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Flipping Microlearning-based EFL Classroom to Enhance Learners' Self-Regulation

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Abstract

The potential benefit of employing a flipped learning approach, where learners are presented with the content preceding the class time, is to make a shift from traditional teacher-centered learning environments to more learner- and learning-centered ones. As this content delivery should be short, small, fine, and powerful, 'microlearning' as a new method of content-delivery in mediated environments, is suggested. The purpose of this study is to examine the effect of this flipped learning approach on raising Iranian EFL learners' self-regulation. This study was undertaken on 26 intermediate students in a nine-week course held at an English Institute in Tehran, IRAN. Of the participants, 13 learned English using a task-based language teaching (TBLT) approach in a non-flipped learning setting, whereas 13 studied English in a flipped learning setting. The data was collected in three sections: self-regulation survey flipped learning questionnaire and focus group interviews. Findings demonstrate that the latter were more aware of the learning process itself, playing a more active role in the classroom, while enjoying learning, as being more engaged in the learning progress, resulting in the development of their autonomy and self-regulated learning.

Keywords: *Flipped Learning Approach, Microlearning Resources, Self-Regulation, Metacognitive Awareness, Task-Based Language Teaching (TBLT), Learner-Centered Approach, Learning-Centered Approach*

Introduction

A flipped classroom, a new type of blended learning, is a reformation of the traditional learning environment in which the instructional content is often presented preceding the class time via

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different types of media. In a flipped classroom format, the conventional, typical homework is moved into the classroom, as opposed to the after-school format of such activities in a traditional classroom setting. In a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home while engaging in concepts in the classroom with the guidance of a mentor. In the traditional model of classroom instruction, the teacher is typically the central focus of a lesson, the primary conveyor of information during the class period. Lessons are focused on an explanation of the content using a lecture style, and the instructor directly answers learners' questions for guidance and feedback. Therefore, in traditional classes, discussions are mostly led by the teacher as the controller of the conversation.

The flipped classroom moves instruction to a learner-centered and learning-centered model in which the time in the classroom is spent to discuss topics in greater depth while students are introduced to new topics outside the classroom before the class time. This content delivery may be presented in a variety of forms, often video lessons prepared by the teacher or third parties.

As this content delivery should be attractive, short, fine, and powerful, microlearning solutions, as a new method of content-delivery, are suggested. Microlearning contents are small nuggets of learning units and short-term learning activities, such as small video clips of 5 to 15 minutes in length with special features and in particular dimensions. In the following part, first, the theories underlying a flipped classroom format are investigated. Then, the implications of deploying microlearning solutions as a constituent part of such a classroom setting are elaborated.

Flipped Classroom

Flipped Classroom, a modern term in teaching, as developed by Bergmann and Sams (2012) is a new format of a classroom in which the traditional instructional format is flipped; teacher-created materials featuring instruction of new concepts are viewed outside the scheduled class time, freeing teacher-student time in the classroom for more interaction and collaboration. This collaboration can be spent to work on a project to aid laggards or further work with students who quickly learn the material, as students have already studied the theoretical material at home. In other words, conventional homework or activities that normally take place outside the classroom would take place face to face (F2F) in the classroom with a new structure.

This change in the format of the class schedule has an impact on the roles and responsibilities of teachers as well as learners (Baker, 2000). The collaboration among learners, higher levels of personal responsibility on the students' part, enjoying a constructive learning, and active engagement of students in the learning outcome are some of the plus points with flipped classroom format. In flipped pedagogy, education process involves two processes of transferring new information and learner's attempt to assimilate the new information (Lambert, 2012). In the traditional classroom setting, the first step of conveying information takes place during class time and in a F2F environment, and it is then upon the student themselves to make sense of the new information. In a flipped classroom setting, learning takes place outside the classroom in a time preceding the class time, with students collaborating with their peers and the teacher during the

class time. This enables the teacher to provide the learners with immediate corrective feedback when learners are assimilating the new information and developing their insights.

For an English as a foreign language classroom (EFL) with an ultimate goal of language learning through communication, the flipped classroom format can lead to more intercommunication as the method of learning. F2F class time involves not only changing in-class teaching methods but also adjusting the students' perception of how they are accustomed to learning and the teacher's role in the classroom, and thus developing their autonomy and self-regulated learning.

According to Lave and Wenger (1991), learning in the flipped classroom is a journey that involves the construction of identities, where students are engaged in both instructor and learner roles, and more importantly, in the process of learning by doing.

