Research in English Language Pedagogy (2022) 10(4): 685-707

 DOI: 10.30486/RELP.2022.1949219.1350

Original Article

The Effect of Flipped Classroom on EFL Learners' Speaking Complexity, Accuracy, and Fluency: A Mixed-Methods Study

Maedeh Davari[1], *Behdokht Mall-Amiri**[,1]

[1]Department of English Language, Islamic Azad University, Central Tehran Branch, Tehran, Iran.

Submission date: 07 January, 2022 Acceptance date: 24 April, 2022

Abstract

This study investigated the effect of the flipped classroom on intermediate EFL learners' speaking complexity, accuracy, and fluency, employing a sequential mixed methods design. To achieve this, two female intact classes at the intermediate level at Rasan English Language School in Isfahan, Iran, participated in the study. One of these classes was randomly assigned as an experimental group (N=16) and the other one as a control group (N=16). A PET was administered to both groups before the intervention to ensure that the participants were homogeneous. Next, the experimental group was taught based on a flipped classroom. The control group, however, was taught conventionally. The speaking section of the PET as pretest and posttest was given to the groups to measure the speaking components. MANOVA was applied to compare speaking complexity, accuracy, and fluency mean scores of the two groups. The effect of the flipped classroom on speaking complexity and fluency was significantly positive, while it was non-significant for speaking accuracy. At the qualitative stage, data from an interview with the experimental group participants were utilized to find out the participants' attitudes towards the flipped classroom.

Keywords: Accuracy, Complexity, Flipped classroom, Fluency, Speaking

Corresponding Author's E- mail: bmallamiri@gmail.com

1. Introduction

The role of technology in educational contexts is both inevitable and increasing (Basal, 2015). Mainstream course setting fails to cope with the changes in the nature of education regarding technology integration; therefore, alternatives are required. One of these alternatives is a flipped classroom pedagogical approach, which "inverses traditional teaching and learning processes" (Blau & Shamir-Inbal, 2017, p. 3). Flipped classroom refers to a model where instruction is delivered through videos out of class. In contrast, class time is devoted to in-depth discussions, peer work, and the teacher's individualized comments (Francl, 2014). In a flipped classroom, what is typically done in the classroom should be done as homework at home, and what is done as homework should be done in the classroom (Bergmann & Sams, 2012).

Many EFL students "study English to develop speaking proficiency" (Richards & Renandya, 2002, p. 201). Since flipped classroom provides an efficient strategy for class time (Ronchetti, 2010), it is possible to spend more time on time-consuming activities and need immediate feedback from the instructor, such as speaking.

Each flipped session begins with a short discussion on the subject delivered through video lectures. After learners' questions are answered, they are given the assignment for the day (Bergmann & Sams, 2012). Admittedly, a successful flipped classroom is more than recording instructional videos and delivering them to students before a lesson. In other words, class time is more influential than video lectures. In a flipped classroom, "classroom time can engage in activities, discuss concepts, clarify hard-to-understand information, and investigate content-related questions" (Basal, 2015, p. 29).

Furthermore, L2 proficiency has many components and includes the concepts of complexity, accuracy, and fluency (CAF) (Housen & Kuiken, 2009). These three dimensions are used as performance descriptors for speaking assessments of language learners (Housen & Kuiken, 2009). Speaking complexity refers to the degree "to which the language produced in performing a task is elaborate and varied" (Ellis 2003, p. 340). Speaking accuracy denotes being able "to produce error-free speech," and speaking fluency is related to the ability "to process the second language with native-like rapidity" (Lennon, 1990, p. 390).

Nowadays, state-of-the-art technology for teaching and learning is inevitable (Seereekissoon, 2018; Shyr & Chen, 2018). Many scholars have argued that using

technology helps the progress of applying flipped classrooms (Wang, 2016). Moreover, few studies have been carried out regarding the effect of the flipped classroom on speaking (e.g., Jafarigohar et al., 2019). Therefore, many more studies on flipped classrooms in EFL contexts should be carried out (Lee & Wallace, 2018).

2. Literature Review

2.1 Flipped Learning

One of the growing approaches that employs technology and has been considerably used in recent years is the flipped classroom (Al-Hamdani & Al Breiki, 2018). In a flipped classroom, learners use open courses to study basic knowledge, by themselves, at home. Then, they attend the classroom to add to their understanding of the subject knowledge through activities in the classroom. Thus, students with low prior knowledge can "increase their learning effectiveness when they come to the classroom" (Sun & Wu, 2106, p. 83).

A conventional learning environment and the activities are reorganized (Awidi & Paynter, 2018). In a flipped classroom, students learn the course content through video lectures. The more complex tasks, including "applying, analyzing, evaluating, and creating, " are done through the teacher's support and peer interaction during class time (Ye et al., 2018, p. 3). Indeed, in a flipped classroom, during the class, "students are prepared to participate in interactive and higher-order activities." Besides, teachers can devote more time monitoring students' performance and "providing immediate adaptive feedback to individuals or groups" (Chuang et al., 2018, p. 57).

In a flipped classroom, learners do most of their activities in the classroom in the presence of their teacher and classmates to help them. This matches with Vygotsky's theory of the zone of proximal development, i.e., the distance between what a learner can do with help and what they can do without help, which states when learners are at the zone of proximal development for a particular task, appropriate assistance can improve task achievement (Vygotsky, 1978).

