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Metacognitive Knowledge Raising Via Explicit Reading Strategy Instruction in Flipped Instructional Environment: A Mixed-Method Study Focusing on EFL Learners' Reading Skill Development

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ABSTRACT

Research in second language learning has identified the absence of metacognition awareness among learners as one of the major problems contributing to students' inability to develop reading skills. This mixed-method study sought to investigate the impact of metacognitive awareness raising via explicit reading strategy instruction in a flipped instructional environment on Iranian EFL learners' reading skills. To this end, a sample of 56 EFL learners at the pre-intermediate level (28 in the treatment group and 28 in the control group) who were selected based on convenient sampling from one of the private language institutes in Kerman, Iran, participated in the study. Data were collected using the Oxford placement test, a reading pre-test, a post-test, and a semi-structured interview. The findings revealed that EFL learners in the treatment group outperformed the control group in reading comprehension from the pre-test to the post-test. The results of the semi-structured interview confirmed the results of the t-test, and it was concluded that the learners were satisfied with the treatment due to its cooperative, fun, and informative nature. The participants, even though they mentioned some negative points such as the unavailability of the instructor and wasting time on both methods and unimportant details, reported on the effective role of both flipped context and the strategy itself. In sum, the results confirmed that integrating flipped classrooms with metacognitive development increased EFL learners' reading comprehension. **©authors**

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1. Introduction

Research on foreign or second language (L2) learning has shown that individual differences can influence L2 learners' behavior during the L2 learning process (Dörnyei, 2009; Dörnyei & Ryan, 2015). Among language skills, reading seems to be a contentious issue regarding language proficiency in a foreign language context because it is essential for accessing information sources. The primary aim of reading skills is to understand, which is a constant challenge, especially for L2 learners (Tercanlioglu & Demiröz, 2015). In L2 contexts where L2 input sources are limited, reading becomes a viable way to develop L2 skills and can enhance or impede academic progress for many L2 learners in all educational settings (Gorsuch & Taguchi, 2010). Härmälä and Barkhanajyan (2018) reported that many L2 readers find it challenging to comprehend what they read, particularly in academic texts. It seems that L2 students lack the necessary metacognitive strategies to successfully manage their reading. Also, academic second language readers, though they have appropriate language proficiency, to some extent have problems with understanding the academic materials (Sahmadan & Ajam, 2020). Additionally, it is argued that how someone manages and monitors the L2 learning process impacts and may even determine how well they learn a language (Chamot, 2014).

This awareness and monitoring of the L2 learning process, referred to as 'metacognition' or 'metacognitive awareness', are important aspects of successful language learning (Öz, 2007). A significant body of research (Anderson, 2002; Ohata & Fukao, 2014; Rican, 2015) has now revealed that metacognitive awareness, the ability to control and regulate one's cognition, and self-controlled mechanisms can play a significant role in L2 learning. Furthermore, metacognition benefits the academic realm and impacts students' modern routines by improving an individual's analytical approaches (Al-Jarrah et al., 2018).

Furthermore, classroom environments can affect the metacognition awareness of EFL/ESL learners. Among all the possibilities of classroom environments, according to previous research (Shih & Huang, 2020; Shyr & Chen, 2018; van Vliet et al., 2015), the flipped classroom is found to have an impact on metacognition. The flipped classroom is "the blend or mixture of any two instructional technologies" (Caner, 2012, p. 24). It has one prominent feature which is distinct from the traditional classroom in that students access teaching content outside of class and use in-class time to get involved in peer discussions, the application of knowledge, or hands-on activities. As a different teaching model, the flipped classroom is believed to impact students' approach to learning because they are expected to actively participate in both in-class and pre-and/or post-class activities (Trigwell et al., 1999). According to Shih and Huang (2019), when students are given more control over learning outside of class, they are also granted more opportunities to use metacognitive strategies to engage successfully in learning. Indeed, there have been several studies attempting to establish the positive relationship between flipped classroom instruction and students' metacognitive strategy use (Shih & Huang, 2019; van Vliet et al., 2015), which is deemed an essential capability for students to develop into life-long learners (Carneiro, 2007; Cornford, 2002; Fleming & Panizzon, 2010).