The flip technique brings learning into two levels, the individual level, and the group level. It can change in-class pedagogy based on both cognitive and social constructivist theories, leading to what Piaget (1969) believes - the gradual acquisition of knowledge in one's head. However, this learning takes place in a social environment where individuals interact with different groups daily (Vygotsky, 1978). This gives the flipped classroom a nature of constructivist learning in which knowledge is acquired through interaction with others.

In a flipped classroom, the task of learning is carried out before class time as homework via a short video, which builds the lower tier of remembering and understanding in Bloom's Taxonomy (Krathwohl, 2001). During the class, the instructor uses social constructivist activities of discussion and collaboration on the content to enhance learning outcomes. In this stage, learners create an artifact demonstrating their new knowledge, which can later be used at Bloom's higher applying, analysis, evaluation, and creating tier. The instructor's role during the whole process is as a guide to help students apply new learning or referring them back to the flipped materials for further information. In addition, feedback from the instructor, as well as viewing examples of others' work, helps individuals to build a community of learners in the class - the central point where learning takes place.

Microlearning Solutions

Microlearning solutions deal with small nuggets of learning units and short-term learning activities in a mediated environment such as video clips to teach. Microlearning involves a variety of online resources which are Short (lasting for a short time), Small (time-controlled between 5 to 15), Fine (well-selected content), and Powerful (widely applicable teaching resources), and are presented in a set of subsequent, short learning activities.

According to (Hug, Lindner, & Bruck, 2006), there are different dimensions of time, content, curriculum, form, process, mediality, and learning type to characterize microlearning activities.

