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Effect of Micro Flipped Method on EFL Learners' Speaking Fluency

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This study investigated the effect of the micro flipped method on English as a foreign language (EFL) learners' speaking fluency and compared its effect with the traditional face-to-face teacher-fronted method in the EFL context of Iran. To this end, 40 intermediate-level EFL learners in a language institute were selected through a placement test and were assigned to experimental and control groups. The control group (non-flipped classroom) was exposed to in-class activities and instructional materials in the print format whereas the experimental group (micro flipped classroom) was exposed to both in-class and out-of-class instructional materials, including mini videos uploaded before class via Edmodo, a technology-based pedagogical environment. To assess the participants' speaking fluency, they were interviewed at the beginning and end of their course, and the recorded speech data were analyzed through PRAAT (computer software package for speech analysis) in terms of six aspects of speaking fluency, including articulation rate (syllables per second), rate of all pauses, rate of long pauses, rate of unfilled and filled pauses and mean length of run. The analysis of the data through Mann-Whitney tests revealed statistically significant differences regarding the measures of fluency with the higher articulate rate and mean length of run and lower rates of pauses for the experimental group in the posttest interview. The findings accentuate the role of the flipped classroom and blended learning where second/foreign language (L2) leaners can develop their L2 speaking skills and fluency in online and actual settings.

Keywords: Edmodo, micro flipped teaching, speaking fluency, L2 learners

Introduction

Speaking skill is an interactive process of constructing meaning which involves producing, receiving, and processing information (Luoma, 2004). Speaking a second/foreign language (L2) well is one of the significant objectives in L2 learning/teaching (Celce-Murcia, 2001), and it makes real communication between interlocutors possible. As Zaremba (2006) asserts, compared with other language skills, speaking skill contributes more to communication. Through speaking, L2 learners can express their ideas, intentions, and personal viewpoints. Thus, it is crucial for them to speak fluently and without comprehension difficulties in their L2 classes. Fluency can facilitate communication in the target language (Mirzaei & Heidari, 2012). However, speaking the target language fluently is challenging for many foreign language learners, including English as foreign language (EFL) learners, because oral communication proficiency needs the ability to interact in the real social context (Richards & Renandya, 2002), and L2 learners need to invest much time and energy to develop this skill.

Fluency in speech is an important criterion in assessing speaking skills and a crucial part of oral proficiency and L2 learning (De Jong & Perfetti, 2011). In fact, speaking fluency is considered an essential component of communicative competence (Harmer, 2015). It is defined as the use of naturally occurring language when a speaker engages and maintains meaningful communication (Richards, 2006). According to Bailey (2003), fluent speaking is being able to use language quickly, without much hesitation and abnormal pauses. A fluent speaker knows what and how to say without a need to pause to think (Nation, 1989). Nonetheless, in many foreign language teaching/learning contexts, little attention is paid to speaking fluency due to such factors as low proficient L2 teachers, inadequate meaning-focused class activities, and lack of communicative or task-based syllabuses (Yingjie, 2014). Moreover, given the inadequate interaction between teachers and learners, the dominance of teachers in regular teacher-fronted classrooms, and EFL learners' inadequate skills to appropriately initiate oral performance, traditional teacher-centered classes have faced criticism. As a result, several researchers (e.g., Bushweller, 2011; Davis, 2011) have called for more innovative methods in language education that allow learners to be more active, autonomous, and productive.

One relatively recent method to teach the target language is the flipped teaching method, which aims to incorporate technology into education. Technology is employed in the flipped classroom to allocate more time to meaningful communications in L2 with the hope of having more profound levels of cognitive involvement in the learning process (Moranski & Kim, 2016). As Bergmann and Sams (2012) explain, in flipped teaching, the mainstream traditional approach of teaching, in which the class starts with the teacher introducing a topic, changes to a discussion about the video watched before class, perhaps as a homework assignment at home. This method is intended is "to clarify any misunderstanding and provide the students with the opportunity to ask any questions about the issue they have in their mind" (Bergmann & Sams, 2012, p. 13). The flipped classroom is viewed as a pedagogical approach that has reversed the place for doing homework and instruction (Zou et al., 2020).

So far, flipped method has been employed as for different language skills, such as writing (e.g., Ahmed, 2016), oral proficiency (Wang et al., 2018), academic achievement and performance (e.g., Adnan, 2017; Lee & Wallace, 2017), and learning attitudes (Hung, 2015). However, employing the micro flipped classroom for language skills and components is under-researched, particularly in L2 education. The micro flipped classroom is a kind or model of flipped classroom. According to Lu and Sun (2016), micro class is the short form of micro-video network class. In this type of teaching, the micro-video is considered as the main component of the educational process, which aims to explain the knowledge points in an online video course. Micro flipped teaching, according to Freeman et al. (2014), establishes a link between the activities outside and inside the classroom. The use of conventional lectures in this model is reduced, without being entirely canceled. It is claimed that the micro flipped method overpasses the limitations in time and space, common in traditional English learning classes (Lu, 2013).