In a comprehensive study, Kim et al. (2014) identified nine design principles of the flipped classroom, which are as follows:

1. Students should be exposed to online learning materials before class
2. Motivate students to prepare for class
3. Evaluate students' understanding regularly

4. Connect in-class and out-of-class activities
5. Guide students carefully and systematically
6. Give students sufficient time to do the assignments
7. Facilitate establishing a learning community
8. Provide adaptive feedback on individual or group works
9. Provide familiar and easy-to-access technologies

Several studies have indicated that students hold a positive attitude towards implementing the flipped classroom (e.g., Thaichay & Sitthitikul, 2016). Moreover, the positive effect of the flipped classroom on English language course in general (Lee & Wallace, 2018), on students' vocabulary achievement (Al-Hamdani & Al Breiki, 2018), on raising students' engagement in class (Seereekissoon, 2018), as well as on teacher-student interaction in specific (Sun & Wu, 2016) have been investigated in the last decade. In the Persian context, Shahani et al. (2021) revealed that female EFL learners had a positive attitude towards the flipped classroom. Besides, Farrah and Qawasmeh's study (2018) indicated that the students found the flipped classroom "exciting, motivating, and engaging" (p. 275). Further, the positive impact of a flipped classroom on EFL learners' speaking and listening skills (Jafarigohar et al., 2019) and intensive and extensive reading comprehension (Neisi et al., 2019) has been shown. By reviewing the relevant literature, one can conclude that the flipped classroom can be used in language classes (Han, 2015; Thaichay & Sitthitikul, 2016).

2.2 Merits of Flipped Classroom

Several studies have found substantial benefits of the flipped classroom. To Altemueller and Lindquist (2017), the flipped classroom sets a framework that provides students with a personalized-differentiated education to meet the needs of those who have problems in learning. Moreover, teachers can devote more time to monitor students' performance and provide immediate feedback to individuals. Further, a flipped classroom encourages students to collaborate and cooperate more in the classroom.

Flipped learning has been proved to be an efficient strategy for promoting students' deep thinking and learning. According to Basal (2015), the flipped classroom is ideal for teaching content in classroom contexts where students have different learning styles. Additionally, class time will be spent on more engaging activities in a flipped classroom.

Ronchetti (2010), for example, contends that, in a flipped classroom, class time is devoted to open in-depth discussion, focused exercises, students' challenges, students' questions, and clarifying doubts and issues. A study conducted by Vaezi et al. (2019) revealed that learners' time and energy are saved in a flipped classroom, increasing their motivation. Furthermore, learners can ask their teacher's assistance whenever they need it.

A flipped classroom can afford the flexibility of learning environments. It transfers the responsibility from teachers to learners (Hung, 2017) so that students can watch the instructional videos at their own pace (Seereekissoon, 2018), resulting in student-centered instruction and autonomy of learners. It transforms teaching from a unidirectional procedure to a multidirectional one (Shyr & Chen, 2017). In addition, it speeds up experiential learning and reinforces active learning (Awidi & Paynter, 2018). Thus, students who try harder receive the most assistance (Altemueller & Lindquist, 2017). Finally, a flipped class classroom increases both student-student and teacher-student interaction during the class (Sun & Wu, 2016).

2.3 Implementation of Flipped Classroom

Despite the considerable benefits, "certain concerns and doubts regarding the flipped classroom approach remain" (Hung, 2017, p. 180). One of the negative aspects of the flipped classroom is that students cannot ask clarifying questions that cross their minds during the instruction, as they could if the teacher taught the lesson live (Bergmann & Sam, 2012).

The flipped classroom is about "a mindset: redirecting attention away from the teacher and putting attention on the learner and the learning" (Bergmann & Sam, 2012, p. 11). Teachers must use "face-to-face class time for dynamic and active, inquiry-based, and cooperative learning opportunities for their students"(Overmyer, 2014, p. 90).

Instruction in a flipped language classroom must ensure a flexible and acquisition-rich environment (Hung, 2017). Teachers should assist students to participate in in-depth learning activities to construct knowledge. They "must ensure that instruction is directed to providing learners with interactive opportunities" (Hung, 2017, p. 182). Getting sufficient time, having high-quality online tutorials, and accessing online tutorials are necessary to effectively implement flipped learning (Lee & Wallace, 2018).

To Altemueller and Lindquist (2017), the best way for implementing the flipped classroom includes "beginning gradually, collaborating with colleagues to increase capacity and speed of implementation, utilizing free resources on the Internet, and adapting current materials" (p. 15).

Teachers in flipped classrooms regularly make instructional decisions concerning when and how to react to particular conditions to address learners' needs (Hung, 2017). They are no longer the disseminator of information; instead, they perform more of a tutorial role (Bergmann & Sam, 2012).

It is also essential to train teachers for teaching a flipped classroom. The teacher must be a content expert in a flipped classroom, but he must also be "an expert in classroom and facilitation management" (Overmyer, 2014, p. 90). Further, teachers who adopt the flipped classroom "should train their students to regulate their learning with hypermedia using the specific embedded scaffolds" (Shyr & Chen, 2017, p. 60). During class time, teachers play the role of a learning coach and facilitator (Altemueller & Lindquist, 2017). They have plenty of time to present learning opportunities to students rather than just informing them. They act as guides, facilitators, and organizers (Basal, 2015).