To attain a more satisfactory result, various teaching methods and learning strategies have been tried and applied in the context of EFL. One of the strategies seems to be metacognitive awareness raising via explicit reading instruction. It is generally believed that the development of metacognition is essential to successful learning because it helps learners manage their cognitive skills (e.g., Gourgey, 2002; Zohar & Barzilai, 2015).

Hence, the present study aimed to investigate the effect of using strategy-based teaching via metacognitive raising on the reading skill of EFL learners who are trained and instructed in the flipped language

learning context. Furthermore, investigating the attitudes of the learners who experienced this type of instruction (metacognitive awareness raising via explicit reading strategy instruction) towards English learning in general and reading skills, in particular, was the other objective of this study.

2. Literature Review

Metacognitive Knowledge

Knowledge of cognition refers to what individuals know regarding their mental processing and includes declarative, procedural, and conditional awareness; that is, learning about things, how to do things, and the reason why and the opportunity to do something (Sugiharto et al., 2018). Flavell (1979, p. 906) defined metacognition as "knowledge and cognition about cognitive phenomena". Schuster, Wirth, J., & Leutner (2018) placed learning strategies at the object level and regarded metacognition as a way to confirm the standard of the appliance of cognitive learning strategies or metacognitive awareness. Metacognitive awareness is knowing how you learn in an ELT classroom. Increasing learners' effectiveness and, more critically, their autonomy requires them to develop metacognitive awareness (Akbarzadeh et al., 2020).

Recent research on metacognitive awareness (Batang, 2015; Maftoon et al., 2014; Öz, 2007; Sun, 2013) has shown that this strategy also significantly affects different aspects of the L2 learning process and academic achievement. For instance, Yilmaz and Baydas (2017) examined undergraduate students' awareness of metacognition, the metacognitive strategies they use in their learning, and their learning performance in pre-class asynchronous activity in a flipped classroom. Post hoc results indicated no difference between metacognitive strategy and learning performance in the first three weeks. However, the results of the first three weeks differed from those of the 4th and 5th weeks. However, learning individuals become more independent and self-sufficient when they are aware of their learning processes and use them to plan, organize, and evaluate their learning (ÇAKICI, 2015; Lazăr, 2013).

Learning Strategy Instruction

Numerous research has assessed the efficiency of teaching-learning strategies for creating metacognitive awareness (Ajideh et al., 2018; Takallou, 2011). It means that learners can achieve higher levels of language achievement when they are explicitly taught language learning strategies and allowed to realize what they can learn in the language classroom (Graham & Harris, 2000). A considerable number of studies have focused on explicit reading instruction. For instance, Chumworatayee (2017) investigated the possible effect of implementing reading strategy instruction on Thai EFL adult learners' reading strategy awareness. The findings revealed that the one-semester implementation of reading strategy instruction could raise these learners' awareness of reading strategies.

Koukourikou et al. (2018) aimed to investigate the impact of a multiple-strategy intervention on Greek EFL secondary school students' reading performance. According to the results of the study, it was revealed that the EFL teachers were not familiar with the strategic use and instruction. Moreover, the quantitative and qualitative data indicated improved students' reading comprehension ability. Suhono (2019) aimed to identify the effects and advantages of providing explicit strategic instruction to enhance students' reading comprehension in English for Islamic Studies. Students' reading comprehension scores indicate that teaching reading strategy explicitly is beneficial. After treatment, students are more familiar with the strategy to find explicit information, make inferences, find mind ideas, understand the communicative function, and make a prediction during reading. Moreover, Fathi and Afzali (2020) examined the effects of instruction of a second language reading strategy on young Iranian EFL learners' reading comprehension. The findings of the study revealed that the learners in the experimental group outperformed those of the control group concerning reading comprehension after receiving the strategy instruction intervention.