According to Jinlei et al. (2012), it is justified to apply micro flipped teaching in colleges and schools because it can improve students' learning interests and autonomous learning. This issue might be compelling for EFL learners who consider speaking fluently as a neglected area in their classroom, have problems to use the target language (English) confidently with little hesitation and unnatural pauses, and they do not find enough time to practice their oral proficiency in the class (Yingjie, 2014). This topic bears significance, especially after the Coronavirus pandemic, in situations where L2 learners cannot physically attend classes full time. All things considered, this study aimed to investigate the effect of using micro flipped classroom on speaking fluency and compare its effect with the traditional instructional method utilized in mainstream classrooms in a sample of EFL learners.

Literature Review

Flipped Teaching

Flipped classroom is an educational method in which the status of classroom activities and homework is reversed. The inverted classroom is used for this method, which refer to the design of a class in which information transfer takes place outside of class, and students in class focus on activities/tasks using the time that is freed up (Talbert, 2014). As noted by Teng (2017), the call for flipped teaching is associated with the development of technology, which has facilitated the duplication of information at a low cost. According to Kong (2014), this type of learning method/approach can be organized into three steps, including getting ready before class, following some in-class activities and consolidating knowledge after class. For before-class preparation, students are exposed to teaching materials such as videos, presentation slides, or reading worksheets and online quizzes at home. Learning resources such as pausing, replaying videos can be presented to learners as many times as needed. During the classroom, the knowledge that is acquired can be used in a more desirable scope (Bishop & Verleger, 2013; Tucker, 2012). During post-class stage, students review the materials to improve their outcomes and consolidate their knowledge. With this model, teachers can give the "instruction by recording and narrating screen casts of work they do on their computers, creating videos of themselves teaching, or curating video lessons from trusted Internet sites" (Hamdan et al., 2013, p. 13).

Several empirical studies have looked into flipped teaching in L2 contexts (e.g., Ahmed, 2016; Chen et al., 2017; Hung, 2015; Jehman, 2016; Lee & Wallace, 2017). For instance, in a study, Hung (2015) investigated the effect of the flipped classroom on EFL learners' academic performance, learning attitudes, and participation levels in a sample of 75 Taiwanese EFL learners. Using quasi-experimental design, Hung (2015) developed three different formats for teaching, including non-flipped, structured, and semi-structured flipped lessons. The results indicated that the structured and semi-structured flipped classes were more effective instructional designs than the non-flipped classes. Both helped the students attain better learning outcomes, and develop better attitudes toward their learning experiences.

Jehman (2016) applied the flipped classroom to EFL teaching in a freshman course at Thammasat University in Thailand. The participants were 20 students of English. Jehman investigated how the flipped classroom influenced Thai EFL learners' beliefs and developments in their English writing. At the beginning of the course, the students were asked to write a paragraph related to a topic assigned as homework which they had to complete without any instructional materials. During the course, they were asked to interact with the materials uploaded on a platform. At the end of the course, the students were asked to complete a final exam, which included an essay and a course evaluation satisfaction survey. The results showed that the Thai students were satisfied with the course, scored high in the entries of the evaluation rubric, and improved their writing skills. In another study, Ahmed (2016) investigated the effect of a flipped classroom on EFL learners' writing skills. The participants were 60 students from Qassim University in Saudi Arabia. They were assigned to the experimental and control groups. The experimental group was exposed to 15 videos and some online activities. Additionally, writing practices were given to them in class. The same tasks were presented to the students in the control group based on the traditional in-class instruction. The data analysis from the pretest and posttest revealed that the experimental group outperformed the control group in their writing posttest.

In a study carried out at a South Korean university, Lee and Wallace (2017) compared the two groups of EFL learners taught either by a communicative language teaching approach or by a flipped instruction. The researchers collected data by administering tasks and surveys to the learners and analyzing the content of the teacher's notes. The findings revealed that the flipped classroom students outperformed the non-flipped students in their final examination. Additionally, the survey results indicated that most students in the study enjoyed the flipped type of learning. Likewise, Adnan (2017) investigated the effect of flipped classrooms versus non-flipped as a means to contribute to the growing line of research on flipped teaching. Adnan used student grades, weekly e-journal entries, guided final journal entries, and

focus group interviews as data collection tools in a Turkish public university course. The results revealed no significant difference between mean scores of the flipped and non-flipped groups regarding midterms and final e-portfolio. Yet, the flipped students received higher essay scores and had positive perceptions.

L2 oral proficiency has also been investigated in the flipped classroom. For instance, Wang et al. (2018) studied beginner learners' oral proficiency in a flipped Chinese foreign language classroom. Foreign language development was assessed by standard complexity, accuracy, and fluency measures, alongside subjective ratings. The results showed that those learners who were exposed to flipped instruction significantly outperformed the baseline group in oral proficiency in speech fluency, though their advantage in complexity and accuracy was less evident. Also, Yoon and Kim (2020) examined the effectiveness of flipped teaching, compared with traditional and blended teaching, regarding L2 (English) speaking skills in Korean context. A sample of 70 Korean university EFL students were divided into flipped, blended and conventional learning groups. The flipped learning group used online contents, the blended learning group used online contents and messengers, and the conventional group used paper-based activities. The results of speaking pre- and posttest data analysis revealed significant improvements in the posttest phase regarding fluency and coherence and lexical resources for all three groups. They concluded that both flipped and conventional classrooms have positive effects on L2 learning outcomes.