2.4 Speaking Components

EFL practitioners argue that target language proficiency is a multifaceted construct (Housen & Kuiken, 2009). Complexity refers to "the extent to which learners produce elaborated language" (Ellis & Barkhuizen, 2005, p. 139). It is defined as "the competence to use a wide and varied range of sophisticated structures and vocabulary in the target language" (Jiang, Jong, Lau & Chai, 2021, p. 112).

Accuracy is defined as "how well the target language is produced concerning the rule system of the target language" (Skehan, 1996, p. 23). Moreover, it is related to the learners' "ability to produce error-free speech" (Housen & Kuiken, 2009, p. 461). It is also referred to as "the degree of correspondence between the learners' interlanguage and the rule system of the target language" (Fathi & Rahimi, 2020).

Fluency denotes "language production in real-time without undue pausing or hesitation" (Ellis & Barkhuizen, 2005, p. 139). It refers to "learners' control over their linguistic L2 knowledge" (Housen & Kuiken, 2009, p.462). It is also characterized as

"language learners' ability to produce the target language at a natural speed the same as native speakers without redundant pauses" (Hashemifardnia et al., 2021, p. 64).

A few studies have investigated the impact of flipped classrooms on the various speaking or writing components. For example, Thaichay and Sitthitikul (2016) explored the effects of flipped classroom instruction on speaking accuracy. Fathi and Rahimi (2020) revealed the positive impact of the flipped classroom on writing performance and writing fluency.

Larsen-Freeman (2006) developed a model which applied t-units in measuring language productions in terms of CAF. The concept of T-unit has been defined as "one main clause with all subordinate clauses attached to it" (Hunt, 1965, p. 20). She defined complexity as the proportion of clauses to t-units. Accuracy was calculated by dividing error-free t-units into the total number of t-units. Fluency was described as the total number of words separated by the number of t-units.

T-units are usually used for analyzing written and spoken discourse since it has been shown that there is a remarkable correlation between language proficiency and T-units (Ellis & Barkhuizen, 2005).

Although there has been a great deal of interest in the role of technology in learning English over the past decades, a flipped classroom in general and its effect on learner' speaking components (CAF) is overlooked to some extent. No study has been reported to investigate flipped classrooms' effect on learners' speaking CAF in the Iranian context. Thus, a quasi-experimental study with a pre-treatment test-posttest design was adopted, and accordingly, the research questions of this study were as follows:

RQ$_1$. Does the flipped classroom significantly affect EFL learners' speaking complexity?

RQ$_2$: Does the flipped classroom significantly affect EFL learners' speaking fluency?

RQ$_3$: Does the flipped classroom significantly affect EFL learners' speaking accuracy?

RQ$_4$: How do EFL learners expose to flipped conditions perceive the experience and its effect on their speaking?

3. Methodology

3.1 Design and Context of the Study

This investigation enjoyed a sequential explanatory mixed-methods design which consisted of quantitative and qualitative stages of data collection. The research was carried

out in Isfahan, Iran, at Rasan English language school in winter 2021. The quantitative phase enjoyed a quasi-experimental post-test-only control group design. The researcher gathered the quantitative data first, and the qualitative data were collected subsequently. The flipped classroom was the independent variable, and speaking fluency, accuracy, and complexity were the dependent variables. The qualitative data were collected immediately after the intervention, then were analyzed and reported descriptively to enrich findings of the quantitative stage.

3.2 Participants

In this study, 32 intermediate participants from two intact classes were assigned as one control group (N=16) and one experimental group (N=16). All participants were chosen from Rasan English Language School in Isfahan, Iran, and were native speakers of Persian. To ensure homogeneity of the participants regarding their general English proficiency, the piloted PET was administered to both groups. The means of the scores were calculated and compared through an independent-samples t-test. Then, one of the classes was randomly assigned as the control group and the other class as the experimental group.

The participants were female students. The medium of instruction in these classes was English. Their ages ranged from 16 to 25. Two raters, i.e., the researcher and a colleague who were an experienced female teacher at the same institute, scored both the speaking and the writing section of the PET test. Twenty female intermediate EFL learners sat for piloting the PET.

Table 1.

Demographic Background of the Participants

No. of Students	32 Intermediate Participants
Gender	Female
Native Language	Persian
Major	Science & Engineering
Institute	Rasan English Language School

3. 3 Instruments

3.3.1 Preliminary English Test

Before any instruction and grouping, a version of the proficiency test of Preliminary English Test (PET) (2020 version) was administered to 20 female intermediate EFL learners to pilot the test to be sure about its reliability.

During the piloting and the main study, a total mark out of 100, a maximum of 25 marks available for each skill (in writing, reading, and speaking, the marks were converted to a sale of 0-25) was given to each participant. The rubric for scoring writing (part of PET) was the modified version of Wang and Liao's (2008) writing scoring rubric. Participants were given a score out of 5 for each criterion, totally receiving a score out of 25. Moreover, the rubric for scoring speaking was the IELTS speaking band descriptors (public version). Two raters scored the participants' writing and speaking performance, and their scores' reliability was calculated by running a Pearson correlation analysis.