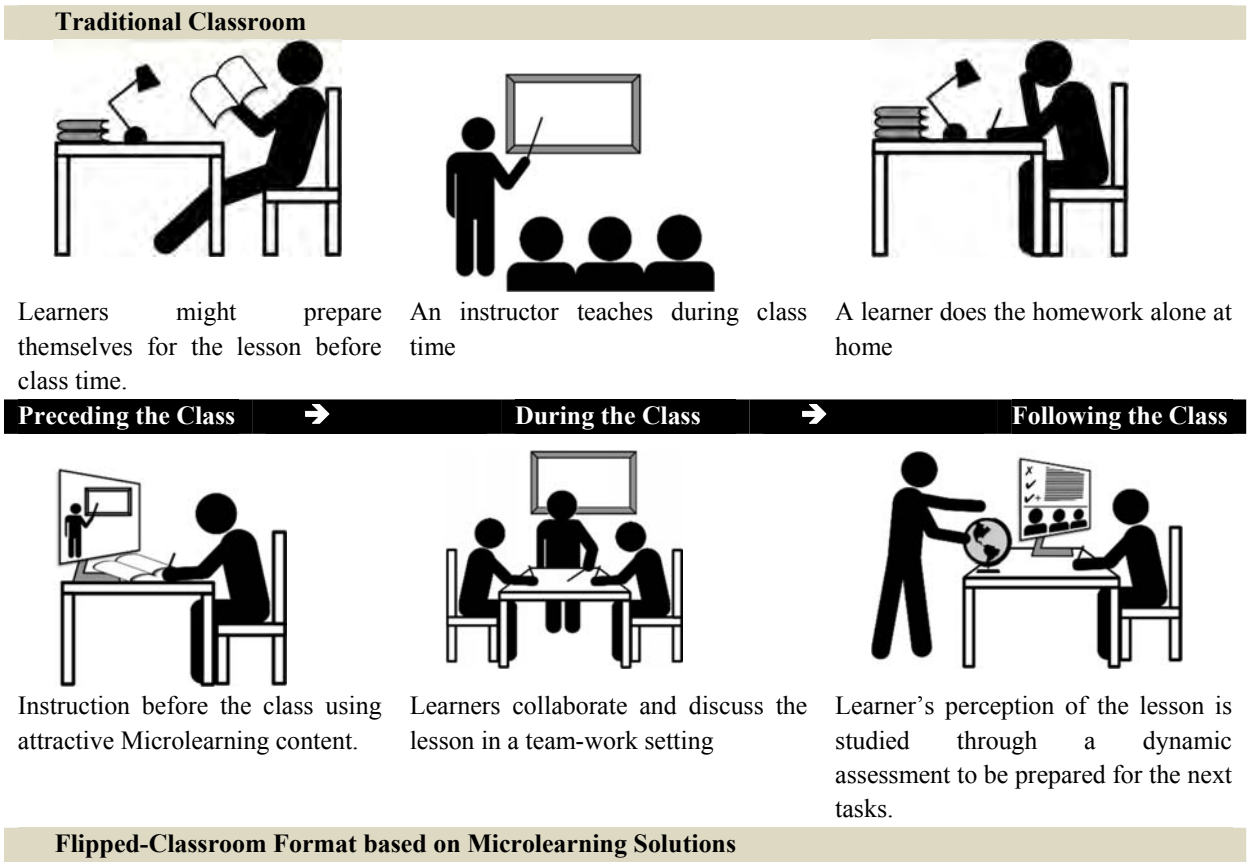

Figure 1. Flipped-Classroom Format vs. Traditional Classroom Format

Sletten (2017) suggested that providing learners with video lectures in a flipped-learning environment can engage learners in the learning process more through a constructivist teaching approach. This study aims to go further to use video lectures in the form of micro-learning content delivery, i.e., 3 to 10-minute videos to boost engagement, encouragement, and the effectiveness of the pre-class content. Ray and Powell (2014) and Long, Logan, and Waugh (2016) studied the effects of using shorter videos on learners' motivation as one of the determining components of self-regulation. When the content is small, students are more encouraged to go through lectures, repeat them and access them more easily both as pre-class preparation content and post-class review content in order to improve their autonomy and eagerness (Ding et al., 2017).

Previous Studies on Flipped Classroom Setting

Ramirez (2017), in her paper, describes the step by step process of the flipped lesson plan for a pronunciation lesson in a Teacher Training Course in Spain. The lesson plan includes both in-class and out-of-the-class activities. Furthermore, an explanation of the technological resources used for the different types of activities included in the plan, together with a description of how evaluation and assessment were performed along the lesson is presented. As for the reflection on

the course, the author concludes that students expressed a preference for the flipping approach as well as the blended method, in such a way that when they were asked whether they would take the course only in a face-to-face format, the answer was no.

In a similar course, Buitrago and Díaz (2017), employed flipped classroom format in a writing course. The result was an increase in students' motivation toward the use of technology for language teaching and an improvement in the grading scale for the writing. One of the conclusions from the study was the preference and effectiveness of teacher-made videos over curated videos. They concluded that teachers' voices and faces in videos made it a lot easier for them to understand concepts and to relate them to their learning process.

Tohei (2017) applied flipped learning in English as a foreign language (EFL) classroom. In the study, a survey was used to determine how students perceived the wide range of activities that came from learning the basics beforehand and then using the in-class time to complete challenges. According to the paper, although face-to-face teaching time was diminished after implementing the flipped learning classroom format, the learners gained more opportunity to interact and collaborate with their instructor and peers in the class.

As a case of employing a flipped classroom setting in a cross-cultural learning environment, Teng (2017) showed how flipped learning provides opportunities for increased academic success in a spoken class by shifting learners from passive to active learning. The results of the interviews following the course showed that students were more satisfied with the flipped classroom method.

The Study

In all previous studies on flipped classroom setting, the emphasis is to compare the overall effectiveness of the flipped classroom setting over against that of the conventional ones. However, one of the major impacts of such a setting is to engage learners in their learning process, thus enhancing their self-regulated learning – their ability to understand and control their learning environments. Learners with a higher degree of self-regulation can set goals, select strategies that aid them in achieving those goals, know how to implement those strategies, and know how to monitor their progress towards their goals (Schunk, 1996). Self-regulated learning theory dates back to the social-cognitive learning theory of Albert Bandura (1997), suggesting that learning is the result of personal, environmental, and behavioral factors. Since then, many studies have applied this theory to different settings, which led to the development of self-regulated learning theory (Butler & Winne, 1995; Zimmerman, 2000). Self-regulated learning theory holds a variety of interacting cognitive, meta-cognitive, and motivational components responsible and necessary for learning. Cognitive skills include skills necessary to encode, memorize and recall information; meta-cognitive skills include skills that enable learners to understand and monitor cognitive processes, and motivation skills include believes and attitudes that affect the use and development of cognitive and metacognitive skills (Zimmerman, 2000).

This paper aims to compare the effect of both a conventional setting and a microlearning-based flipped learning to set on learners' main components of self-regulation: cognition,

metacognition, and motivation. Moreover, interviews and questionnaires were conducted to evaluate the impacts of this setting on improving the components of learners' self-regulation.

Method

This study was conducted using both qualitative and quantitative data. It was collected to demonstrate the effect of microlearning content-providing in the flipped learning setting on intermediate EFL learners' self-regulation enhancement.