Micro Flipped Teaching

The concept of micro flipped classroom goes back to micro lesson and mini lecture, which is also known as 60-Second Course or One-Minute Lecture originated by Professors LeRoy, McGrew, and Kee (Zhang, 2017). Professor LeRoy McGrew from the Netherlands put forward 60-Second Course in 1993 and Professor Kee from England proposed the One-Minute Lecture (Zhang, 2017). Later, in 2008, David Penrose, a senior teaching designer, applied the idea of micro lecture into teaching. According to Penrose, to record a video, the time can be short. In this way, it is possible to achieve the same effect as the traditional long-time teaching with the support of the corresponding assignments and discussions (Zhang, 2017). In fact, micro flip(ed) teaching is an innovative model in education which has resulted in creation of spaces that supply short online video content for the classroom use while boosting students' active involvement in learning experience (Fidalgo-Blanco et al., 2017).

As for the micro flipped teaching, the nascent body of investigation is not established well enough to form a cohesive review. However, a few studies have looked into the micro flipped classroom. For instance, Zhang (2017) investigated how the microlesson fostered innovation and utilization of educational information technology. The participants were a group of EFL teachers in China who took part in a survey. The findings revealed that strategies which improved the quality of college English teaching through micro flipped included: reforming the previous teaching evaluation system; strengthening teacher training; correctly understanding the role of modern education technology in college English teaching; managing the pre-class and classroom time; paying attention to convergence between teaching materials and teaching software; strengthening the interaction inside and outside of the classroom, and implementing a variety of teaching methods.

In another study, Cao (2018) analyzed the papers published about micro lecture and College English teaching in China National Knowledge Infrastructure. The results revealed that Chinese teachers' role was changed with the emergence of micro lecture in College English teaching. In closing, the close review of the related literature on micro flipped teaching indicates that research on this type of flipped method is scanty.

Speaking Fluency

Fluency is defined as "natural language use occurring when a speaker engages in meaningful interaction and maintains comprehensible and ongoing communication despite limitations in his or her

communicative competence" (Richards, 2009, p. 14). Lennon (1990) believes that fluency, in a narrow sense, is a subcomponent of oral proficiency, and is usually considered in evaluating oral proficiency. This complex concept has been described or operationalized in different ways in relation to speaking. According to Kormos and Dénes (2004), fluency is sometimes described as speech or articulation rate and operationalized in terms of the number of syllables per time unit. It is sometimes operationalized in terms of breakdown, that is, the duration and number of silences in the running, that is, pausing and hesitation (Ellis & Barkhuizen, 2005) or ready-made chunks (McCarthy, 2005). Fluency is sometimes described and measured in terms of different types of pauses and mean length of run. As De Jong et al. (2013) explain, rate of all pauses is measured as the number of pauses which last a certain period of time, namely, 0.25 seconds or more, per 100 syllables. Rate of long pauses includes the number of pauses which last a longer period of time, namely, 0.5 seconds or more, per 100 syllables. Rate of filled pauses is the number of filled pauses (an articulation, like "um", which is not a word and is encountered between utterances) lasting 0.25 seconds or more, per 100 syllables. Rate of unfilled pauses refers to the number of unfilled (silent) pauses which last 0.25 seconds or more, per 100 syllables. Finally, mean length of run is the mean number of syllables spoken between pauses for 0.5 seconds or longer.

Measures of fluency have also been subject to some investigations in different domains. For instance, pausing as an important subdimension of fluency has been subject to several studies on such topics as the relationship between L1 and L2 fluency (De Jong et al., 2013; Derwing et al., 2009), the relationship between utterance fluency and perceived fluency (Bosker et al., 2013; Rossiter, 2009), and fluency development during study abroad (Llanes & Muñoz, 2009). As Mirzaei and Heidari (2012) maintain, these prior studies accentuate both importance and complexity of fluency in communication.

Despite the subjectivity and difficulty involved in measuring fluency, fluency has attracted the attention of some L2 researchers. For instance, within the area of MALL (mobile assisted-language learning), Grimshaw and Cardoso (2018) studied the effect of *Spaceteam*, which is a mobile game, on 20 low-intermediate second language learners' oral fluency. The ESL (English as a second language) participants were assigned into game and non-game groups, and then they were interviewed. The results showed that the learners who played the *Spaceteam* game performed better than the control group in speaking fluency, that is, the number of syllables produced per minute in an oral interview test.

Also, Diyyab et al. (2013) investigated the effectiveness of using a multimedia-based program for developing EFL speaking fluency skills among second year, English section student teachers. Their sample consisted of 30 student teachers in Egypt. A speaking fluency test with a rubric for assessing the participants' performance was used before and after using a multimedia-based program to measure the level of the participants in English speaking fluency. The results revealed that the multimedia-based program was effective in developing student teachers' EFL speaking fluency.

In the EFL context of Iran, several researchers (e.g., Amirnejad, 2015; Bahrani, 2011) have used technology to see its effect on speaking fluency. For instance, Amirnejad (2015) investigated the effect of cell phone video recordings on Iranian EFL learners' speaking fluency, as measured by speech rate. The participants were 40 elementary-level learners who were randomly assigned to experimental and control groups. The participants in the experimental group were exposed to 15 monologue videos through their cell phones as part of their homework. They were asked to video-record themselves talking on the topics. The findings revealed that recording the participants' voice greatly affected the learners' rate of speech.