3.3.1.1 Pre-treatment Test and Posttest

The speaking section of the piloted PET was used to test the participants' speaking CAF. The participants were interviewed in pairs, which took almost 10 minutes. The pretest and posttest were the same for all the participants to ensure that improvements on the posttest were not because of the differences in the type of questions asked.

The participants' oral performance in both the pre-treatment test and posttest was recorded, transcribed, and analyzed in terms of accuracy, fluency, and complexity to measure speaking components.

To assess the students' speaking CAF objectively, the researcher used the Profile of Larsen-Freeman (2006).

An example of analysis:

Go to fish is funny.

Um so do I, um **but**, um he take his dog to park.

So do I, **but** he painting.

Neither do I. Um he's, um he can, cook is, cooking.

Complexity: clauses/t-units: 7/5=**1.40**

Accuracy: error-free t-units/t-units: 1/5= **0.20**

Fluency: words/t-units: 31/5= **6.20**

3.3.2 Interviews

All the participants in the experimental group were interviewed briefly and individually after the treatment. The participants were allowed to speak English and Persian in the semi-structured interviews. They were supposed to answer the questions immediately. Their voices were recorded for further analysis. Through a flipped classroom, they were questioned about their feelings and insights about learning English, particularly speaking. The main questions that were asked from the experimental group were as follows:

- "How did you feel about experiencing flipped classrooms?"
- "What are the advantages of a flipped classroom?"
- "What are the disadvantages of a flipped classroom?"
- "State any other comments you wish to make about the flipped classroom."

3.3.3 Family and Friends 4, 2nd Edition

Family and Friends 4, 2nd edition (Simmons, 2014) was used as the coursebook in this study. It combines brand-new fluency, culture, and digital resources with the basic features from the first edition. It includes 15 units, and each unit contains a word section, skills training, grammar exercises, and unique phonics programs.

3.3.4 Instructional Video Clips

Before each session, the teacher created one instructional video lecture. However, it was divided into short videos to prevent confusion, make the videos user-friendly, and devote each video to a specific part of the lesson. An attempt was made to use subtitles and visual features to convey the videos' information vividly. Each video clip included teaching a particular speaking section of the coursebook. The teacher explained the necessary parts of the book, gave a short lecture about a topic, and provided them with the essential topic-related vocabulary items and grammatical structures.

3.3.5 Telegram Messenger

The teacher used the social network application Telegram Messenger to send the instructional video clips to the students to watch before class.

3.4. Data Collection Procedure

3.4.1 Quantitative Stage

Data were collected from 32 EFL learners in two intact classes studying at Rasan English language institute in Isfahan, Iran. They were tested twice on speaking CAF, once at the beginning of the study and another time, five weeks later, immediately after the intervention.

3.4.1.1 Experimental Group

In the experimental group, before the treatment, the researcher held a training session for the participants to demonstrate how to watch instructional video clips effectively out of the class.

Before each session, the teacher sent the students a video clip containing the lesson they would study through the social network application Telegram Messenger. The students watched the video clips before class.

The students did some speaking activities related to the video lecture that they had watched at home during the class. The activities focused mainly on promoting interactional skills, and students discussed open-ended questions in groups or pairs. The teacher also asked for student presentations at the beginning of the class to introduce the session. Therefore, some students presented what they had watched in the video lectures. The teacher supported them during courses and provided instant feedback on their performance. The experimentation was carried out for ten sessions spanning over five weeks. Each session took 90 minutes, but only 20-25 minutes was devoted to practicing speaking since the teacher had to cover other skills as a part of the course requirements. After the last treatment session, the group was interviewed and posttested on their speaking ability.

As an illustration, in the second session, since the teacher had planned to teach the students how to speak about their eating habits and different meals, she sent them a video clip, giving a short lecture about breakfast and provided them with necessary vocabulary items (e.g., picky eater, grab, etc.) as well as grammatical structures (e.g., simple present with adverbs of frequency like hardly ever, never, etc.). The following day, at the beginning of the class, the teacher asked the students to practice the model conversations in the book and change them based on their eating habits. Finally, she asked the students to speak in pairs and individually about their eating habits. The teacher provided feedback

when it was necessary. The students' errors were corrected using reformulation, facial expression, and repetition.

3.4.1.2 Control Group. In the control group, the students were taught the same coursebook. However, speaking skill was trained conventionally and without flipping the classroom. In fact, in the control group, similar to the experimental group, only 20-25 minutes per session was devoted to speaking. Every session, during the class, following the teacher's lecture, the students practiced the speaking exercises of the coursebook. They were supposed to do homework at home. After the last treatment session, the group was posttested on their speaking ability. The same techniques of error correction were used in the control group.

3.4.2 Qualitative Stage

To find out the participants' attitudes towards flipped instruction, the researcher developed a set of interview questions to be carried out with the experimental group after the treatment. The responses were recorded, analyzed, and interpreted by the researcher.

3.5 Data Analysis Procedure

An independent sample t-test was run on their mean scores to ensure that the participants were homogeneous concerning their PET performance. To ensure that the participants of both groups performed similarly on the pre-treatment test within each component of speaking CAF, MANOVA was utilized. Likewise, MANOVA was used to compare the effectiveness of the flipped instruction regarding speaking CAF.