Metacognitive awareness in reading strategies

According to a growing body of research in teaching foreign languages, students must understand how and what reading strategies are used and observe and control the usage of specific techniques in their reading activities (Tamin & Büyükahıska, 2020). Skilled readers can use all the techniques in their toolbox to deduce the meaning of a text (Par, 2020; Manoli, 2020; Klapwijk, 2015). As Karbalaei (2011) aptly put it, metacognitive reading strategies are major tools students consciously choose for a particular task when managing, organizing, controlling their reading processes, and evaluating the effectiveness of their strategic use. Advanced metacognitive readers are responsible for their mental processes, take responsibility for their reading techniques, and use them successfully. They are aware of what they know and do not know as well as their cognitive processes (Azizoğlu & Okur, 2020).

Flipped Classroom

Increasing L2 knowledge can be significantly more influenced by strategy and technology integration (Zhou & Wei, 2018). The flipped classroom is one kind of blended learning, defined as "the blend or mixture of any two instructional technologies" (Caner, 2012, p. 24). Increasing student involvement, enhancing the learning experience, and eventually improving student outcomes have traditionally been the goals of flipped approaches for university teaching and learning (Bossaer et al., 2016; Chiang, 2017; Day, 2018). The most prevalent justification for flipped classroom strategies is encouraging active knowledge creation and experience learning (Awidi & Paynter, 2018). Through a quasi-experiment, Zhang et al. (2019) investigated the impact of using rubrics in flipped learning activities on students' learning achievement, metacognitive awareness, and cognitive load. According to the findings, using rubrics can help with flipped learning by raising students' levels of learning achievement and metacognitive awareness while lowering their cognitive load. In contrast to a traditional classroom setting, Shih and Huang (2020) used a qualitative approach to compare how EFL students developed metacognitive knowledge and used metacognitive strategies in a university flipped classroom. The results demonstrated students' metacognitive knowledge had experienced a significant shift in a flipped classroom setting.

Similarly, the flipped classroom model promotes a broader, more active use of metacognitive techniques. Kanszolu and Cömert (2021) sought to ascertain the impact of the flipped classroom paradigm on writing achievement and metacognitive writing awareness. The survey's findings demonstrated that the participants in the flipped classroom model-based teaching group had statistically more significant metacognitive writing awareness and story writing proficiency levels than those in the conventional face-to-face teaching group. Jiang (2022) recently looked into the metacognitive technique utilization and affecting aspects of Chinese English majors in a flipped setting. The results showed that participants' primary employed metacognitive strategies in and outside the flipped classroom are planning, self-monitoring, self-evaluation, directed attention, and selective attention. Moreover, the findings indicated that desired learning outcomes and group learning were the factors affecting pupils' metacognitive strategy use. Finally, students' self-control over the learning pace in the flipped setting further encourages their use of various metacognitive strategies.

Recent growth in educational interventions aimed at enhancing learners' metacognitive skills and knowledge is not unusual (White & Frederiksen, 2000). As far as we know, numerous studies have been conducted on the effects of explicit reading instruction, flipped classrooms, and metacognition in various teaching contexts, including EFL and ESL. However, to be optimistic, there seemed to be few studies specifying the role of metacognitive awareness raising via explicit reading strategy instruction in flipped instructional environments on EFL learners ' reading skill and their attitudes towards the

treatment in an EFL context like Iran. Hence, this study was an attempt to bridge this gap.

Research questions:

RQ1. What is the effect of metacognitive awareness raising via explicit reading strategy instruction in the flipped instructional environment on EFL learners' reading comprehension?

RQ2. What are the views of learners of English toward adopting strategy-based teaching in flipped classrooms with a focus on metacognitive awareness?

3. Methodology

Participants

The purpose of this study was to investigate the effect of metacognitive awareness raising via explicit reading strategy instruction in the flipped instructional environment on EFL learners' reading comprehension. To this end quasi-experimental research with the pretest-posttest control group was used. "A typical experimental study usually uses comparisons or control groups to investigate research questions" (Mackey & Gass, 2005, p.146). This study investigated the impact of treatment between two groups, i.e., the experimental and control groups (the control group did not obtain treatment-based instructions), Mackey and Gass (2005) classified this type of research as “between-group design” in which one of the groups, (i.e.) the control group, receives non-treatment. Besides, because the researcher selected the samples on the basis of non-random sampling and convenience sampling, this study should be regarded as quasi-experimental.