Targeting fluency in speaking on account of flipped methods appears to be a promising area for research in EFL contexts. Recent interest in technology-oriented methods along with the exigency of online courses due to the COVID-19 outbreak in teaching speaking may shape a growing stream of flipped teaching research practice, such as micro flipped teaching, in EFL contexts. However, as the review of literature shows, this issue is fairly absent from the L2 research archive. This study, thus, aimed to fill this research gap about the (in)effectiveness of micro flipped classroom on speaking fluency of Iranian EFL students, as compared with the mainstream traditional teacher-fronted classroom. The findings may be important for many EFL students who know grammar and vocabulary, and are able to write short sentences or paragraphs, but they have not developed good fluency in speaking. The outcome

of the present study may be important for those who want to gain more desirable results in speaking classes. Taken together, the study was an attempt to seek an answer to the following research question:

- Is micro flipped classroom more effective than the traditional teacher-fronted classroom in developing speaking fluency among Iranian EFL learners?

Method

Participants

The participants of the study included 40 female learners of English who were chosen from 44 EFL learners studying in a language institute in Isfahan, Iran. The participants with a mean age of 23 had an experience of learning English for 5-6 years, and registered for an intermediate-level English conversation course. In addition, teaching materials for speaking included the topics and questions presented in the book titled *Discussions A-Z Intermediate* by Wallwork (2010). The participants were native speakers of Persian who they were selected through Outcomes Placement Test, with a range score of 26 to 32, set for intermediate-level language learners. They were randomly assigned to a control group and an experimental group, each with 20 participants in each. In the control group, the participants were exposed to the regular method of teaching speaking. The experimental group was exposed to speaking materials through micro flipped method of teaching.

Instruments

Outcomes placement test

To check the participants' homogeneity to be within the intermediate level, the Outcomes Placement Test (2016), was employed. This test was originally developed to help course providers place students at the most appropriate level. The Outcomes Placement Test Package includes three types of sections/tests: separate oral and writing tests, along with the core placement test. The core placement and oral sections were used in the present test. The oral section contained 50 items assessing test takers' grammar and vocabulary knowledge, and the oral section consisted of an interview to help interviewers determine the appropriate speaking level of the test takers. The test was piloted among a group of 30 EFL learners who were at the similar level as the main participants. The interrater reliability of the oral section index was set to be high (r = .94), and Cronbach's alpha coefficient of the core section was found to be acceptable (α = .89).

Speaking test: Interview

To assess the participant's speaking fluency, a speaking test was administered before and after the treatment. The test comprised of an interview and lasted between 11 to 14 minutes with two parts. In part one, the participants introduced themselves and answered several simple opening questions. This part was not recorded. In part two, the participants were given two cards which asked them to speak about two topics for 10 minutes, 5 minutes for each topic in each card. For instance, in one card, it was written:

- *Describe an item of technology that is very important for you. You should explain:*
- *What the technology is.*
- *When you get it.*
- *How often you use it and how different your life would be without it.*

The interviewer first read the questions and the participants were then given 1-2 minutes to prepare their talk. They could make notes before speaking. Then, they were asked to talk about the two topics (for a limit of 10 minutes) with their voices recorded by a voice recorder. To control the practice effect of utilizing the same version as the pretest, two different topics were used in the posttest. The topics were extracted from *The Cambridge English IELTS Book 13*, published by Cambridge University Press (2018). The appropriacy of the questions and the clarity and coverage of the topics, were checked in advance with two experienced experts. The speech samples of the participants were audio-recorded and introduced to a computer program called PRAAT, computer software package for speech analysis, (Boersma & Weenink, 2015).

Procedure

Forty-four EFL learners, who registered for intermediate-level English course from a language institute in Isfahan, were selected. At the beginning of the study, an Outcome Placement test was administered to ensure their homogeneity in terms of proficiency before they receive the instructions of the study. Four students were excluded from data analysis. After establishing homogeneity of the participants, they were randomly assigned to an experimental group and a control group. Then, a speaking pretest, i.e., interview, was administered to gauge the participants' speaking fluency. In doing so, the participants were contacted personally and one of the researchers interviewed them individually during a week.

During the research treatment, both experimental and control groups attended English conversation classes two days a week, receiving 90 minutes of instruction in each session. The same instructor taught both groups. The treatment continued eight sessions, for about a month, taking both classroom and non-classroom locations into account. The time was also identical for both groups.

The experimental group was exposed to both in-class and out-of-class activities. The out-of-class activities included video files about the conversations, lecture, and topics raised in *Discussions A-Z Intermediate* (Wallwork, 2010). These videos were uploaded each week before face-to-face class via Edmodo (see Figure 1), which is a social learning platform for teachers and students to exchange ideas, share content or information, and access homework. Some of the videos contained recordings of the teacher's instructions to stimulate the participants' interests and improve their speaking skills. The participants were provided with micro videos of 1-5-minute length through Edmodo. In addition, they were sometimes invited to take online quizzes through Edmodo at home.

As shown in Figure 1, the teacher provided instructions and asked the students to reflect on their topics related to the following session materials in the classroom. The videos used in the experimental group were short in duration to reduce the cognitive load on the part of the learners. Then, the learners met their teacher in person in the classroom to discuss the video content, solve their problems, do textbook-based in-class activities, and communicate their views. Occasionally, they were asked to stand up in front of the class with a partner and present the video content and then discussed the topic of mini videos and lecture files (see Table 1). After class, unlike the participants in the control group, they were not required to do homework, but were asked to review their materials to consolidate their knowledge.

