Evaluating the Impact of a Flipped, a Traditional, and an Online Course on Grammar Knowledge Development and Content Coverage: Flipped Class's Perception in Focus

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Article Info	**ABSTRACT**
Article Type: **Research Article** **Received:** **29/09/2021** **Accepted:** **01/08/2022**	The integration of technology into education has offered new opportunities for higher education students. Flipped class, as part of this opportunity, has inspired ample research recently. However, there is still controversy over its effectiveness. To shed more light on its potentials, the present study compares a flipped class with a traditional and an online course in terms of their effects on developing the grammar knowledge of Iranian pre-intermediate TEFL students. In addition, the perceptions of the flipped group toward their learning experience in four areas were examined: motivation, effectiveness, interaction, and satisfaction. Finally, the potential of the flipped class to assist the instructor in presenting more topics was evaluated. Fifty-nine freshmen in two different classes were selected. Then, each class was randomly assigned to an experimental (n=31) or a control group (n=28). The former received instruction in a flipped class, whereas the latter attended a traditional class. Afterward, their performance was compared with that of another group attending an online course (n= 25). The data were collected through a timed and an untimed grammaticality judgment test and a perception scale. In order to compare the content coverage in the three classes, the number of units taught in each class was divided by the total number of units assigned for the semester. The results showed that instruction in the flipped class was as effective as instruction in the traditional class, and both were more effective than the fully online course. Additionally, the flipped class seemed to be a satisfactory experience for the learners. The results also indicated that drawing on a flipped class can allow the instructor to present more content without compromising the quality of instruction and learning. The results can encourage language teachers, program developers, and educational policymakers to consider the flipped classroom as an acceptable alternative.

1. Introduction

Grammar is an essential and indispensable element of language learning and use (Burgess & Etherington, 2002). It is the mortar that glues the building blocks of language together and turns them into coherent phrases and sentences. Almost in all models of communicative competence proposed by different researchers (e.g., Canale & Swain, 1980; Littlewood, 2011), grammatical competence is a fundamental component of communicative competence; that is, we may not be able to communicate efficiently if we do not adhere to the rules of grammar and its essential principles. Throughout the history of language teaching, various methods, with their benefits and shortcomings, have been tried for teaching grammar.

In most Iranian universities, a significant portion of a grammar class is typically spent on lecturing and delivering the content to the learners. As a personal experience, the researchers have always encountered a shortage of time to cover the syllabus, deal with the exercises, examine students' assignments, and perform collaborative activities required to strengthen knowledge acquired recently. This can be a challenge in a 16-week semester, which, due to various problems and limitations, is partially implemented over an 11- or 12-week period and seems to be a serious problem afflicting many language teachers in the Iranian academic context. As a promising candidate, the flipped classroom, through taking the content delivery phase to students' homes and freeing up the class time for more collaborative activities can probably enable teachers to partially overcome this daunting challenge. The flipped class is an instructional strategy designed to enhance students' learning through flipping or reversing the common method of teaching.

A review of the literature shows that a myriad of studies in various fields has documented the benefits of the flipped class often by comparing it with the traditional method (e.g., Asaka et al., 2018) that nowadays, due to the universal outbreak of Coronavirus and lockdown, has inevitably been replaced by online learning almost all across the globe. Therefore, it seems that comparing the effectiveness of flipped classes with online and conventional lecture-based courses can put them in a broader comparative context and shed more light on their potentials and flaws in an Iranian higher education context, which generally appears to suffer from a dearth of empirical studies. In addition, the results of such comparative studies can help teachers and educational administrators make more informed choices among these methods in the post-pandemic era.

Furthermore, previous research indicates that the way learners make sense of the teaching-learning process and the context in which it evolves can affect the learning outcomes (e.g., Williams & Burden, 1997). Ginns and Ellis (2009) also argue that one of the main components of

teaching and learning is how students perceive their own experiences. Therefore, teachers need to become aware of their students' perceptions so that they can create "the type of environment his or her learners would find most conducive for learning a language" (Williams & Burden, 1997, p.202). Similarly, Nunan (1989) points out that any curriculum intended to be student-centered must take students' needs and perceptions of the learning process into account.

Accordingly, the present study sought to compare the effects of a flipped class, a fully online course, and a traditional class on the grammar knowledge of Iranian higher education students. Moreover, the perceptions of the flipped group toward their learning experience in four areas were examined: motivation, effectiveness, interaction, and satisfaction. The flipped class potential to assist the instructor in covering topics included in the course syllabus was also evaluated. More precisely, this study was conducted to address the following research questions:

1. Which of the three modes of instruction (i.e., online, traditional, or flipped) is more effective in improving the Iranian EFL learners' grammar knowledge?

2. How do Iranian EFL learners perceive the flipped classroom?

3. To what extent does the flipped class help the instructor cover more grammar topics during a semester?

2. Literature Review

2.1. Flipped Classroom

Drawing on modern facilities, technology-based language courses are making their way into the field of language teaching. Flipped or inverted classroom, as a form of blended learning, is one of the technology-based teaching methods that is increasingly being investigated in various fields. Bergmann and Sams (2012), as developers of flipped class approach, simply define it as "that which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class" (p.13). Thus, it "flips" the conventional way of teaching by providing the learners with instructional videos, PowerPoint slides, podcasts, and webpages to be studied outside the classroom and moving what is called homework into the classroom in which learners participate in various collaborative activities, problem-solving tasks, language games (Roehling,2018), and activities based on the higher-level categories of the Bloom's Taxonomy, whereas the teacher "instead of being the 'sage on the stage,' functions as a 'guide on the side,' facilitating learning in less directive ways" (King, 1993, p.30).