Moreover, this study used qualitative data through interviews to complement the quantitative data, making it a mixed methods study. The study population consisted of pre-intermediate EFL students at Shokouh Language Institute in Kerman, a city in the southeast of Iran. The learners were male and female and aged 15 to 20. All of the students were considered pre-intermediate level learners based on the profiles of the learners at the institute. The sample was composed of 56 subjects, 28 in the experimental group (EG) and 28 in the control group (CG) in the flipped context classroom. The researcher used availability sampling procedures to select the participants of the study.

Instrumentation

Various data collection tools were employed to acquire the study's data, including the Oxford placement test (OPT) to homogenize the participants, pre-test and post-test in reading comprehension, and a semi-structured interview. The OPT test's content and face validity were endorsed by three experienced EFL teachers from the same institute who had high knowledge in the assessment and testing fields.

To assess the learners' reading comprehension, the researcher used the test after piloting the test. Considering the important role of validity, since the test was standard, there was no need to validate it. It is worth noting that the same test of PET used in the pre-test of reading was utilized as the post-test due to comparability.

Procedure

At the onset of the study and following a general ethics code for research, the Academic Affairs of the language department of the university issued their consent to start the research. Thus, the students were informed about the study's goals and that their answers would remain confidential. It was crucial to ensure that both the research institution and the participants understood their right to anonymity. The students were asked to write their names on the tests during project implementation. Although the researcher was aware of their names during verbal reporting and interviews, they were kept anonymous, then the treatment started.

In the first phase and two weeks before the onset of the treatment, to ensure the EFL students' homogeneity in terms of language proficiency, OPT was used for 70 students. The test included 60 questions on different skills and sub-skills. The test examined whether the participants were homogeneous regarding their language proficiency. After analyzing the proficiency test results, 14 students were excluded from the study due to their high/low scores on the test.

The remaining learners in the intact classess, amounting to 56 students, continued

their studies. The basis for determining sample size was the mean scores of the learners at the homogeneity test. Learners with one standard deviation above and below the mean were selected for this study as final participants. After this phase, the reading comprehension test was administered to the learners in both groups one week before the study, and the allotted time was 60 minutes. After these phases, the treatment started. Based on the study objectives, metacognitive reading strategies adapted from Chamot and O'Malley's (1994) framework were used. The strategies included guessing unfamiliar words from contextual clues, summarizing the main ideas from a text, looking for logical relationships between paragraphs and trying to find out the organizational aspects of the text, determining in advance what my reading purpose is, and then reading the text with that goal in mind, looking for specific aspects of information and focusing on that information while reading the text, checking the effectiveness in strategy use, and finally checking whether the goals for reading are accomplished. These strategies were taught to the students of the treatment group for 16 sessions. The strategies mentioned above are supposed to help students become aware of what strategies are and which ones they are already using. For this reason, the teacher, as the researcher, asked three simple questions to raise students' consciousness of learning strategies. The questions were as follows:

(1) Have you ever heard of the term "reading strategies"? (2) If you have heard of the term "reading strategies", what specific strategies did you use in reading? (3) Do you want to learn how to read more effectively? This phase is called the preparation phase. This consciousness-raising helped students begin thinking about their learning strategies as self-reported. The second stage is the presentation stage, in which the teacher models, names, and explains how a new strategy is used. The practice stage is the third and the most important one, in which students practice new strategies. As the researcher of the current study, the teacher involved the participants in discussing strategies and then asked them to apply them in the reading tasks in small groups regarding pre-, while-, or post-reading stages. After these preliminary interactive discussions, all the participants were referred to the reading strategies. The whole class was then divided into small groups and asked to talk about what each of the strategies meant to them by supplying definitions, what situations would be appropriate for using such strategies, so that reading comprehension would be enhanced and why such strategies should be used. The teacher presented and modeled strategies, so students became increasingly aware of their thinking and learning strategies. Multiple practice opportunities were created to help them move toward autonomous use of the strategies through gradual withdrawal of the scaffolding.