The thematic content analysis adopted from Braun and Clarke (2006) was used in the current study to analyze the interview data. The following steps were taken:

1. Getting familiar with the data.
2. Coding (labeling) the whole text.
3. Searching for themes with broader patterns of meaning.
4. Reviewing themes to make sure they fit the data.
5. Defining and naming themes.
6. Writing the report.

4. Results

4.1 Results of Preliminary English Test (PET)

The first set of analyses was carried out to calculate the internal consistency of the PET in piloting (n=20) using Cronbach's Alpha. The reliability of the test during the piloting was 0.84.

Then, the descriptive statistics of the PET scores obtained by two intact classes was calculated.

Table 2.

Descriptive Statistics for the Results of the PET

	N	Mean	Std. Deviation	Skewness		
	Statistic	Statistic	Statistic	Statistic	Std. Error	Ratios
PET score (Control)	16	75.88	5.214	.417	.564	0.739
PET score (Experimental)	16	78.13	3.775	.229	.564	0.406

As depicted in Table 2, both sets of scores are normally distributed as the skewness ratios are less than 1.96.

The results of an independent-samples *t*-test of PET score between the control and experimental groups, at a 95% confidence, are indicated in Table 3. It demonstrated that the difference was not statistically significant, t (30) = 1.398, (p=.172>.05), 2-tailed. Thus, the participants had no differences in terms of general English proficiency.

Table 3.

Independent-samples t-test on PET Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	sig. (2-tailed)	Mean Difference	Std.Error Difference	Lower	Upper
PET score	Equal variances assumed	610	.441	1.398	30	.172	2.250	.609	-5.536	1.036
	Equal variances not assumed			1.398	7.336	.173	2.250	.609	-5.550	1.050

4.2 Reliability Statistics

The two rater's degree of agreement in scoring the participants' speaking and writing in control and experimental groups were calculated primarily.

Table 4.

Skewness Ratios of the two Raters in both Groups for both Speaking and Writing on the Pre-treatment Test

		Skewness Ratios			
		Control Group		Experimental Group	
	N	Speaking Scores	Writing Scores	Speaking Scores	Writing Scores
Rater1	16	-.790	-.421	1.131	.368
Rater2	16	-.382	.363	1.132	-.530

As shown in Table 4, both sets of scores (rater 1 & rater 2) for speaking and writing (part of PET) in both groups were normally distributed as the skewness ratios were less than 1.96. The Pearson formula was used to establish the correlation between rater one and rater two within each skill and group.

The inter-rater reliability measures of two raters for the PET pre-treatment test scores in the control group for the speaking and writing sections were 0.82 and 0.85, respectively. Moreover, inter-rater reliability measures of the same raters for the PET pre-treatment test scores in the experimental group for the speaking and writing sections were 0.86 and 0.82, respectively.

4.3 Results of the Speaking Test (of PET)

4.3.1 Pre-treatment Test

4.3.1.1 Descriptive Analysis of the Data

Table 5.

Descriptive Statistics for Speaking CAF (Pre-treatment Test)

	Group	Mean	Std. Deviation	N
CP.pre	Control	1.60	.343	16
	Experimental	1.70	.336	16
AC.pre	Control	.56	.160	16
	Experimental	.55	.153	16
FL.pre	Control	7.44	1.989	16
	Experimental	8.86	2.323	16

Table 5 depicts the descriptive statistics of the participants' scores on the pre-treatment test. It indicated that the means for each speaking component's control and experimental groups were quite similar.

After meeting the assumptions of MANOVA, namely: normality, outliers, multivariate outliers, linearity, and multicollinearity, the MANOVA analysis was conducted:

Normality of distribution was checked through Shapiro-Wilk analysis, which concluded that the assumption was met. There were no outliers as checked by creating Box plots.

4.3.1.2 MANOVA on the Pre-treatment test

As there were three dependent variables in this study related to the same construct (speaking), MANOVA was used.

Table 6.

One-way MANOVA for Speaking CAF (Pre-treatment Test)

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	CP.pre	.094	1	.094	.808	.376
	AC.pre	.001	1	.001	.056	.814
	FL.pre	16.103	1	16.103	3.443	.073
Intercept	CP.pre	87.682	1	87.682	757.649	.000
	AC.pre	10.091	1	10.091	410.301	.000
	FL.pre	2129.760	1	2.130E3	455.347	.000
Group	CP.pre	.094	1	.094	.808	.376
	AC.pre	.001	1	.001	.056	.814
	FL.pre	16.103	1	16.103	3.443	.073
Error	CP.pre	3.472	30	.116		
	AC.pre	.738	30	.025		
	FL.pre	140.317	30	4.677		
Total	CP.pre	91.247	32			
	AC.pre	10.831	32			
	FL.pre	2286.180	32			
Corrected Total	CP.pre	3.565	31			
	AC.pre	.739	31			
	FL.pre	156.420	31			

Based on Table 6, the obtained sig values were more significant than 0.05. Therefore, it was concluded that there was no significant difference between the groups on the pre-treatment test regarding all three components.

4.3.2 Posttest

4.3.2.1 Descriptive Analysis of the Data

The next step in analyzing the study results was calculating the student's scores in CAF after the treatment on the posttest. Descriptive and inferential statistics were used for this purpose.

Table 7.