Participants

The present study was carried out on 26 EFL learners in two classes, experimental and control, ranging in age from 23 to 40, at an English institute in Tehran, Iran. Of the participants in the control group, thirteen learners receiving instruction in a non-flipped learning environment included nine females and four male participants. In contrast, the participants in the experimental class with a flipped learning setting were eleven females and three males. It is worth mentioning that the proficiency level of both groups was intermediate.

Instruments

Two questionnaires, followed by a focus group interview, were applied in this research. As for the self-regulation questionnaire, Bouffard Educational Self-regulation Questionnaire (1955) was administered on both groups, experimental and control. The purpose of employing this questionnaire was to investigate the level of learners' self-regulation based on the three main components of self-regulation. The survey was divided into three subsets, cognition, metacognition, and motivation, including 6, 5, and 3 items, respectively. The Likert scale was employed in the survey as below:
(1=Strongly agree, 2=Agree, 3=Uncertain, 4=Disagree, & 5=Strongly disagree).

Given the literature, a flipped questionnaire developed by Farrah and Qawasmeh(2018)was deployed to examine the learners' general perceptions in the experimental group towards the flipped learning classrooms. This Surveycontained10 items with five options (1= Strongly Agree, 2= Agree, 3=Uncertain, 4= Disagree, & 5= Strongly disagree).

In terms of focus group interviews, it provides a deeper understanding of collected data and enables participants to interact with each other elaborating more on their opinions (Krueger & Casey, 2014). It was administered on both groups in which participants were able to enlarge on their perceptions and attitudes towards self-regulation. It is noteworthy that the interview data was used to manifest the quantitative data gathered by questionnaires.

Procedure

The study was performed in an English institute in Tehran, Iran, in 2020. Before the administration, participants were provided with the necessary information about the study. Before the administration, the instruments of the study were piloted to 26 English learners at the same level of proficiency in the previous semester, and all the required changes were made. Both

questionnaires were administered in the last session of the course as well as a focus group interview. Cronbach's alpha was used to estimate the consistency of the participants' responses. The reliability coefficients for the self-regulation and the flipped-learning classroom questionnaires were .76 and .73 in turn. That is, both questionnaires indicate a good degree of internal consistency, which makes them reliable instruments for the current research.

Data Analysis

Quantitative data were analyzed using the SPSS software. An independent sample t-test is exerted on self-regulation questionnaires. Afterward, descriptive analysis is applied to flipped-learning class questionnaires. Theme analysis is deployed to examine the focus group interview questions in order to appraise EFL learners' perceptions of the flipped learning environment.

Results

Analysis of self-regulation

The study was employed on 26 participants. Of the participants, 13 participants received instruction in a flipped learning setting based on the microlearning approach. Others, however, studied conventionally. The average age of the participants was 31 (Figure 2). Among all the participants, 19(73%) were female, and 7(27%) were male (Figure 3).