Over time, the teacher scaffolding was slowly removed to ensure that the students started using these strategies independently, so that learner autonomy (autonomy of language learning competence) or self-regulation could be regarded as an ultimate goal for strategic instruction. In the other stage, self-evaluation of the strategies' effectiveness and transfer of strategies to other texts were also employed. Students evaluated the use of the strategies immediately after practice. Students transferred strategies to new tasks, combined strategies into clusters, and developed a repertoire of preferred strategies. The final stage was the assessment phase, in which the researcher assessed students' use of strategies and their impact on performance. These phases were time-consuming. However, the groups were interested in step-by-step involvement and accomplishment of the tasks based on the researcher's direct observation of the actual practices of the classroom. It is worth noting that the procedures and treatment were conducted in a flipped environment.

When the term 'flipped classroom' is used, only the idea of the video is generally brought to mind. However, both pre-class and in-class activities are necessary for the flipped approach. Accordingly, using metacognitive strategies is important in pre-class asynchronous activities. Also, in-class

activities were as important as the pre-class activities. The learners were required to write and take notes about the strategies they used in the pre-class activities. This task motivated and encouraged them to involve the learners in the treatment process. For in-class activities, the teacher interviewed one or two students in each group after each lesson probing questions such as: What is today's strategy? What do you understand from that strategy? Do you think this strategy is essential? Is it difficult or easy to use while reading? Have you ever used this strategy before? Did you like that strategy? Why? Why not? Do you consider using this strategy from now on?

The learners in the CG were instructed using the traditional teaching procedures in terms of reading comprehension tasks without implementing metacognitive strategies via explicit reading strategy. Word and dialogue memorization, topic discussion, reading, and writing activities were done at home and they were checked by the teacher online where the activities were used except using reading texts. The activities were limited to methods that were mostly teacher-centered and controlled by the teacher. It is worth noting that the procedure for the control group was conducted in the flipped classroom context.

The study was administered during 16 sessions. The instructor was the same for both groups, but the difference lay in the material selection, teaching procedures, and strategies. The identical exams were used as post-tests following treatment, and students in the experimental group were exposed to the interview stage. For the sake of accurate transcription and in-depth analysis, the interview was recorded. After data collection, the means of the two groups based on their scores in post-tests were compared through independent samples t-tests to answer the first research question. Finally, the interview results were reported, and the positive and negative points of the strategy under study were reported based on the attitudes of the learners in the treatment group to answer the last research question.

Finally, a semi-structured interview was utilized to examine the participants' attitudes in the treatment group to answer the last research question. To fully understand the scope of the study, the researcher invited the students in the EG to reflect on their overall perception of the instruction, such as whether they liked the class and recommended it to others. They were also required to give reasons for their answers. Besides, the participants were asked to share their ideas about the strengths and weaknesses of the instruction and suggest some solutions to improve it.

The researcher conducted one-on-one interviews with each student in the EG while recording their voices for further analysis and presentation. The interviewees provided their responses in Farsi, which were translated into English and presented as part of the study's qualitative data. For the purpose of dependability, 30% of the interview results were re-checked by two of the researcher's colleagues who were familiar with the data analysis section, and the inter-rater reliability results were estimated via Cohens kappa and reported to be 90.

4. Findings

Quantitative results

The results of descriptive statistics of the pre- reading comprehension test are represented in Table 1.

Table 1. *Descriptive Statistics of Pre-test in Reading Comprehension*

	N	Minimum	Maximum	Mean	Std. Deviation
CG	28	11.00	17.00	15.39	1.57
EG	28	12.00	17.00	16.22	1.64

Table 1 shows that the mean pre-test scores of the treatment and control groups are 1.6 and 15.3, respectively. The pre-test was taken before instruction, and the mean scores were very low. The highest score was 17 out of 20 compared with the lowest one, 12 in the treatment group.