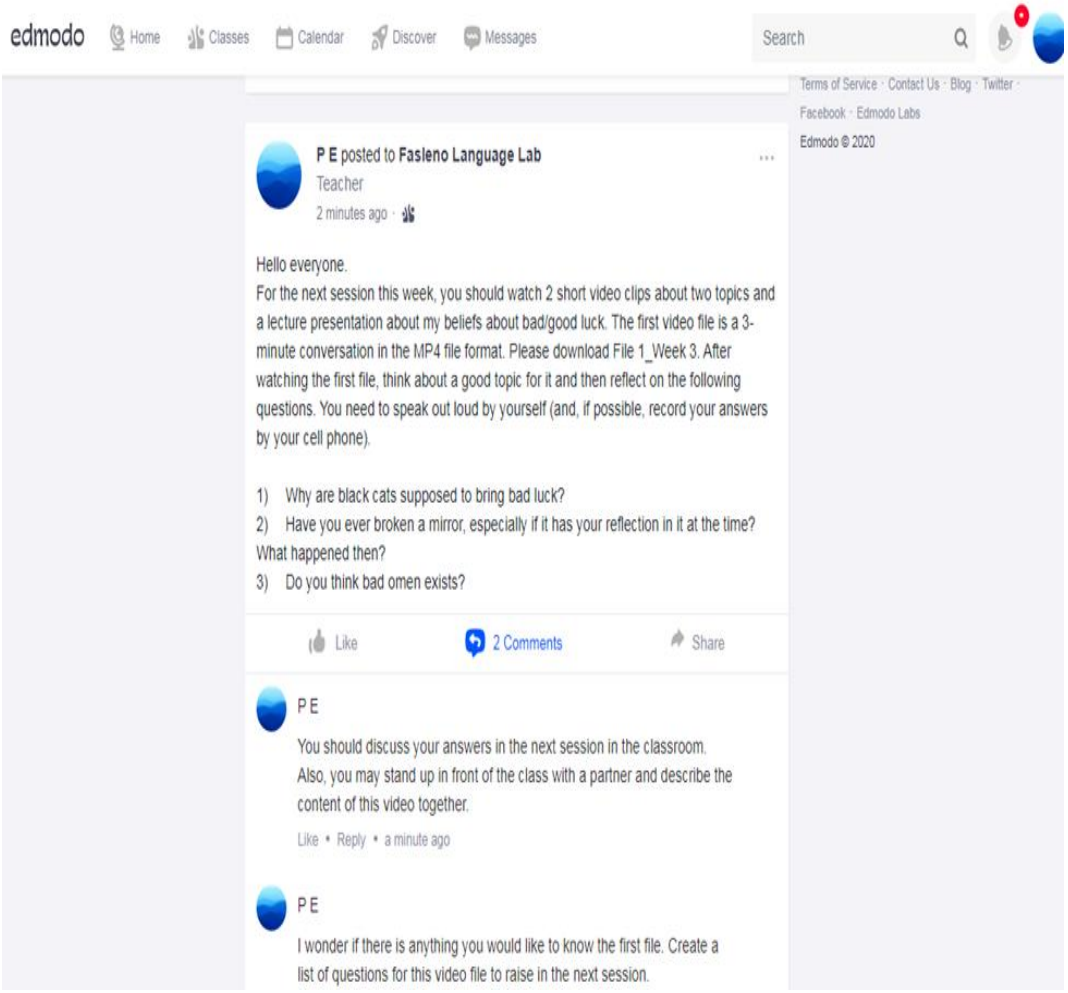

Figure 1. A screenshot of the out-of- class instruction in Edmodo.

In the control group, the same textbook was presented to the participants in a fully face-to-face classroom. The teaching materials were also introduced in the print format in the classroom. However, no videos or instructional materials were introduced before class. In this group, the topic of each unit was introduced by the teacher briefly at the beginning and some warm-up activities, such as previewing the topic, giving ideas about the pictures of the textbook lesson, brainstorming the topic, were presented by their teacher. Then, based on the activities in their textbook, they were asked to listen to the audio files and do follow-up activities, such as group activities, to improve their oral proficiency. This is followed by lecture presentation by one or two students selected by the teacher. She provided some feedback on their lectures, such as their errors and mistakes, and, from time to time, led a short discussion around the topic. An overview of the procedures in both experimental (micro flipped) and control (non-flipped) groups is presented in Table 1.