Previous studies suggest that flipped instruction has been employed by numerous educators and researchers in different fields such as medicine, technology, mathematics, engineering, and science (e.g., Clark, 2015; Mason et al., 2013). It has also been implemented recently in language teaching as well as teacher education fields (e.g., Lee & Wallace, 2018). In addition, language teachers have capitalized on it to improve students' language skills (e.g., Teng, 2018; Kang, 2015). The results of research and numerous meta-analyses indicate that the use of flipped classes in various fields has often resulted in improved academic performance, increased engagement, positive students' perception, autonomy, and enhanced motivation (Bulut & Kocoglu, 2020; Chen Hsieh et al., 2017; Clark, 2015; Vitta & Al-Hoorie, 2020).

2.2. Modes of Delivery

A thorough search of the relevant literature yielded only a few studies that have compared flipped, online, and traditional language learning courses concurrently. However, pairwise comparisons, especially between flipped and traditional courses, abound. To the best of the authors' knowledge, only one study in the field of language teaching has compared these three delivery modes of instruction simultaneously. Khodabandeh and Tahririan (2020) studied the effect of reading English newspaper articles on a group of Iranian EFL students' grammar knowledge in flipped, blended, and traditional classes. The blended group received both online and traditional instruction, whereas students in the flipped group received only online instruction, and the third group attended a traditional lecture-based class. Their findings showed that both flipped and blended groups outperformed the traditional group, but there was no significant difference between the flipped and the blended group on the posttest. In another study, Bezzazi (2019) compared the outcome of flipped instruction in an EFL grammar course with that of a traditional grammar class. A number of English tenses, passive voice, and conditionals were taught in both classes over a 10-week period. The results indicated that flipped instruction seemed to be more effective than the traditional class in improving the participants' grammar knowledge.

There are numerous other studies, the results of which often indicate the superiority of the flipped class in terms of language development (e.g., Bulut & Kocoglu, 2020; Kang, 2015; Noroozi et al., 2020). However, there exist comparative studies that have reported results in favor of the traditional method (e.g., Azizi, 2020; Fischer et al., 2020; Liu et al., 2019). Azizi (2020), for example, compared the effects of an online and a traditional EAP course on students' vocabulary, grammar, and reading comprehension knowledge improvement and reported that the only significant difference was found between the grammar scores, with the traditional group performing better than their counterparts in the online group.

The results of another set of studies suggest that there is no significant difference between these rather new pedagogical approaches and the traditional method of language teaching in terms of developing the learners' L2 (Asaka et al., 2018; Shotaro et al., 2018). For example, Shotaro et al. (2018) designed a study in which several English tenses were taught to two groups of students divided into a flipped and a traditional control group. Their findings revealed that the two groups were not significantly different regarding their grammar knowledge.

Furthermore, several other studies have been carried out in a broader context, generally comparing the outcome of a great number of online, blended, and traditional courses. For example, in a meta-analysis, Shachar and Neumann (2010) investigated the academic performance of over 20,000 students enrolled in distance education (online and blended) courses, and compared it with those who had attended traditional face-to-face classes within the 1990-2009 period, and reported that in 70% of the studies distance education students performed better than their counterparts in traditional classes. Therefore, it seems that the results of studies conducted in this area are diverse and sometimes contradictory.

2.3. Students' Perceptions

A large number of earlier studies in higher education contexts have examined students' perceptions of the flipped class they had experienced. The general theme that emerged indicates they are satisfied with the flipped class and have a positive attitude towards it (e.g., Fauzan & Ngabut, 2018; Lee & Wallace, 2018; O'Flaherty & Phillips, 2015; Wang et al., 2018; Clark, 2015). Some studies have dealt with it at greater length, focusing on sub-scales such as students' perceived motivation, course effectiveness, engagement, interaction, and satisfaction (e.g., Chen Hsieh et al., 2017; Jafarigohar et al., 2019; Vaezi et al., 2019). Jafarigohar et al. (2019), for example, examined the effect of the flipped classroom on improving EFL learners' speaking and listening abilities and the learners' perception of this new pedagogical approach. Their results suggested that most learners were satisfied with instruction in the flipped class that had improved their speaking and listening skills.

However, there are always some students who, for various reasons, are not satisfied with a teaching method or a class. A flipped class is no exception. For example, Schultz et al. (2014) found that several students favored the traditional way of teaching over flipped instruction. They mostly complained about their failure to ask the teacher questions while watching videos and not getting used to the new way of teaching. Chen (2016) also noted that some students initially resisted the flipped classroom because they

had studied in a traditional teacher-centered educational system and were not accustomed to learning independently at home.

Accordingly, it seems that very few studies have examined and compared these three classes simultaneously. Furthermore, scales employed in most perception studies often include a list of haphazard questions, lacking any obvious organization, whereas, in the present study, the scale items are subsumed under four specific subcategories. Moreover, no previous research has investigated the flipped class potential to present more topics effectively during a semester.

3. Method

3.1. Participants

Three intact classes, including 84 first-year university students studying TEFL at two branches of Azad University in Iran, were selected on the basis of the convenience sampling method. All were Iranian students with Persian as their native language. Out of the 84 students participating in the study, 58 were female, and 26 were male undergraduates whose ages ranged from 19 to 36 ($M = 27.5$). Fifty-nine students who attended either the flipped class (n = 31) or the traditional class (n = 28) had to take a compulsory grammar course during the second semester of the academic year 2019-2020, and the online group (n = 25) took the same course during the first semester of the academic year 2020-2021. In order to ensure that they had not yet acquired the target structures, only freshmen at the pre-intermediate level were selected. All the students completed a consent form before joining the study.

3.2. Materials and Instruments

In order to collect data required for the purposes of the study, the following tests, scale and materials were employed.

3.2.1. Oxford Quick Placement Test (OQPT)

In order to determine the students' language proficiency level and help the researchers select the participants, the OQPT as a placement test that enjoys an acceptable level of reliability and validity was used in the present study. This pen-and-paper version of the electronic Oxford Placement Test for learners of English has been published by Oxford University Press and used extensively all across the world. It tests their knowledge of grammar and vocabulary as well as the use of English. The OQPT consists of 40 items, and its reliability coefficient (Cronbach's Alpha) in the present study was $\alpha = 0.79$.