Table 2. *Descriptive Statistics of Posttest in Reading Comprehension*

	N	Minimum	Maximum	Mean	SD*
CG	28	20.00	26.00	21.70	1.66
EG	28	21.00	33.00	25.60	1.63

* Std. Deviation

The results of the post-reading test are shown in Table 2. As it reveals, the mean score of the EFL students in the control group is 21.7 with an SD of 1.66, and the mean score of students in the treatment group is 25.6 with an SD of 1.63. Since the Sig values are higher than the significance level (.05), it can be concluded that the data were normally distributed in the post-reading test. To see whether there was a difference between the two groups, a T-test was run. The results of an independent sample T-test are illustrated in Table 3.

Table 3. Results of Independent Samples T-Test

	Levene's Test for Equality of Variances		**t-test for Equality of Means**						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	2.279	.130	1.9	28	.043	21.34	11.27	-.6112	42.11
Equal variances not assumed			2.2	28	.025	21.34	9.41	2.123	40.32

According to Table 3, Levene's test of the equality of variances is F=2.27 with a significant level of .043. Since the Sig. Value is less than the P-values; it can be concluded that there is a significant difference between the two groups of EG and CG. Based on mean values, metacognitive awareness raising via explicit reading instruction in flipped teaching environments outperformed the control or traditional reading groups.

Qualitative results

According to the interview results, most of the students in the EG group preferred explicit instruction in the flipped classroom to the traditional classroom (26 out of 28 students). They suggested this strategy be used in other English-related courses. The students expressed their points of view in the sentences; however, the main codes, including the merits and demerits of the strategy under study, were presented in the following two tables (Table 4 and Table 5).

Table 4**:** Positive Attitudes of EG Group

Sub-themes	**Extracts**
Group work	Group work was noticeable among the students, and it helped everybody to adapt my stress and get help from friends.
To adopt stress	
To get help from friends	
collaborative dependence on peers	The teacher was very collaborative, although I depended on my classmates more than the teacher.
Flipped context	The flipped context that I did not experience so far was amazing and motivating since I received materials before the class and could study them.
Attractive	
Motivating	
Different	The teaching procedures were both new and different from what we had learned before since some unimportant errors were ignored and the class time was devoted to detailed instruction of reading strategies.
Unimportant errors were ignored	
detailed instruction on reading strategies	
Active participation	Active participation and happiness in the class context increased my motivation and decreased my anxiety level.
Happiness increased motivation decreased anxiety	

Practice self-assessment feedback	Most of the reading strategies were practiced. Also, self-assessment and feedback should not be ignored.
Flipped classroom To actively engage in metacognitive awareness-raising tasks	The flipped classroom encourages students to engage in more active and in-depth usage of metacognitive awareness-raising tasks.
Self-evaluation approach Time-management	Self-evaluation approach was much more effective in this class may be due to the time that expanded in the flipped environment. I had enough time to read the reading passage before the class as it was transferred before the class started.
Group work Not afraid of misunderstanding	I was not afraid of my shortcomings or misunderstanding since the group ignored my problems.

Based on the results obtained from Table 4, the interviewees believed that the flipped classroom, along with the explicit instruction of reading strategies, encouraged students to engage in more active and in-depth usage of metacognitive methods. Collaborative discourse and linguistic activities are examples of academic tasks, according to the interview data, which enhanced cognitive strategies approach usage under both circumstances. Because students were required to analyze their learning to participate in peer discussion, both cohorts employed the self-evaluation approach, and it was usually via these discussions that they were unaware of vulnerabilities found. As an example, one of the learners expresses his desire to participate in peer conversation in the following quotation:

The advantage of providing feedback is that I can understand how others view my activities and learning process, which will aid me in improving reading skills. So, I'd learned how to create the necessary changes.