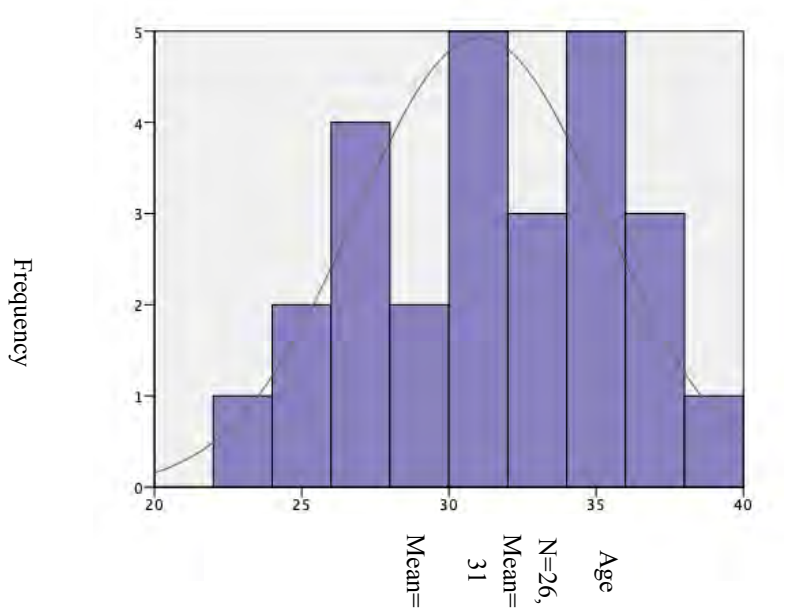

Figure 2. Age Histogram

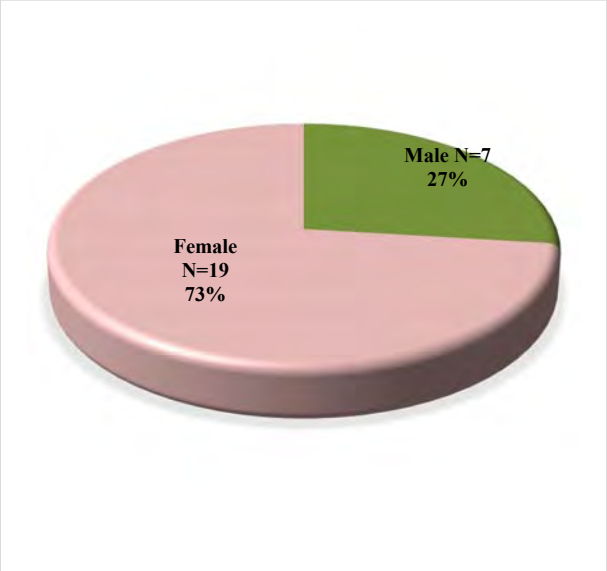

*Figure 3.*Gender Histogram

As shown in Table 1, In terms of metacognition, one of the main self-regulation components, participants in flipped learning classrooms (M=2.20, SD=0.906) utilized more metacognitive strategies than non-flipped setting (M=3.00, SD=0.816). As for cognition, the second component of self-regulation, learners in flipped-learning class (M=1.97, SD=0.802) employed more cognitive strategies comparing to conventional class (M=2.77, SD=0.599). Additionally, results indicate that students in the flipped learning class (M=2.05, SD=0.655) are more motivated than those in the non-flipped environment (M=2.74, SD=0.641).

Table 1.
Group Statistics of EFL learners' level of self-regulation

Self-regulation components	Groups	N	Mean	Std. Deviation	Std. Error Mean
Metacognition	Flipped	13	2.20	.906	.251
	Non-flipped	13	3.00	.816	.226
Cognition	Flipped	13	1.97	.802	.222
	Non-flipped	13	2.77	.599	.166
Motivation	Flipped	13	2.05	.665	.184
	Non-flipped	13	2.74	.641	.178

The two-sample t-test (independent t-test) analysis was exerted to evaluate EFL learners' self-regulation in both the flipped - learning environment using microlearning approach to deliver the content, and the conventional one. As is shown in Table 2, the result presents, considering metacognition, cognition, and motivation as the main components of self-regulation learning, the t and *p* values are respectively: "t(24)=-2.366, *p*=0.026", "t(24)=-2.863, *p*=0.009", and "t(24)=-

2.705, *p*=0.012".Since the*p* value is less than 0.05, therefore, there is a significant difference in the EFL learners' level of self-regulation between flipped and non-flipped environments.

Table2.
independent samples t-test of EFL learners' level of self-regulation

		Levene's Test for Equality of Variances		t-test for Equality of Means			
Self-regulation components		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Metacognition	Equal variances assumed	2.002	.170	-2.366	24	.026	-.800
	Equal variances not assumed			-2.366	23.747	.027	-.800
Cognition	Equal variances assumed	.726	.403	-2.863	24	.009	-.795
	Equal variances not assumed			-2.863	22.217	.009	-.795
Motivation	Equal variances assumed	.018	.894	-2.705	24	.012	-.692
	Equal variances not assumed			-2.705	23.968	.012	-.692

Focus Group Interview

The last part of the class was devoted to a focus group discussion among EFL learners in both the experimental and control groups separately. The focus group discussion included four questions regarding three main elements of self-regulation: cognition, metacognition, and motivation, administered by one of the researchers. The questions were shown by the PowerPoint file on the interactive board so that learners could see the questions while discussing. The first discussion question of '*How do you integrate new information to your prior knowledge?*' was asked. Here are some extracts of the flipped classroom discussion:

Because we receive the lessons three days before the class, we have enough time to think about the new lessons and try to connect the new information to the previous one. (Flipped)

Each session, our teacher gives some tasks that we have to use new information and previous lessons in order to complete the task. (Flipped)

When I get the lesson before the class, it gives me a clue what next class will be about. It also gives me a chance to think about the topic and activate my previous knowledge. (Flipped)

Some excerption in the non-flipped setting are as follows:

Sometimes I find it hard to think about what I know about the topic because it is new to me. (Non-flipped)

In my opinion, the prior knowledge is very important. It gives me confidence. If I know about the topic I can act better in the class. Unfortunately, it is hard for me to self-study before coming to the class because I do not know where to star.. (Non-flipped)

Given the excerpts above, learners in the flipped-learning environment stated that receiving the content of each session before the class enables them to relate and activate their prior knowledge (schemata) to accomplish their assigned tasks. Enabling learners to organize, store, and recall information, schemata are crucial to self-regulated learning. Non-flipped setting

learners, however, believed that although prior knowledge would help them perform more effectively, it is difficult to activate their schemata since they are not familiar with the topic in advance, and they have not instructed the class.

The second question was *What task strategies do you use? How do you know what strategy to use? why?* The following extracts underline the strategies used by the learners:

We use different strategies like note-taking, finding the main idea, outlining, and etc. In this term, we got to know how to use these strategies in different tasks. We also use same strategies in different skills. (Flipped)

We have learnt a lot of strategies until now. But we didn't know how to use finding main idea of the passage strategy for example. This term, before the first writing task, a reading passage that focused on main idea of each paragraph was sent to us before the class. Also, a video was sent to us that showed the steps to use main idea and supporting details step by step. After that, a writing task which was an email similar to the video was given to us. We knew how to write and we knew how to use main idea and supporting details in our writing. (Flipped)

I know some strategies. For example, I know note-taking. I like it a lot. The problem is that we do not have enough time in the class to practice it. To be honest, I cannot do it alone at home. (Non-flipped)

I know a lot of strategies. I know guessing the meaning from the context, finding the main idea from the passage, note taking and etc. I like to have more time to practice them in the class with the help of my teacher. (Non-flipped)

As stated, learners in the flipped-learning classroom found task strategies taught in the short and fine content before the class very useful. Additionally, the step-by-step instruction given has empowered learners to do the task. Hence, probably, there would be more time in the class to work on various task strategies and to interact with peers and the instructor. While in the non-flipped classroom, learners preferred to have more time in the class for interaction and practicing different strategies.

The next question was: *Do you set goals for tasks? Do you evaluate yourself while doing a task?* Here are some extracts from the answers:

Yes! In the beginning, I didn't know how to set goals for my tasks. Each task we got to do before the class had a goal. After few sessions, our teacher asked us to write the goal of each task. Now I know how to choose a specific goal for my tasks. We have self-evaluation after each task that we should do by ourselves and at the end of each session our classmates evaluate our tasks. This helps me to correct my mistakes now. I know my weak points now and try my best to improve them. (Flipped)

I guess I know the goal of each task but I don't know how to evaluate myself. My tasks are always corrected by my teacher. I don't know how to evaluate myself. (Non-flipped)

According to excerpts above, in flipped-learning class, tasks and lessons' goals are pointed out clearly. Learners are required to recognize and set the goals of each task. Knowing the tasks' goals enables learners to be aware of their learning process and be able to evaluate their performance during the task process to achieve the ultimate aim of the task. On the other hand, in

the traditional class, learners are not able to evaluate themselves since they are not aware of the potential aims of each lesson and task beforehand. The instructor has always evaluated their performance.

The last part was *Do you feel confident in the class?* Here are the highlights extracted:

A lot! Getting the lessons before the class makes me more prepared. Also, we are asked to do some tasks related to the lessons. It forces me to study before the class to complete the task. It helps me to use my previous lessons too. It motivates me to study harder before coming to the class. When I am prepared before coming to class, I also perform better in different activities and games in the class. It makes me feel much more confident in the class. (Flipped)

It depends on the topic. When I am familiar with the topic, I talk a lot! But, when I have no idea about the lesson I keep quiet. Also, I cannot act well in the tasks and activities. (Non-flipped)

Given the extracts above, delivering the content of each session previously provides learners with a higher level of confidence. Knowing and integrating new information to prior knowledge using appropriate strategies enables learners to perform more confidently during the class. Besides, self-efficacy as an essential element of self-regulated learning is related to the level of self-esteem positively (Goddard, Hoy, & Wool Folk, 2000)