3.3.2. Grammaticality Judgment Tests

In an attempt to measure the students' grammar knowledge as accurately as possible, the researchers employed an untimed, and a timed grammaticality

judgment test (see Appendices A & B) used to measure their implicit and explicit grammar knowledge, respectively. However, both included only recognition-type test items. Two versions of each test were developed to be used as pretests and posttests. The correlations between the traditional group's scores on the pretest and posttests were estimated to determine the test-retest reliability of the TGJT and UGJT. The calculated coefficients for each test were as follows: $r_{TGJT} = 0.91$ and $r_{UGJT} = 0.77$.

The Timed Grammaticality Judgment Test (TGJT) was used to measure the implicit grammar knowledge of the students. It included 25 sentences presented through a self-paced PowerPoint slide show in the classroom. Thirteen sentences were ungrammatical and 12 were grammatical. The amount of time allotted for the sentences varied between 6 and 9 seconds, depending on their length. Each correct item received 1 point and an incorrect or unanswered item was given a zero.

The Untimed Grammaticality Judgment Test (UGJT) designed to quantify the students' explicit grammar knowledge was identical to the TGJT regarding grammar points examined and the number of items. Of the 25 items, 14 were ungrammatical and 11 were grammatical. The test-takers were given an answer sheet including the sentences and instructions and were asked to judge their grammaticality without any time limits. Their responses were then dichotomously scored as either correct (1 point) or incorrect (0 points).

3.2.4. Perception Scale

The perception scale was developed by the researchers based on an extensive review of the related literature and modified based on the particularities of the flipped class. First, 29 items out of a pool of 49 were selected on the basis of experts, students, and colleagues' judgments. Next, the scale content validity was established using the Content Validity Index (CVI) calculated for each individual item (I-CVI) and the overall scale (S-CVI). In order to compute the I-CVI, a "content evaluation panel" composed of 6 experts in applied linguistics, psychology, language teaching, and language testing were asked to evaluate how well each scale item corresponded to or represented the underlying construct using a 4-point ordinal scale (*not relevant=1, somewhat relevant=2, quite relevant=3, highly relevant=4*). The I-CVI was computed for each item as the number of experts who chose either 3 (quite relevant) or 4 (highly relevant) divided by the total number of experts. Moreover, to calculate the S-CVI, the average of each I-CVI score for all the items on the scale was calculated.

Regarding item acceptability criteria, Lynn (1986) recommended that if there are six or more experts, I-CVIs should not be lower than 0.78. In

addition, 0.80 is commonly considered as the lowest boundary of acceptability for an S-CVI (e.g., Lynn, 1986; Polit et al., 2007). Findings showed that out of the 29 items submitted to the experts, 24 items had values equal to or more than 0.83 and the S-CVI/Ave was 0.91. To ensure that all students understood the statements on the scale, they were translated into Persian by a professional translator and then translated back into English by another qualified translator who was blinded to the original scale. Finally, it was pretested on a sample of 18 university students who had already experienced the flipped classroom, and their demographic and educational profiles were similar to the target groups. The participants were required to indicate their degree of agreement or disagreement with the items on a 5-point Likert scale. Cronbach's alpha (α) estimated for the whole scale was 0.89. In addition, the internal consistency of each subscale was measured (Table1).

Table 1

Reliability Statistics

Subscales	No of Items	Reliability
Perceived Motivation	6	0.90
Perceived Effectiveness	6	0.89
Perceived Interaction	6	0.81
Perceived Satisfaction	6	0.84
Scale	24	0.89

3.2.5. Textbook

The grammar book used in all three classes was *English Grammar in Use* (4th edition), designed for intermediate-level learners. Ninety-two units of the book were assigned to be taught for the course.

3.3. Data Collection Procedure

First, 59 students at the pre-intermediate level were selected based on the QOPT results. Then, the two classes were randomly assigned into a traditional and a flipped group. The same procedure was followed for selecting students in the third class (the online course), and eventually 25 students were selected. Two days before beginning the instruction, all groups took the two pretests. Subsequently, all received instruction on the same grammar topics but in different ways for 11 weeks. All students had to attend the classes twice a week, and every session lasted about 105 minutes, with a 10-minute break in between. The instructor, language of instruction (a mixture of English and Persian), textbook, and number of sessions (n= 22) were the same for all groups. A detailed description of the processes and activities in the three classes follows. All the groups took two posttests a week after the last treatment session. The order of test administration on the

pretests and posttests was altered to mitigate the order effect. The perception scale was completed by the flipped group at the end of the last session to collect data on the students' perception of the flipped classroom.

3.3.1. Flipped Class

Out-of-Class Phase. Three or two days prior to each session, instructional videos and other related materials were sent to the WhatsApp group (Figure 1) created for the purposes of the study. Even though various platforms (e.g., Edmodo, Moodle, Prezi, Socrative, Kahoot) have recently been used for presenting the materials, WhatsApp was selected primarily for the following reasons: It is free, widely available, and user-friendly. In addition, it allows real-time multimedia communication among users by combining various content forms such as texts, images, voices, and videos. Then, a set of questions, mainly fill–in–the–blank and multiple-choice items, on the new grammar topics were sent to the group. The students were asked to answer them and send them back.

In-Class Phase. Each class usually started with a summary of the points previously presented by the videos to identify and tackle the students' possible problems. Through a systematic review of language learning websites, researchers found some suitable instructional videos on the selected grammar topics. Quality, duration, clarity, pacing, language, and tone were the major selection criteria. Sometimes, a pop quiz was administered on the newly taught grammar topics. Then, they would do the textbook exercises in pairs and read them out. After that, using the new grammar points and structures, they would write sentences that were either approved or corrected by the instructor or their peers. Subsequently, in groups of four, they concentrated on writing a paragraph or simple story based on a series of prompts selected in such a way that the target structures could be elicited. Each group would then share their writings with the class and receive feedback from their peers and the instructor, who often wrote their ungrammatical sentences on the whiteboard and tried to correct them based on their suggestions. It should also be noted that grammar games were used as a substitute for the paragraph-writing task every other session. Due to measurement issues and practical problems, this study only focused on conditionals, passive voice, and articles as target grammar items.