TABLE 1
The Procedure of the Two Groups of the Study

Types of teaching	Material delivery	Teaching method		
		Before class	In class	After class
Non-flipped classroom	The teaching materials presented to the participants were mostly in the print format based on their coursebook.	None	(1) The teacher had a short talk and introduced the topic of each unit for about 5 minutes (2) The teacher presented warm up activities (e.g., previewing the new topic, commenting on textbook pictures, or brainstorming the topic) for about 15 minutes. (3) The students listened to audio files about the topic and then did follow up textbook-based activities supervised by the teacher, including group activities, for about 30 minutes. (4) Teachers and students listened to one or two students' lectures on an assigned topic. The teacher asked questions and provided feedback on the lecture and their mistakes and occasionally led a discussion around the topic, which all took about 30 minutes.	They were asked to prepare a lecture on a given topic and do the textbook assignments as homework.
Micro flipped classroom	The learning materials were in print and nonprint format. The materials for out-of-class preparation were in the form of short video clips delivered through Edmodo.	Watching short videos, answering questions, and taking quizzes via Edmodo	(1) The learners talked about the content of mini videos and explained what they were about for about 15 minutes. (2) They discussed their questions and views as well as answers to the questions in quizzes. They also communicated the problems and difficulties on the video contents uploaded in Edmodo for about 30 minutes. (3) The learners did pair or small group activities and debated issues with a partner in groups for about 20 minutes (4) The students collaboratively did the textbook assignments for about 25 minutes.	None (No homework was given.)

After the treatment in each group, a posttest speaking test, similar to the pretest speaking, was used. That is, the participants in both groups were interviewed, similar to the interview procedure in the pretest phase and the recorded data were analyzed through PRAAT to measure speaking fluency in terms of six aspects including articulation rate (syllables per second), rate of all pauses, rate of long pauses, rate of unfilled and filled pauses and mean length of run. The aspects of fluency measures, together with their definitions as offered by Ruth (2015) are presented in Table 2. Finally, the quantitative output data from PTAAT were submitted to SPSS Software for further subsequent analysis.

TABLE 2
Fluency Measures and their Operational Definitions

Measure	Definition
Articulation rate	The number of syllables per second, with pauses ≥ 0.25 seconds removed from the calculation
Rate of all pauses	The number of pauses lasting 0.25 seconds or more, per 100 syllables
Rate of long pauses	The number of pauses lasting 0.5 seconds or more, per 100 syllables
Rate of unfilled pauses	The number of unfilled (silent) pauses lasting 0.25 seconds or more, per 100 syllables
Rate of filled pauses	The number of pauses consisting of non-lexical fillers lasting 0.25 seconds or more, per 100 syllables
Mean length of run	The mean number of syllables spoken between pauses (filled or unfilled) 0.5 seconds or longer

Results

To investigate whether the instructions in both experimental and control groups would have any effects on the EFL learners' speaking fluency, the data on the fluency aspects obtained from PRAAT were subjected to quantitative analysis though SPSS. To see whether to run parametric or non-parametric statistics, these data were checked for distribution normality using Kolmogorov-Smirnov test. As the sample size was small and the data were not normally distributed, the mean ranks on the six aspects of fluency were obtained and non-parametric tests of significance, that is, Mann-Whitney tests, were run on the data from the two groups in both pretest and posttest phases. The Mann-Whitney U test compares medians between two groups. The results of the Mann-Whitney U tests on the speaking fluency for the two groups of the study in the pretest are summarized and presented in Table 3.

TABLE 3
Results of Mann-Whitney Tests on the Experimental and Control Groups' Fluency Data in the Pretest

	Control Group (N = 20)			Experimental Group (N = 20)			Mann-Whitney U	Z	Sig.
	Mean	Mean Rank	Sum of Ranks	Mean	Mean Rank	Sum of Ranks			
Syllables per second	2.93	23.22	464.50	3.19	17.78	355.50	145.50	-1.476	.140
Rate of all pauses	12.26	22.15	443.00	12.02	18.85	377.00	167.00	-.893	.372
Rate of long pauses	11.84	23.05	461.00	11.23	17.95	359.00	149.00	-1.382	.167
Rate of unfilled pauses	13.44	20.78	415.50	13.47	20.22	404.50	194.50	-.149	.881
Rate of filled pauses	3.390	19.02	380.50	3.6400	21.98	439.50	170.50	-.801	.423
Mean length of run between pauses	10.36	22.25	445.00	10.00	18.75	375.00	165.00	-.949	.342

According to the results presented in Table 3, there was no significant difference between the participants' fluency regarding the aspects of speaking fluency measures at the beginning of the study ($p > .05$). The Mann-Whitney statistics for the syllables per second (U = 145.500, $p = .140$), the rate of all pauses (U = 167.00, $p = .372$), the rate of long pauses (U = 149.00, $p = .167$), the rate of unfilled pauses (U = 194.50, $p = .881$), the rate of filled pauses (U = 170.50, $p = .423$), and the Mean length of run between pauses (U = 165.00, $p = .342$) were not statistically significant, indicating that the control and experimental groups were not significantly different on the six aspects of fluency before treatment.

However, differences were observed in the posttest phase when the Mann-Whitney U tests were run on the posttest interview data (see Table 4).