Analysis of Flipped Classroom

As results in Table 3 illustrate, learners exposed to flipped learning classrooms strongly agreed that this approach would provide less frustration in the classroom (M=1.00, SD=0.000). It is also believed that flipped learning classes assist learners to increase their level of self-directedness (M=1.23, SD=0.439). Additionally, results indicate that learners find the flipped learning classes a better environment to have more one-to-one interaction with the instructor (M=1.31, SD=0.480), to have more opportunities to get involved in inside-classroom activities (M=1.31, SD=0.630) and to communicate more with the peers (M=1.38, SD=0.768). It also gives them a chance to ask difficult questions and get responded immediately (M=1.31, SD=0.480). Moreover, flipped learning classes entitles learners to access to the lectures and the content of each session based on the microlearning approach easier (M=1.38, SD=0.506). Subsequently, as results show, learners would choose a flipped learning setting rather than the conventional one (M=4.77, SD=0.599) and recommend it to their friends (M=4.46, SD=0.660). Furthermore, it is also believed that the flipped-learning environment has improved their level of English learning (M=4.69, SD=0.480).

Table 3.
Descriptive Statistics of EFL learners' attitudes and beliefs towards flipped learning classroom

	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
The flipped classroom reduces the amount of frustrating sessions.	13	1.00	.000	.000
The flipped classroom supports students in becoming self-directed learners.	13	1.23	.122	.439
Teachers are available for more one-on-one interaction with students in a flipped classroom.	13	1.31	.133	.480
The flipped classroom helps students to ask questions and get immediate targeted answers to difficult concepts.	13	1.31	.133	.480
he flipped classroom allows students have more time for friends, play, and extra-curricular activities.	13	1.31	.175	.630
The flipped classroom allows students to have access to the lectures at any time easily.	13	1.38	.140	.506
The flipped classroom gives students more opportunities to communicate with each other.	13	1.38	.213	.768
Students would not recommend the flipped classroom to their friends. (REVERSED)	13	4.46	.183	.660
The flipped classroom has not improved students' learning of English. (REVERSED)	13	4.69	.133	.480
Students would rather watch a traditional teacher lead lesson than a video one. (REVERSED)	13	4.77	.166	.599
Valid N (listwise)	13			

Discussion

As stated in the introduction, the research was conducted in order to compare the effect of micro-learning content delivery in a flipped-learning environment on Iranian EFL learners' level of self-regulation. In this study, assisting learners to have more active and self-regulated learning, learners were provided a flipped-learning context based on a microlearning approach to supply a fine and small content before each session. Independent t-test analysis explicitly illustrated that the flipped-learning setting in which the content is presented in the micro-learning form was remarkably more effective than the conventional one regarding the main components of self-regulation, i.e., metacognition, cognition, and motivation.

Furthermore, as the results of the focus group interview revealed, learners in the flipped setting receiving the content of lessons in terms of micro-content delivery were more satisfied as their schemata were activated before the class. Hence, they believed that their level of confidence increased as their minds were brushed up, and they felt more prepared before coming to the class. Additionally, the results of the descriptive analysis indicated that learners believed that the flipped-learning setting had provided them with a less frustrating environment, more interaction, and more involvement during class activities.

Flipped-learning, a pedagogical approach in which the basic instruction is given before the class and the concepts are explored in-depth during class time, empowers learners to construct their knowledge by integrating the video lectures received before the class and the genuine problems and tasks assigned during the class. In other words, based on the constructivist

pedagogical approach, flipped-learning stimulates learners' prior knowledge and requires them with comprehensive input enabling them to construct their knowledge through authentic activities and more interactions in the class (Ray & Powell, 2014).

In this study, the learners in the experimental group were exposed to a flipped-learning environment. That is, the learners received the content of each session before the class. Meanwhile, the content of lessons was provided in the form of micro-learning content transmission. To be more specific, the content was in the form of 3 to 10-minute videos, demonstrating a point of knowledge by integrating various learning resources and objectives. Although the time of the videos was short, they accommodated a comprehensive teaching process, incorporating introduction, main points, difficulties, and a wrap of the knowledge.

The results of this study illustrate that learners in the flipped learning environment receiving the content of each lesson before the class in the format of micro-learning videos may become more self-regulated. That is, all three main components of self-regulation, metacognition, cognition, and motivation (Zimmerman, 2000) are, in turn, facilitated in the current setting. The reseason is that in this environment, learners are required to take responsibility for their learning as they are more aware of the learning process and have more time to take part in in-class activities and tasks. These findings concur well with Sletten's (2017), suggesting that learners receiving video lectures in a flipped-learning environment performed a more active role in the learning process through a constructivist teaching approach. In the ongoing study, however, learners receive the video lectures in the form of micro-learning content delivery, presenting information through a 3 to 10-minute video. Due to its short length, it considers being more engaging, encouraging, and effective. Hence, it may lead learners to have fierce self-regulated learning skills and to learn more productively.