Descriptive Statistics for Speaking CAF (Posttest)

	Group	Mean	Std. Deviation	N
CP.pre	Control	1.65	.308	16
	Experimental	2. 02	.494	16
	Total	1.84	.448	32
AC.pre	Control	.62	.162	16
	Experimental	.55	.175	16
	Total	.58	.170	32
FL.pre	Control	8.02	1.861	16
	Experimental	10.85	3.868	16
	Total	9.43	3.314	32

The mean and standard deviation for all three speaking components (CAF) on the posttest are exhibited in Table 7. In the control group, the means were 1.65, 0.62, and 8.02 for CAF, respectively. However, in the experimental group, the mean scores were 2.02, 0.55, and 10.85 for CAF, respectively. The participants of both groups performed almost similarly in accuracy on the posttest. The participants' performances were better in the experimental group than the control group regarding complexity and fluency.

To run MANOVA, the assumptions of normality, outliers, multivariate outliers, linearity, and multicollinearity were checked primarily, and as there were no violations, the main analysis was conducted.

4.3.2.2 MANOVA on the Posttests

The following table shows the descriptive statistics of the posttest scores of the two groups.

Table 8.

One-way MANOVA for Speaking CAF (Posttest)

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	CP.pos	1.121	1	1.121	6.594	.015
	AC.pos	.045	1	.045	1.575	.219
	FL.pos	64.184	1	64.184	6.965	.013
Intercept	CP.pos	108.376	1	108.376	637.325	.000
	AC.pos	11.045	1	11.045	386.459	.000
	FL.pos	2851.258	1	2851.258	309.412	.000
Group	CP.pos	1.121	1	1.121	6.594	.015
	AC.pos	.045	1	.045	1.575	.219
	FL.pos	64.184	1	64.184	6.965	.013
Error	CP.pos	5.101	30	.170		
	AC.pos	.857	30	.029		
	FL.pos	276.453	30	9.215		
Total	CP.pos	114.599	32			
	AC.pos	11.947	32			
	FL.pos	3191.895	2			
Corrected Total	CP.pos	6.223	31			
	AC.pos	.902	31			
	FL.pos	340.637	31			

According to Table 8, the obtained sig values for complexity and fluency (0.015, 0.013, respectively) are less than the significance level set for the study (0.05). Therefore, there was a significant difference between the posttest groups regarding both complexity and fluency. However, the sig value for the accuracy turned out to be 0.22, which is more significant than .05, leading to the conclusion that the two groups did not significantly differ.

4.4 The Data Analysis of the Qualitative Stage

The students in the experimental group were asked four questions orally. Regarding the first question, "How did you feel about experiencing flipped classroom?" most students

(87.5%) stated flipped classroom is more positive than negative, and the approach was quite encouraging for them. However, a few of them (12.5%) found it difficult as they had to bear an extra cognitive load when learning at home.

As for the second question, "What are the advantages of a flipped classroom?" some of the participants (25%) mentioned that through the flipped classroom, they were more active during the classroom. In addition, 31.25 percent of the interviewees said they felt more independent than before the treatment. They were also in favor of being able to watch the video lectures several times (37.5%).

Concerning the third question, "What are the disadvantages of a flipped classroom?" two of the students (12.5%) complained about the audio quality of the lectures. Four participants (25%) stated that they could not fully understand the instructional video lectures since there was no help from the teacher when they needed her. Furthermore, two of the participants (12.5%) criticized the length of video lectures. The rest of the participants (50%) did not express any negative aspects.

To answer the fourth point of "State any other comments, you wish to make about the flipped classroom." a few participants (31.25%) suggested watching the video lectures in pairs. Some participants (43.75%) recommended using Persian and English subtitles in video lectures. The rest of the participants (25%) did not state any recommendations.

5. Discussion

The posttest analyses demonstrated that the participants in the experimental group significantly outperformed the control group regarding fluency and complexity in speaking. Therefore, regarding the first and second research questions, it was indicated that flipped classes significantly improved learners' speaking fluency and complexity. This improvement might be because of the nature of the flipped classroom, as there is plenty of time for face-to-face interaction between students and the teacher and among students. Furthermore, individualized instruction is available to students in a flipped classroom.

However, there was no significant difference between the accuracy of the two groups' speaking posttests. Therefore, concerning the third research question, the effect of the flipped classroom on EFL learners' accuracy was not proved.

Overall, a possible explanation for the different performances in the groups may be found. Although the amount of time spent in each group regarding speaking instruction

was equal, the amount of time spent on interactive exercises in the experimental group was more significant. This is because the students in the experimental group watched the instructional lectures at home. Therefore, class time was devoted to group discussions and face-to-face interactions. In the control group, however, most of the instruction happened during the classroom, and there was not much time for speaking activities.

The present study is in line with the claim maintained by Sun and Wu (2016) that the flipped classroom provided ample opportunity for interaction compared to traditional classrooms and, therefore, more significant learning opportunities. Additionally, this study is in harmony with the one conducted by Altemueller and Lindquist (2017), which revealed the benefits of individualized education in learning. Furthermore, the current study corroborates the research results by Jafarigohar et al. (2019). After using quantitative and qualitative data analyses, it was revealed that flipped classrooms performed a significant positive role in speaking.