TABLE 4
Results of Mann-Whitney Tests on the Experimental and Control Groups' Fluency Data in The Posttest

	Control Group (N = 20)		Experimental Group (N = 20)		Mann-Whitney U	z	Sig.
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks			
Syllables per second	16.42	328.50	24.58	491.50	118.50	-2.208	.027*
Rate of all pauses	27.05	541.00	13.95	279.00	69.00	-3.547	.000*
Rate of long pauses	24.45	489.00	16.55	331.00	121.00	-2.141	.032*
Rate of unfilled pauses	27.02	540.50	13.98	279.50	69.50	-3.537	.000*
Rate of filled pauses	26.45	529.00	14.55	291.00	81.00	-3.238	.001*
Mean length of run between pauses	16.38	327.50	24.62	492.50	117.50	-2.238	.025*

*$p < .05$

According to Table 4, the mean rank for the syllables per second for by the participants in the control group was 16.42, while the mean rank for the syllables per second for the participants in the experimental group was 24.58. This means the participants in the experimental group produced more syllables per second, resulting in more fluent speech. The posttest statistics for the rate of all pauses (U = 69, $p = .000$) revealed a significant difference between the two groups, with the participants in the experimental group having less pauses than those in the control group. Also, the rate of long pauses for the participants in the control group was lower than the one for the participants in the experimental group (U = 121, $p = .032$), which led to a significant difference between the two groups (*$p < .05$). Likewise, there was a significant difference between the two group regarding the rate of unfilled pauses with a mean rank of 27.02 per 100 syllables for the participants in the control group and 13.98 for the participants in the experimental group (U = 69.50, $p = .000$). Moreover, the rate of filled pauses (26.45) was lower in the experiment group than the rate (14.55) in the control group. Finally, a significant difference was observed between the mean length of run between pauses in the two groups in the posttest (U = 117.5, $p = .025$). The experimental group had a statistically larger mean length between pauses (*$p < .05$). As Figure 2 vividly displays, the mean rates of pauses were smaller in the experimental group, but the mean length of run between pauses and articulation rate mean were larger in this group in the posttest.

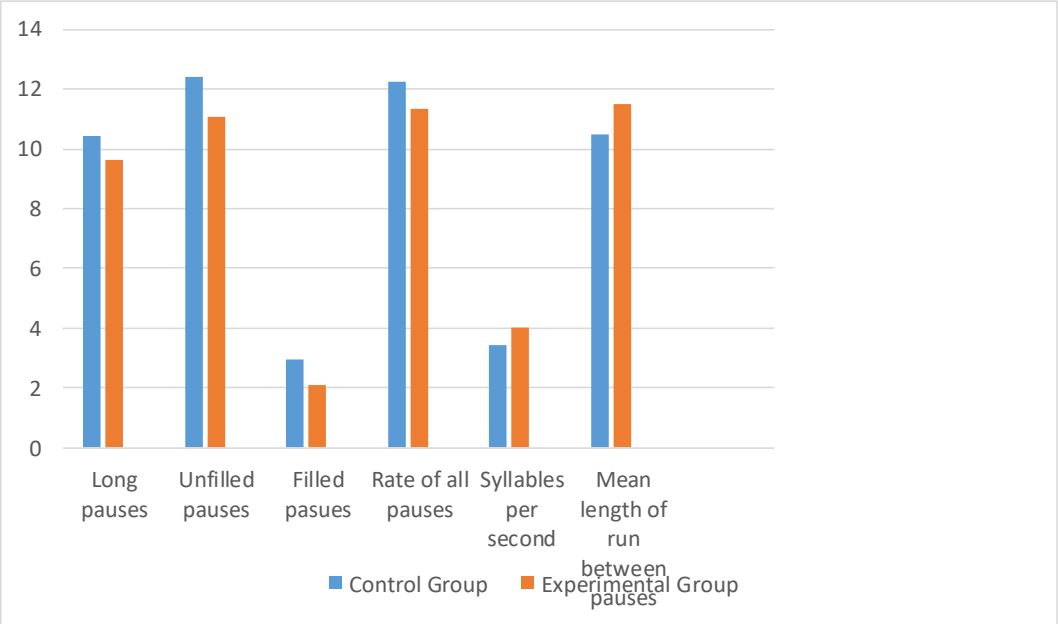

Figure 2. Comparison of fluency measures between the experimental and control groups in the posttest.

Discussion

The findings revealed that micro flipped method had significant effects on the aspects of speaking fluency. The effects were greater in the micro flipped group. The mean number of syllables per second (articulation rate) and mean length of run between pauses increased after carrying out the instruction in both groups, but the increase was greater in the micro flipped group, indicating better speaking fluency as the result of micro flipped instruction. Moreover, the rate of all pauses, the rates of long pauses, unfilled and filled pauses decreased in both groups due to the instruction, revealing that the participants were more fluent after instruction. Nonetheless, the comparison of mean ranks between the two groups indicated that there was a statistically significant difference between them. The participants in the micro flipped group gradually improved their (English) speaking skill and demonstrated greater reduction in pauses such as filled, unfilled, and long pauses in their speech than those who were exposed to the traditional method of teaching. Their pauses were often at the end of clauses in speech. As Skehan (2009) states, higher degrees of filled, unfilled, and long pauses are characteristics of less natural speech, compared with pausing at the end of clauses, which is usually more common in fluent speech.