In the current study, learners not only are exposed to a flipped environment but also receive the lesson by short, fine, and small size of information. In terms of motivation as one of the determining components of self-regulation, it can be enhanced by a micro-learning form of content transmission. To put it more specifically, the length of the lectures is shorter as compared to a common video lecture. Nevertheless, the videos seem to be as comprehensive as those ordinary ones. That is, it ties together the whole lesson in a very short video (Ray & Powell, 2014). The findings of this study might be in line with that of Long, T., Logan, J., & Waugh, M. (2016), demonstrating learners' positive attitudes towards pre-class video lectures. Interestingly, in the study mentioned above, learners held the view that short and engaging lecture videos may be more beneficial in terms of pre-class learning material. As a result, producing shorter and more engaging videos, micro-based resources, is bound to foster learners' level of motivation leading to becoming more self-regulated.

This learning strategy would provide learners with a stronger learning mechanism, through which students can utilize cognitive strategies like encoding, organizing, and elaborating more constructively (Neath, 1998). In addition, it raises learners' awareness of metacognition subcomponents, knowledge of cognition, and regulation of cognition (Schraw & Moshman, 1995) and how they can take part in and evaluate their learning. Last but not least, this strategy

would increase the learners' level of self-efficacy as well. Besides, it helps learners set both short and long-term goals. Therefore, learners with more levels of self-efficacy and goal-orientation are more likely to get engaged in the learning process, thereby boosting their level of motivation (Bandura, 1997).

As for the advantages of integrating self-regulated learning skills and the flipped-learning approach, self-efficacy level enhancement can be pointed out. To put it in another way, incorporating the self-regulated strategies under flipped-learning environment not only empowers learners to use the strategies of planning, be aware of their learning process, be able to evaluate their learning, and make effective use of their study time but also gives learners the higher level of confidence enhancing their self-efficacy (Lai, C. L. & Hwang, G. J., 2016). Concerning micro-based resources, the strongest point is that the video lectures can be played repeatedly, and it is accessible for learners at any time so that learners can review after the class, strengthen their weak points, and improve their autonomy and eagerness (Ding, N. Et al., 2017).

Learners in flipped learning classrooms believed that this learning strategy would empower both instructors and learners to have more effective interaction in class time, which was in line with the findings of Baker (2000), and Lave & Wenger (1991). Additionally, similar to what Ramirez (2017), Tohei (2017) and Teng (2017) found, the microlearning-based flipped setting lessens the amount of frustration in the class and motivates learners to play a more active role and participate effectively in various activities, which is in line with other scholars' findings (Ding et al., 2017; Lai & Hwang, 2016; Ray & Powell, 2014; Long, Logan, & Waugh, 2016; Sletten, 2017).

Conclusion, Implications, and Future Research

The major contribution of this study is to determine that using appropriate content before each class based on the microlearning approach in a flipped learning environment would improve learners' level of self-regulation as well as learners' interactions. To put it differently, there is a requirement of shorter and more engaging means of content delivery in a flipped EFL learning classroom. Presenting the content of lectures based on the microlearning approach benefited learners to reach higher levels of self-regulation. Furthermore, the amount of frustration may be reduced since the content provided to the learners is more appealing. Both the instructor and learners have more opportunities to have effective interaction within the class time. In terms of accessibility, the content of each session is more reachable to the learners.

Although the present study has revealed some interesting findings of the effects of the microlearning-based flipped classroom on learners' self-regulation, it has some limitations, and further research is needed before firm generalization be made. Owing to the small size of the experiment, the findings may not be precise enough to be generalized into other cases. In addition, learners may not have access to the content of each session before the class due to the lack of technological accessibility. In terms of content creation, creating short videos, and trying to deliver the message as comprehensible as the long ones may be problematic and time consuming for instructors and institute administrators.

Therefore, further studies may be taken into consideration, such as the application and effectiveness of the flipped learning environment using microlearning content delivery on critical thinking. Prospect research may be taken into account regarding the effectiveness of micro-based sources in flipped-learning settings on each component of self-regulation. Additionally, affective factors of individuals can be investigated. As instructors play a vital role in this learning setting, future studies may be carried out in terms of teacher education and teacher training courses. Over and above, considering technology enhancement, various collaborative and communicative tools can be observed to both deliver the content and maximize learners' interactions.

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