Regarding the fourth research question, although there were a few criticisms and complaints from the participants about the nature of the flipped classroom, the general attitude towards it was positive and promising. The yielded results confirm the outcomes of Farrah and Qawasmeh and Shahani et al.'s study. The majority said they liked the flipped procedure of watching instructional clips as they found it more interesting, encouraging, and challenging. Moreover, the findings of the current study are in consistence with Awidi and Paynter's (2018) results as the students expressed they felt more independent, and since the students had their own time at home to watch video clips as many times as they wished, they were more prepared and therefore more active during the class time

6. Conclusion

The main contribution of the current study was that it adopted a more comprehensive look at the effect of a flipped classroom on developing speaking complexity and fluency in the EFL context.

The present study's most essential and fundamental findings emerged from the experimental group: teaching speaking through a flipped classroom is possible. It is not always necessary to teach in person through in-person classes, and the teacher does not have to attend the physical class to teach.

Another point is that as the study took five weeks, it might be concluded that the effect of the flipped classroom on speaking complexity and fluency is achieved in almost a short term. However, speaking accuracy might need more time through a flipped classroom to improve.

The present study's findings have micro implications regarding how to teach speaking and macro implications in developing curriculum, designing syllabi, and policymaking. This study cast light on the status of teaching English and the effect of the flipped classroom on speaking components in an EFL context. It provided additional insights into identifying existing challenges regarding the flipped classroom.

The main pedagogical implication for teachers is that it is possible to flip the classroom specifically using social media. This opens up a window of opportunity for practitioners to use this new model's capacity to present more interactive exercises. In addition, students have more time to ask for clarification during class. Further, teaching speaking through flipped classrooms is considerably economical time-wise. Rather than teaching speaking, the teacher can save class time for real interaction during the classroom.

The current study has considerable advantages when the conventional instruction proves not so fruitful for boosting speaking. Flipped classrooms, especially at the intermediate level, are beneficial for EFL students. Nonetheless, teachers need to be trained in applying an appropriate procedure for implementing a flipped classroom, as teaching the flipped classroom requires more devotion than conventional techniques.

6.1 Limitations of the Study

Due to the coronavirus pandemic, a limited number of language learners (N=32) from one language institute participated in this study. More accurate results might have been obtained if more learners were available to the researcher. Furthermore, since the language school as the research site of the current project was not allowed to hold mixed classes, only female EFL learners participated in this study. Therefore, the results may not be generalized to male learners.

6.2 Suggestion for Further Research

This study used teacher-made instructional videos to fit her presentation style. Teachers, however, can use other ready-made materials available in the virtual world

instead of their video lectures to provide students with various teaching materials. Moreover, based on the students' suggestion in this study, future research should explore the effect of pair work in flipped classes on speaking components of the learners. Likewise, the impact of Persian subtitles in a similar milieu can be investigated. Future research may also explore teachers' experience with the flipped classroom and their views on implementing it.

References

Al-Hamdani & Al Breiki (2018). The effect of flipped vocabulary learning on achievement and attitudes of EFL ninth-graders in Oman. *International Journal of Research in Applied, Natural and Social Sciences, 6*(10), 35–44.

Altemueller, L., & Lindquist, C. (2017). Flipped classroom instruction for inclusive learning. *British Journal of Special Education, 44*(3), 341–358. https://doi.org/10.1111/1467-8578.12177.

Awidi, I. T., & Paynter, M. (2018). The impact of a flipped-classroom approach on the student learning experience. *Computers & Education*. doi:10.1016/j.compedu.2018.09.013

Basal, A. (2015). The implementation of a flipped classroom in foreign language teaching. *Turkish Online Journal of Distance Education-TOJDE, 16*(4), 28–37.

Bergmann, J. & Sams, A. (2012). *Flip your classroom; reach every student in every class every day (Kindle edition)*. Alexandria, VA: ASCD: International Society for Technology in Education.

Blau, I., & Shamir-Inbal, T. (2017). Re-designed flipped learning model in an academic course: The role of co-creation and co-regulation. *Computers & Education, 115*, 69–81.doi:10.1016/j.compedu.2017.07.014

Braun V. & Clarke V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.doi: 10.1191/1478088706qp063oa

Chuang, H. H., Weng, C. Y., & Chen, C. H. (2018). Which students benefit most from a flipped classroom approach to language learning? *British Journal of Educational Technology, 49*(1) 56–68. https://doi.org/10.1111/bjet.12530.

Ellis, R. (2003). *Task-based Language Learning and Teaching*. Oxford: Oxford University Press.

Ellis, R., & Barkhuizen, G. (2005). A*nalysing Learner Language.* New York: Oxford University Press.

Farrah, M., & Qawasmeh, A. (2018). English students' attitudes towards using flipped classrooms in language learning at Hebron university. Research in English Language Pedagogy (RELP), 6(2), 275-294. http://doi/10.30486/relp.2018.542708

Fathi, J., & Rahimi, M. (2020). Examining the impact of flipped classroom on writing complexity, accuracy, and fluency: a case of EFL students. *Computer Assisted Language Learning, 1–39.* doi:10.1080/09588221.2020.1825097

Francl, T. J. (2014). Is flipped learning appropriate. *Journal of Research in Innovative Teaching, 71,* 119–128.

Han, Y. J. (2015). Successfully flipping the ESL classroom for learner autonomy. *NYS Tesol Journal, 2*(1), 98–109.