Figure 1

WhatsApp Group Used Primarily During the Out-of-Class Phase

3.3.2. Traditional Class

Each class normally began with a brief review of the main points already presented and continued with completing and examining the textbook exercises. Afterward, the instructor presented a lecture that frequently took up almost the whole class time and included new grammar points. Then, he asked the students to write several sentences using the target items and read them aloud to the class that usually offered some feedback. Finally, a number of the textbook exercises were completed and, owing to lack of time, the rest were assigned as homework.

3.3.3. Online Class

This class (Figure 2) was held online using a Learning Management System (LMS) called VADANA designed to be used as the major medium of instruction during the Coronavirus pandemic and to help Azad universities manage and facilitate online education. It also started with a review of the points and topics taught during the previous session. Afterward, their homework was examined and the answers were provided by the students and the instructor, who then presented the new lesson in the form of a long lecture usually followed by a sentence-writing task. The sentences sent via an embedded chatroom were examined and corrected if necessary by the instructor and/or the students. At the end of the class, the textbook exercises were assigned as homework that had to be submitted to the instructor via WhatsApp before the next session would commence.

Figure 2

The Online Grammar Class
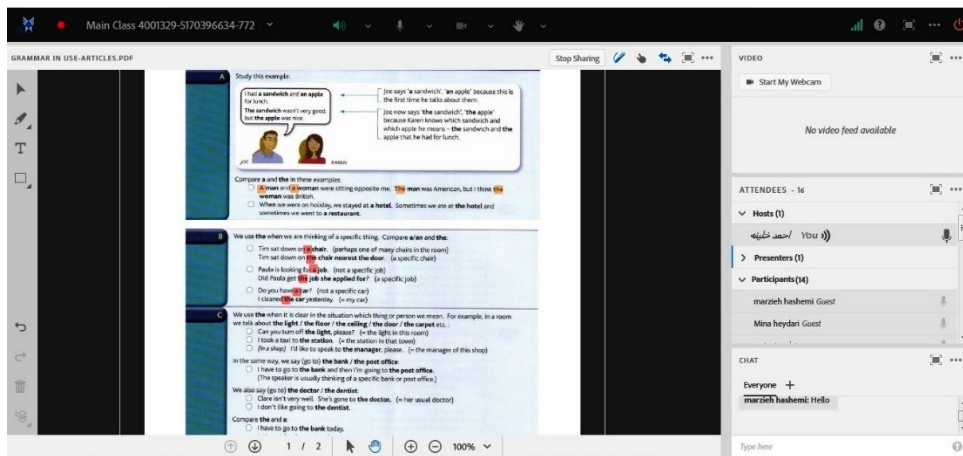
3.4. Data Analysis

First, in order to show the three groups were homogeneous regarding their grammar knowledge before treatment, a one-way ANOVA was run to compare their performance. The total score of each student on the pretest and the posttest was determined based on the sum of their two scores on the TGJT and UGJT. Then, to answer the first research question, another one-way ANOVA and *post hoc* comparisons were also conducted on the posttest scores. Afterward, descriptive statistics were provided to answer the second research question. Finally, in order to compare the content covered in the three classes, the number of units taught in each class was divided by the total number of units assigned for the semester and the result was expressed as a percentage. *SPSS Statistics 23 and GPower 3.1* were employed to conduct the analyses.

4. Results and Discussion

4.1. Results

A one-way between-subjects ANOVA on pretest scores indicated no statistically significant difference at the $p < .05$ level among the three groups, $F(2, 81) = .51$, $p = .59$. This suggests that all were homogenous in respect of their grammar knowledge prior to the treatment. Next, to answer the first research question, descriptive statistics for learners' pretest and posttest scores were provided (Table 2).

Table 2

Descriptive Statistics for Learners' Pretest and Posttest Scores

Course	n	Pretest		Posttest	
		Mean	SD	Mean	SD
Traditional	28	22.85	9.56	36.07	8.80
Flipped	31	20.61	7.95	37.45	7.41
Online	25	21.40	7.95	30.24	7.82

Afterward, an independent one-way ANOVA was conducted. A statistically significant difference was observed between the groups, F (2, 81) = 6.08, p < .05. *Post hoc* comparisons using the Tukey test showed both traditional ($M = 36.07$, $SD = 8.80$) and flipped ($M = 37.45$, $SD = 7.41$) groups significantly outperformed the online group ($M = 30.24$, $SD = 7.82$) at the p < .05 level and by a moderate effect size of $d = 0.36$. However, the difference between the traditional and flipped groups' mean scores was not statistically significant ($p = .78$).

In order to provide a detailed answer to the second research question, descriptive statistics for each item of the scale were provided (see Appendix C). Then, the findings were organized and interpreted according to the categories on the scale. Furthermore, to facilitate analysis and interpretation, the *strongly disagree* and *disagree* categories were merged into one category coded *disagree* and *strongly agree* and *agree* categories were aggregated into another category labeled *agree*. The analysis of each category is detailed below.