The lower pause rates and higher articulation rate or mean length of run in the posttest phase can be explained in light of the method employed in the experimental group. Research in the field of psycholinguistics (Christenfeld et al., 1991; Inoue, 2010; Kormos & Dénes, 2004) has demonstrated that pauses are indications of time out when the speaker looks for the next linguistic element or the next idea. The micro flipped activities for the learners delivered through Edmodo before class, such as watching mini videos, reflecting on the teacher's questions and recording their answers, allowed these learners to speak and learn the content at their own pace in an individual manner. They may have learned how to recognize demarcations in the speech stream, practice how to plan and manage their speech, hence reducing the time out in their own speech. Additionally, they might have learned to reduce difficulty in planning their thoughts and difficulty of speaking in front of others in the classroom. This issue might have resulted in lower rates of pauses in the posttest interview. As Kenny (1996) asserts, the occurrence of pauses might be related to the difficulty of the task, and pauses are symptoms of difficulties in planning and processing, which can be tackled through effective methods of instructions. The findings corroborate with the Kormos and Dénes (2004) and Rossiter's (2009) report that the number of pauses per second and

pruned speech rate, together mean length of utterance, are the good predictors of fluency scores. Also, they find support from the research such as the study by Grimshaw and Cardoso (2018) who reported that technology-based tools could help L2 learners to improve their oral fluency. Additionally, the results partially lend support to the findings of the study by Amirnejad's (2015) on the use of video recordings and the study by Diyyab et al. (2013) on the use of multimedia-based programs for developing speaking fluency. In the current study, the micro flipped participants were asked to record their voices outside the class while responding to some questions following the video watching. Doing voice recording activity could make them plan and manage their speech better later in the classroom. Similarly, Amirnejad's investigation showed that cell phone video recordings improved Iranian EFL learners' fluency as indicated by rate of speech.

The before-class activities might have helped the learners in the experimental group to lower the cognitive load evoked by the materials in the face-to-face classroom. They learned to be prepared and focus on instructional materials that relate to their learning and speaking skill in the classroom. Thereby, they learned to increase their articulation rates of their speech with fewer pauses in their performance on the posttest. As Garman (1990) states, pauses can be a function of heavy cognitive load. According to cognitive load theory (De Jong, 2010; Sweller & Chandler, 1994), the working memory of an individual is limited. When a learning task needs more capacity than can be accommodated by a learner's working memory, an individual experiences cognitive overload. It is likely that the non-flipped learners experienced more cognitive overload in their instructions. Moreover, it is likely that presenting materials via micro videos in the experimental group might have helped the experimental group learn at their own pace with less stress and anxiety associated with speaking performance. Based on Krashen's affective filter hypothesis, when affective filter is low, L2 learners can provide more comprehensible input (Krashen, 2013). It can be argued that watching videos and pre-class activities gave them some confidence to manage their speech in and in-class discussion and activities. This issue could be another reason for the lower rate of filled pauses, higher articulate speech rates, and faster rate of speech, hence better speaking fluency after receiving micro flipped method. Filled pauses reflect internal processes and affective states and serve a communicative function (Adell et al., 2012). When speaking materials are presented at learners' own pace in a safe environment, the learner may experience less anxiety, leading to lower rate in pause time. The findings can be justified in light of Krashen's monitor hypothesis, according to which, when L2 learners see themselves under heavy monitoring, their performance will decrease (Krashen, 2013). In the micro flipped classroom, which was more student-centered, part of learning was carried out before class at home at the learners' own pace with less monitoring, and this issue might have contributed to their better speaking gradually. The micro flipped participants would have benefited more from individual coaching, and took responsibility for their own learning, hence, becoming more autonomous. In view of the positive effects of the micro flipped model on speaking fluency, the findings can lend support to some prior studies about the positive effect of the flipped classroom on language skills and subskills (e.g., Ahmed, 2016), positive effects of microlesson on innovation and application of educational information technology (Zhang, 2017), and College English teaching (Cao, 2018).

Conclusion and Implications

Micro flipped classroom was found to be more effective in improving the EFL learners' speaking fluency, compared with the traditional mainstream classroom. The micro flipped method allowed the EFL learners to watch short videos in advance to remember and understand the material, and then solve their problems with the support of the assignments and discussions in the classroom. It helped them to increase the articulation rate and mean length of run between pauses in the speech, and decrease the rate of pauses, including the rates of long pauses, unfilled and filled pauses, all contributing to the learners' speaking fluency in the micro flipped group. Compared with traditional method of teaching, the micro flipped

method could provide the learners with more opportunities to participate, interact with each other in the classroom and practice their speaking skill.

The results obtained in this study may lead to several implications. First, the findings accentuate the role of technological aids as a supporting means in L2 teaching and learning process in general, and in L2 speaking fluency development in particular. Second, this research can encourage L2 teachers and educators to utilize pedagogical learning/teaching networks and platforms in their teaching environments to improve the speaking fluency of their students in the target language. Third, the findings give prominence to blended learning in which L2 students can learn and develop their L2 speaking skills and fluency, in part, online and, in part, in the actual classroom. They support utilizing different modes of L2 teaching/learning, particularly after the coronavirus pandemic in the today's world. Finally, in the micro flipped classroom, language-related information transfer can take place outside the class to reduce the cognitive load on the part of L2 learners in the actual classroom. By implication, the micro flip method may create a more welcoming environment in which learners can improve their L2 speaking skills and fluency.

Similar to other studies, this study suffers from certain limitations. A low number of participants, limited range of activities, and the type of sampling may challenge the findings to generalize them to a large population of EFL learners. Also, the participants' level of English proficiency was intermediate. If more students from other levels of English proficiency with a wider range of activities were included in the study, more comprehensive results would be obtained. Moreover, quizzes in the experimental group could allow multiple attempts, making the learners receive different amounts of input outside the class. Future research can take these issues into consideration and investigate more aspects of speaking fluency such as the rate of repetitions and false starts, too.

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