Hashemifardnia, Shafiee, Rahimi Esfahani, & Sepehri (2021). Effects of massive open online course (MOOC) on Iranian EFL learners' speaking complexity, accuracy, and fluency. *Computer-Assisted Language Learning Electronic Journal (CALL-EJ), 22*(1), 56–79.

Housen, A., & Kuiken, F. (2009). Complexity, accuracy and fluency in second language acquisition. *Applied* Linguistics, 30, 461–473.

Hung, H. T. (2017). Design-based research: Redesign of an English language course using a flipped classroom approach. *TESOL Quarterly*, *51*(1), 180–192.

Hunt, K. W. (1965). *Grammatical Structures Written at Three Grade Levels.* NCTE Research Rep. No. 3. Urbana, IL: The National Council of Teachers of English.

https://files.eric.ed.gov/fulltext/ED113735.pdf

Jafarigohar, M., Haghighi, H., Khoshsima, H, and Vahdany, F. (2019). Incorporation of flipped learning into EFL classrooms performance and perception. *Iranian Journal of English for Academic Purposes*, *8*(3), 1–14.

Jiang, M. Y., Jong, M.S., Lau, W.W., & Ch, Ch. (2021). Using automatic speech recognition technology to enhance EFL learners' oral language complexity in a flipped classroom. *Australasian Journal of Educational Technology, 37*(2), 110–131.

Kim, M. K., Kim, S. M., Khera, O., & Getman, J. (2014). The experience of three flipped classrooms in an urban university: an exploration of design principles. *The Internet and Higher Education, 22,* 37–50.doi:10.1016/j.iheduc.2014.04.003

Larsen-Freeman, D. (2006). The emergence of complexity, fluency and accuracy in the oral and written production of five Chinese learners of English. *Applied Linguistics, 27*(4), 590–619.

Latham-Koenig, CH., & Oxenden, C. (2013). *American English File 5 (2nd edition).* Oxford: Oxford University Press.

Lee, G., & Wallace, A. (2018). Flipped learning in the English as a foreign language classroom: Outcomes and perceptions. *TESOL Quarterly, 52*(1), 62–84.

Lennon, P. (1990). Investigating fluency in EFL: A quantitative approach. *Language Learning, 40*, 387–417.

Neisi, L., Hajijalili, M., & Namaziandost, E. (2019). The impact of using inverted classrooms on promoting extensive versus intensive reading comprehension among Iranian upper-intermediate EFL learners. *Theory and Practice in Language Studies, 9*(12), 1513-1523.

Overmyer, G. (2012). *The flipped classroom model for college algebra: Effects on student achievement* (Doctoral dissertation, Colorado State University). Retrieved from http://flippedlearning.org/cms/lib07/VA01923112/Centricity/Domain/41/Dissertation%20Overmyer.pdf

Richards, J. C. & Renandya, W. A. (Ed.). (2002). *Methodology in Language Teaching: An Anthology of Current Practice*. Cambridge: Cambridge University Press.

Ronchetti, M. (2010). Using video lectures to make teaching more interactive. *International Journal of Educational Technology, 5*(2), 45–48.

Seereekissoon, D. S. (2018). Flipped classroom teaching in higher education: An assumption or an inevitable tool. *International Journal of Social Sciences, 4*(1), 494–506.

Shahani, S., Chalak, A., & Heidari Tabrizi, H. (2021). The Iranian intermediate EFL learners' attitudes towards using flipped teaching via google classroom. Research in English Language Pedagogy (RELP), 9(1), 43-65. http://doi/10.30486/relp.2020.1910522.1223

Shyr, W. J., & Chen, C. H. (2018). Designing a technology-enhanced flipped learning system to facilitate students' self regulation and performance. *Journal of Computer Assisted Learning, 34*(1), 53–62.

Skehan, P. (1996). Second-language acquisition research and taskbased instruction. In J. Willis and D. Willis (Eds.). *The Challenge and Change in Language Teaching* (pp. 17–30). Oxford: Heinemann.

Sun, J. C.Y., & Wu, Y.T. (2016). Analysis of learning achievement and teacher–student interactions in flipped and conventional classrooms. *The International Review of Research in Open and Distributed Learning, 17*(1). doi:10.19173/irrodl.v17i1.2116

Thaichay, Th. & Sitthitikul, P. (2016). Effects of the flipped classroom instruction on language accuracy and learning environment: A case study of Thai EFL upper-secondary school students. *Rangsit Journal of Educational Studies, 3*(2), 35–64. doi:10.14456/rjes.2016.10

Vaezi, R., Afghari, A., & Lotfi, A. (2019). Flipped teaching: Iranian students' and teachers' perceptions. *Applied Research on English Language, 8*(1), 139–164.

Vygotsky, L.S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Wang, Y. H. (2016). Could a mobile-assisted learning system support flipped classrooms for classical Chinese learning? *Journal of Computer Assisted Learning*, 32, 391–415.

Wang, Y.H. & Liao, H.C. (2008). The application of learning portfolio assessment for students in the technological and vocational education system. *Asian EFL Journal, 10*(2), 132–154.

Ye, X., Chang, Y., & Lai, C. (2018): An interactive problem posing guiding approach to bridging and facilitating pre- and in-class learning for flipped classrooms, *Interactive Learning Environments*. doi:10.1080/10494820.2018.1495651