Items 1, 6,10,15,17, and 22 were included in the scale to inquire into the students' perceived motivation in the flipped class. The results showed that the participants' scores for the six *Likert*-type items, which can have a value from 1 to 5, were all higher than 3, considered as the mid-point. In addition, the average mean score for all six items was 3.61, suggesting that the students' perception of their motivation for learning in the flipped class was higher than the midpoint. In addition, items 3, 7, 11, 13, 18, and 21 of the scale served to collect data on the respondents' perceived effectiveness of the flipped course. The average mean score was 3.74, indicating that the students' perception of the flipped class effectiveness was positive. Additionally, items 2, 5, 9, 14, 19, and 23, designed to assess the students' perception of interaction in the flipped class, primarily focused on their interaction with the instructor as well as other students, their involvement in class activities, and active learning. The average mean score ($M=3.49$) was the lowest among others. However, it was still higher than the midpoint, suggesting that the participants believed the flipped class had enhanced their interaction with their instructor and classmates. Furthermore, items 4, 8, 12, 16, 20, and 24 were added to elicit the students' perceived satisfaction with

instruction and learning in the flipped class. In this subscale, the average mean score was 3.52. It can, therefore, be concluded that the flipped group was generally satisfied with this new pedagogical approach.

Finally, it was found that of the 92 units of the textbook assigned for the semester, the instructor managed to teach 67 units in the flipped class, 56 units in the traditional class, and 61 units in the online course. In other words, the flipped class allowed 72% of the material to be taught, whereas in the traditional and online courses, 60% and 66% were presented, respectively.

4.2. Discussion

4.2.1. Research Question One

The current study found that instruction in the flipped class was as effective as instruction in the traditional class and both were more effective than the fully online course in improving students' grammar knowledge. Therefore, it can probably be concluded that using technology per se cannot guarantee learning. This speculation has been echoed by numerous studies (e.g., Clark, 2012), arguing that technology is merely a medium of instruction rather than a major determinant of students' achievement and success.

Despite the findings of a large number of previous studies in this area (e.g., Bezzazi, 2019; Bulut & Kocoglu, 2020; Khodabandeh & Tahririan, 2020; Lo & Hew, 2020; Vitta & Al-Hoorie, 2020), the present study indicated that the students' performance in the flipped and the traditional courses did not differ significantly. Khodabandeh and Tahririan (2020), for example, reported that students in both flipped and blended classes outperformed those in the traditional group. Another point that distinguishes the current study from their research is that their flipped class was conducted entirely online, but it seems that one of the major components of a typical flipped class is in-class activities during face-to-face sessions when, in a synergetic learning community, students can both acquire new knowledge or reinforce the previously-acquired knowledge in the pre-class activities through interaction with their peers and teachers and by applying, analyzing and synthesizing the information (McLaughlin et al., 2017). Similarly, Bergman and Sam (2012) state, "…the greatest benefit to any flipped classroom is not the videos. It's the in-class time that every teacher must evaluate and redesign" (p.47).

This finding, however, corroborates the results of several previous studies conducted in the field of language teaching (e.g., Asaka et al., 2018; Shotaro et al., 2018). There appear to be two likely explanations for this finding. First, the inconsistency found can possibly pertain to the different ways of implementing the flipped classroom model. Even though general theoretical definitions of the concept presented in the literature seem to be

roughly identical, it has been implemented differently in practice (McLaughlin, 2018). Thus, factors such as the instructional activities, length of time, instructor, and students' proficiency level that may cause variations within the flipped classes may lead to inconsistencies among the results of different studies. Second, various studies (e.g., Lee & Wallace, 2018) emphasize that flipped classroom takes time to reveal its potential. Consequently, it may not have a bearing on students' learning in a short period; particularly, it is fairly difficult for Iranian students to adapt to the flipped class, as a student-centered method, in only a few sessions or even a semester because all often attend traditional teacher-centered classes that are a norm rather than an exception in the Iranian K-12 education system. They probably need more time to adapt to this innovative way of teaching.

The findings also indicated that instruction in both flipped and traditional classes was more effective than instruction in the fully online course in improving the students' grammar knowledge. This is supported by several previous studies in the field (e.g., Azizi, 2020) as well as those that have compared a large number of different online university courses with traditional classes (e.g., Fischer et al., 2020). However, it is inconsistent with a number of studies that have shown online courses are more effective than or as effective as traditional face-to-face courses (e.g., Means et al., 2013).

The fact that the online course lagged behind the two other courses in the current study can possibly be attributed to several reasons. One of the most frequently suggested explanations emphasized in both sociocultural and interactionist theories of language learning is lack of interaction which can lead to students' frustration, discouragement, and failure (Park, 2008). Many researchers maintain that satisfactory learning outcomes require effective interaction (e.g., Long, 1981). The second likely reason can be their reduced level of commitment. It seemed that, in their first experience attending an online course, the students did not take it as seriously as their face-to-face classes, and apparently, they were not willing to invest enough energy and time. In fact, learning in an online course requires stronger commitment which possibly originates from students' motivation as well as self-regulation skills (Fischer et al., 2020) and can result in their more active engagement with the course that can, in turn, lead to positive learning outcomes (Bote-Lorenzo & Gomez-Sanchez, 2017). It appears that it would be more challenging to keep the students engaged and active in an online course than in a conventional face-to-face class. Some possible reasons for this challenge are students' adaptation problems, social isolation, insufficient support and feedback from teachers, technical problems, and the absence of face-to-face interaction (van Weele, 2020). Although educational centers have to resort to online courses in situations like the COVID-19 pandemic, flipped and traditional classes seem to be better alternatives under normal conditions.

However, online courses have their own merits and can be used as part of blended courses until the Information Technology (IT) infrastructure is provided and adequate training of students and teachers is fulfilled.

4.2.2. Research Question Two

The current study findings on each category of the scale are discussed below.

