it. Besides that, it is assumed that there is a mutual relationship

between learners' satisfaction level from the instructional course and their achievement, so this fact causes the necessity of taking the learners' satisfaction level into account when we are talking about teaching of English. Thus, due to the mentioned reason, the researchers investigated the satisfaction level of learners from FTC courses, and a noticeable degree of satisfaction level is reported.

Based on this study's findings, the researcher can propose practical implications that can be beneficial for learners, teachers, stakeholders, and researchers in EFL situations. FTC techniques offer an opportunity for each participant to effectively manage and allocate their time, making them ideal for educational purposes. Furthermore, this study holds considerable importance in terms of instructing grammar in educational environments like language institutes. Educators can enhance their effectiveness in teaching grammar by becoming aware of and utilizing computer software and mobile apps for flipped instruction. To do this, teacher education programs can take proactive steps to increase teachers' awareness of flipped teaching. Qualitative research appears to be somewhat lacking in the literature when it comes to recognizing the valuable contributions of flipped teaching in ELT.

Conflict of interests: None

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