Perceived Motivation. Results showed that about %84 of the participants thought the flipped class had encouraged them to spend more time on the materials. However, when the content was incomprehensible and boring, less than half of them persevered. This can be one of the possible reasons why students in the flipped group failed to outperform their counterparts in the traditional group. Most students usually complain that grammar is dull and tedious in nature. Therefore, when they came across such content outside the classroom and did not understand it, they simply abandoned it. In addition, nearly 68% of them reported they willingly had watched the videos and studied other sources before attending the class. More research needs to be undertaken to investigate why about 30% did not do so. More than half of the respondents (58%) stated they were more motivated to learn English in the flipped class than in a traditional class. About 81% of them stated they were motivated to do the assignments and about 77 % were willing to put more effort into the flipped classes than the traditional courses. The average mean score for this subscale ($M = 3.61$) indicates that the flipped class had generated enough motivation to encourage their participation in the learning process.

This finding accords with what a number of other studies have reported regarding students' enhanced motivation in a flipped class (e.g., Sergis et al., 2018; Vaezi et al., 2019). As previous research has suggested, learner motivation is a crucial factor that affects their learning outcome (Ushida, 2005). One of the pillars of success in a flipped classroom is students' motivation to study new material on their own before attending face-to-face classes. The quality of content and activities presented in a class and students' interest in them, and how relevant they consider flipped instruction to the course objectives are among the most important factors influencing learners' motivation (Zimmerman, 2008).

Perceived Effectiveness. The results of the present investigation showed that 74% of the respondents agreed that the flipped class had added to their grammar knowledge, but 12.90 % disagreed. In addition, a significant majority (97%) thought the availability of class materials had helped them learn better. What is interesting is that nobody disagreed with this statement. Thus, even if teachers are not able to implement flipped classes fully, they

can add "the availability of class content" feature to their regular classes to improve students' learning or at least their perceived effectiveness of the course. Furthermore, nearly two-thirds (65 %) of the students stated they had learned better in a flipped class than in a traditional class. Most students (81%) also felt the flipped class had helped them understand the course content better and learn more effectively. Finally, more than three-fourths (77%) of them commented that the flipped class had improved their English grammar. The average mean score of the students was 3.74, suggesting that most of them perceived the course as fairly effective.

Numerous studies have highlighted the role perceived course effectiveness plays in the success of blended courses (e.g., Ginns & Ellis, 2007; Owston et al., 2013). What this study found supports what Pavanelli (2018) reported in this regard. In that study, the participants believed that the flipped class had assisted them in developing their writing skills and the study results supported their perception. Previous studies have mentioned different factors that may affect the perceived effectiveness of a blended course. Students and teachers' competence in dealing with blended courses, students' engagement in the flipped class activities, the perceived advantages of blended courses, students' prior experience with such courses, and online collaboration are but a few factors affecting students' satisfaction with and perceived effectiveness of such courses (Meltem, 2015; Zhu, 2017).

Perceived Interaction. The average mean score of this subscale ($M =$ 3.49) suggests that the students thought the flipped class had heightened their interaction with their instructor and classmates. About two-thirds (64.50%) of the students reported the flipped class had encouraged them to participate in the online group discussions and have more online interaction with peers and the instructor. About 42% also thought they had asked more questions, and 74% stated they had experienced active learning in the flipped class. Finally, only 48.38% felt they had more interaction in this class. Among all others, students had the lowest mean score on this subscale. Nevertheless, it suggests that most respondents felt they had more interaction in this class as compared to traditional classes they had previously experienced.

This finding is in agreement with Vaughan's (2007) and Tully's (2014) research results, suggesting that flipped classroom approach can facilitate and enhance student-teacher interaction. In addition, the result corroborates Strohmyer's (2016) study that reported students who had participated in the flipped class reported increased engagement and interaction in class.

Moore (1989) also categorizes interaction in an educational context into three different types: student-student interaction, student-teacher interaction, and student-content interaction. Many researchers emphasize that student-student interaction increases students' satisfaction with the instruction and

enhances their learning (Palloff & Pratt, 1999). Likewise, interaction among students and teachers fosters students' positive attitudes to learning and enhances their learning motivation (Moore & Kearsley, 2005). Students' interaction with the content occurs through engaging in learning activities such as watching videos, reading, completing course assignments, and exploring resources. The importance of students' engagement in learning activities to improve learning outcomes and satisfaction has also been emphasized by numerous scholars and researchers (e.g., Hsieh, 2014). Greater importance should be attached to the role of engagement in a flipped class that highly relies on students' engagement in out-of-class preparatory activities before attending the face-to-face classes.

   Perceived Satisfaction. Previous research indicates that learner satisfaction with the learning environment can have an effect on student success (e.g., Wu et al., 2010). In this study, more than 61% of the students pointed out that given the choice, they would definitely prefer flipped instruction to learn English and would recommend it to a friend. In addition, a significant majority (81%) reported they were happy with their experience in the flipped class. Interestingly, although a significant number of students indicated that they were content with the flipped class, about 55% said they preferred listening to teachers' presentations in a physical classroom to watching videos outside. It seems students who have studied in a teacher-centered educational system for years still prefer live teachers' lectures. *Old habits die hard!* Finally, more than 77% of the participants stated they had enjoyed the experience of using a flipped class. The average mean score of this subscale ($M = 3.52$) suggests that most students were satisfied with this new pedagogical approach. What this study found regarding student satisfaction with the flipped class is corroborated by a large number of studies (e.g., Clark, 2015; Hung, 2015; O'Flaherty & Phillips, 2015). In contrast, various studies have revealed that students are less satisfied with flipped classes than with traditional courses (e.g., van Alten et al., 2019).

4.2.3. Research Question Three

   The results also showed that the flipped class helped the instructor cover more units of the textbook. Fortunately, it was not at the cost of learning quality because the flipped course helped the students outperform their counterparts in the online class and even the traditional class on the posttest (the difference was not statistically significant, though). This finding is in agreement with Mason et al.'s (2013) research that indicated the instructor managed to present more topics in a flipped class. Similarly, Yelamarthi and Drake (2015) reported that the flipped classroom approach allowed the content to be taught more effectively and in less time. Bland (2006) also indicated that the flipped model freed up the class time and

enabled the students to progress faster through the course content. In contrast, Turner and Webster (2017) reported that approximately the same amount of material was taught in the flipped class compared to two other non-flipped courses. One likely reason for covering more units in the flipped course is replacing lengthy in-class lectures with videos. The instructor regularly sent instructional videos to the students, who had to make time to watch them over and over outside the classroom and come to class with an acceptable level of preparedness. Thus, he was spared the necessity of having to give lengthy in-class lectures on new topics, and more materials were presented during the course.

5. Conclusion and Implications

The present study was designed to compare a traditional class, a fully online course, and a flipped class in terms of their effects on developing the grammar knowledge of Iranian TEFL freshmen. In addition, the flipped group's perceptions toward their learning experience in four areas were examined: motivation, effectiveness, interaction, and satisfaction. Furthermore, the flipped class potentiality to assist the instructor in covering topics included in the course syllabus was evaluated. The flipped class, which was shown in this study to be as effective as the traditional course and both were more effective than the online class in improving the learners' grammar knowledge, seems to be a satisfactory experience for the learners in terms of enhancing their learning motivation, perceived effectiveness of the course, interaction in an educational environment that transcends the brick-and-mortar classroom, and their overall satisfaction with the class. Furthermore, the results of the present investigation suggest that online grammar courses in an Iranian context cannot currently meet expectations and lead to desired outcomes. The results also indicate that drawing on a flipped class can save time and allow the instructors to cover more content without scarifying the quality of instruction.

The results can encourage language teachers, program developers, and educational policymakers to consider the flipped class as an alternative that utilizes active learning techniques and seems to have a favorable effect on the learners' attitude. They can also give them insight into the potential of technology-enhanced instruction in foreign language teaching and learning. Researchers and teachers in the twenty-first century need to acquire an in-depth understanding of the potential impact of technology on education. Although teachers should not be allured by the glitter and glamour of technology-based methods, such courses can be considered a prelude to the student-centered instruction in the Iranian higher-education system that has a long way to go to make it the norm.

However, there are a number of caveats regarding the limitations of the study. First, flipped classroom model, as a modern pedagogical *type*, has different *tokens* in the literature. Adding one or more activities to or removing them from a flipped class syllabus may have differential effects on the outcomes. Differences in the ways flipped classes have been implemented are a potential source of variation in research results. Second, a review of the literature indicates that instruction may affect each L2 form differently. The reported results in this study are based on teaching conditionals, passive voice, and articles. Different results might have been obtained if other structures and items had been focused on. Third, only higher education students at the intermediate level of English proficiency were selected. Replicating this study with secondary students or students at higher or lower proficiency levels may lead to different results. Finally, the students' responses to the scale items were subjective and inherently susceptible to recall bias.

Acknowledgments

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Appendix A

A Sample of the Timed Grammaticality Judgement Test
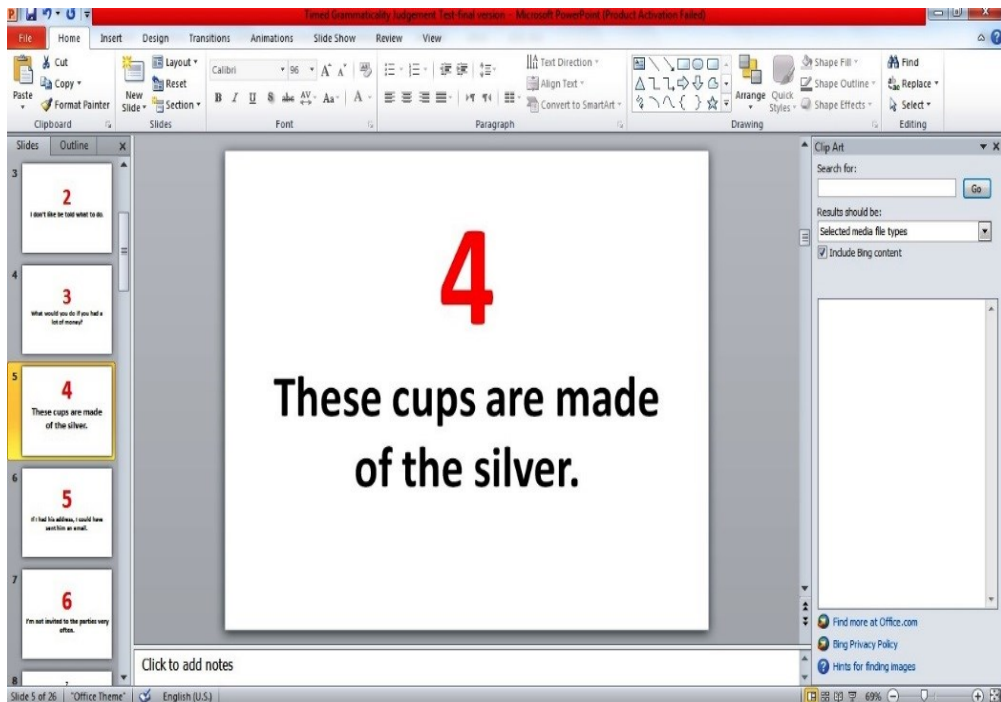
In the Name of the Highest

Timed Grammaticality Judgement Test

Name: Student No.

----

1. I read amazing story yesterday.

2. I don't like be told what to do.

3. What would you do if you had a lot of money?

4. These cups are made of the silver.

5. If I had his address, I could have sent him an email.

6. I'm not invited to the parties very often.

7. How is the word" curiosity" pronounce?

8. His brother is in prison for robbery.

9. I often listen to the radio.

10. If I was you, I wouldn't buy that apartment.

11. The boy is said to run 80 kilometers a day.

12. If we went by the subway, it would be cheaper.

13. The Great Wall of China is the longest wall in world.

14. Can you play piano?

15. If they left now, they will be in London by lunchtime.

16. Portuguese is spoken in Brazil.

17. You will be give plenty of time to decide.

18. You wouldn't have failed the exam if you'd studied a bit harder.

19. We had lunch in a luxurious restaurant.

20. Can you call me if you find my keys at your house?

21. Alexander Graham Bell was invented the telephone.

22.There are millions of stars in space

23.A new building will be built next year.

24.Internet has changed the way we live.

25.If it had stopped raining, we have gone out.

Appendix B

A Sample of the Untimed Grammaticality Judgement Test

In the Name of the Highest

Untimed Grammaticality Judgement Test

Name: **Student No.**

Read the following sentences and decide whether they are grammatically right or wrong. Write R (Right) or W (Wrong) in front of them.

1. Do you need umbrella?

2. She doesn't like told what to do.

3. Would you mind if I use your tablet?

4. These things are made of the gold.

5. If I won a lot of money, I'll buy a new apartment.

6. This experience will never be forgotten by me.

7. A novel had written by her.

8. John had an accident yesterday. He was taken to hospital

9. We watched an interesting show on TV.

10. If you was in my position, what would you do?

11. A mystery is something than can't be explained.

12. If we went by bus, it would be cheaper.

13. What is longest river in the Asia?

14. Lion is my favorite animal.

15. If I had gone to the party last night, I will be tired now.

16. All flights were cancelled because of fog.

17. Alice supposed to call me last night, but she didn't.

18. If he had been looking where he was going, he wouldn't have fallen in the hole.

19. Did Tom get the job he applied for?

20. Do you wish you had studied math instead of language?

21. A new store is going to built next year.

22. I don't like going to the dentist.

23. Is this house cleaned every week?

24. He never wears hat.

25. If I had known you were in the hospital, I would gone to see you.

Appendix C

Descriptive Statistics for Each Item of the Perception Scale

Item	Participants' responses					*M*	*SD*
	Strongly agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly disagree f (%)		
1. I feel the structure and format of the flipped classroom motivated me to spend more time on learning the course content.	1(3.22)	25(80.64)	1(3.22)	2(6.45)	2(6.45)	3.68	0.90
2. I think the flipped classroom encouraged me to participate in the online group discussions of the class.	3(9.67)	17(54.83)	5(16.12)	6(19.35)	0(.00)	3.54	0.88
3. I feel the flipped classroom added to my grammar knowledge.	2(6.45)	21(67.74)	4(12.90)	2(6.45)	2 (6.45)	3.61	0.81
4. If I can choose a way to learn English, I will definitely use the flipped learning model.	2 (6.45)	17(54.83)	8(25.80)	4(12.90)	0(.00)	3.54	0.80
5. I feel the flipped classroom made me have more online interaction with peers and the instructor.	4(12.90)	16(51.61)	4(12.90)	7(22.58)	0(.00)	3.54	1.02
6. Even when materials were dull and uninteresting, I kept working until I understood them.	4(12.90)	11(35.48)	9(29.03)	7(22.58)	0(.00)	3.39	0.98
7. I feel The availability of class content helped me learn better.	11(35.48)	19(61.29)	1 (3.22)	0(.00)	0(.00)	4.35	0.48
8. I would recommend the flipped classroom to a friend.	3(9.67)	16(51.61)	10(32.25)	2(6.45)	0(.00)	3.64	0.75
9. I feel the amount of my interaction with the instructor and my classmates increased in the flipped classroom.	3 (9.67)	17(54.83)	6(19.35)	5(16.12)	0(.00)	3.58	0.70
10. I was eager to watch the videos and study other sources for this course prior to the class.	2(6.45)	19(61.29)	7(22.58)	2(6.45)	0(.00)	3.71	0.69
11. I think students learn better in a flipped classroom.	2(6.45)	18(58.06)	7(22.58)	2(6.45)	2(6.45)	3.52	0.96
12. I prefer the flipped classroom over the conventional classroom.	2(6.45)	17(54.83)	7(22.58)	4(12.90)	1(3.22)	3.55	0.88
13. I feel the flipped classroom helped me better understand the course content.	1(3.22)	24(77.41)	2(6.45)	2(6.45)	2(6.45)	3.65	0.91
14. I think I asked more questions in this class than others.	0(.00)	13(41.93)	11(35.48)	7(22.58)	0(.00)	3.29	0.73

15. I feel I was more motivated to learn English in the flipped classroom.	1(3.22)	17(54.83)	9(29.03)	4(12.90)	0 (.00)	3.48	0.76
16. I'm happy with my experience in the flipped classroom.	4(12.90)	21(67.74)	2(6.45)	4(12.90)	0 (.00)	3.74	0.81
17. I feel I was more motivated to do my assignments and homework in the flipped classroom.	1(3.22)	24(77.41)	4(12.90)	1(3.22)	1(3.22)	3.74	0.72
18. I feel I have improved my English grammar using the flipped classroom.	2(6.45)	22(70.96)	2(6.45)	3(9.67)	2(6.45)	3.65	0.98
19. I feel this class provided an opportunity for active learning.	3(9.67)	20(64.51)	4(12.90)	4(12.90)	0 (.00)	3.71	0.82
20. I prefer watching video lessons at home rather than live teacher instruction in class.	2(6.45)	7(22.58)	5(16.12)	15(48.38)	2(6.45)	2.74	1.09
21. I feel the flipped classroom helped me learn more effectively.	1(3.22)	24(77.41)	2(6.45)	4(12.90)	0 (.00)	3.71	0.73
22. I feel I was willing to expend more effort in the flipped classroom.	2(6.45)	22(70.96)	2(6.45)	5(16.12)	0 (.00)	3.68	0.83
23. Generally, I feel I am more engaged in the flipped course.	2(6.45)	13(41.93)	9(29.03)	7(22.58)	0 (.00)	3.32	0.96
24. I enjoyed the experience of using a flipped classroom.	4(12.90)	20(64.51)	5(16.12)	2(6.45)	0 (.00)	3.87	0.71