In general, respondents in the EC group showed a higher degree of self-evaluation, indicating that active learning had led to learners using metacognitive skills to ensure that they understood video teachings before coming to class. One of the participants explained how she used monitoring tactics when viewing video courses:

When the teacher is teaching in class, once the lesson is complete, that's over. When I'm at home (viewing movies), I can think. When I come across grammatical problems that perplex me, I may use the stop button and consider why. I could also go back and review extra points from the previous sessions.

It is worth noting that the interviewees' reasons for the effectiveness of this strategy were the presence of high cooperation, the attractiveness of the course, a decrease in anxiety level, and increased motivation. Participants' metacognitive awareness improved due to the modifications individuals brought to training tactics. Besides the positive points and merits, the course had some demerits. However, they were fewer in numbers. Table 5 summarizes the negative attitudes that some of the interviewees in the treatment group mentioned.

Table 5. *Negative Attitudes of EG Group*

Sub-themes	**Extracts**
Unavailability of teacher Increased anxiety	Although flipped context and explicit reading strategies' instruction were full of fun, actually, the teacher was not always available. This fact made me stressed.
Time-wasting (on small points)	Before this course, I knew something about scanning and skimming, but the negative point with this type of instruction was that sometimes, much time was wasted discussing a small point
Time-wasting (on methods)	The flipped context was full of fun for me. Also, the strategies we learned were new and informative; however, the method and the procedures were time-wasting for me.

As it is axiomatic from the above Table, the interviewees reported on the course's pros and cons, the time-wasting nature of the course, and the unavailability of the instructor as important downsides. However, the course motivated them as it was attractive. The flipped classroom had novelty to the learners when mitigated with metacognitive awareness raising via explicit reading strategy instruction in the flipped teaching context.

5. Discussion

In response to the first study question, the findings revealed that the low-level EFL learners in the treatment group outperformed the control group in reading comprehension tests. The results of the semi-structured interview confirmed the results of the t-test and demonstrated that the metacognitive awareness raising via explicit reading strategy instruction in a flipped teaching environment had some merits. Metacognitive awareness gave students more chances to continue using their skills and tactics in texts and related activities for the time being as they developed their reading skills. This result was in line with earlier studies (Fitrisia et al., 2015; Viswanathan & Childers, 2003), which showed that raising students' awareness of different scenarios and incorporating that knowledge into lessons gives them enough time to respond and provide feedback on time. These results are consistent with some research that highlighted the value of developing metacognitive awareness and expertise in terms of metacognitive skill training (Anderson, 2012; Batang, 2015; Pintrich, 2002). Compared to less skilled and less successful learners, they found that more proficient L2 learners show a higher metacognitive awareness of the strategies they use to complete tasks.

The result of this study supports what Tabeei et al. (2013) investigated about the effect of metacognitive strategy instruction on the listening comprehension of Iranian EFL learners. Similar to the study mentioned above, the present research elicited students' comprehension in the form of metacognitive strategy as one of the problematic areas for low-level students, like high-school students, by using different instruments like pre-test and post-test and during exercises in the class. The researchers believed that metacognitive awareness could be crucial to language achievement.

Research on strategic education has shown contradictory results regarding the influence of metacognitive instruction on L2 proficiency. However, some studies indicate no immediate effect on the improvement of listening comprehension due to such education (Goh, 2008; Kassaian & Ghadiri, 2011; O'Bryan & Hegelheimer, 2009). A body of evidence suggests a positive benefit of metacognitive awareness instruction (Milliner & Dimoski, 2021). The lack of a statistically significant difference can be attributed to the students' prior listening comprehension skills, the lesson length, and the influence of the EFL/ESL environment.

The learners of EG in the interview sessions mentioned the role of the flipped classroom as reasons for their improvement in reading comprehension. The reason can be traced back to the fact that a flipped classroom increases students' participation and gives them the opportunity to finish homework at home and find solutions to difficulties right away in class (Ozdamli & Asiksoy, 2016). As students reported, in flipped classrooms, they could attend online lectures, participate in online forums, or solve problems at home as a result of self-evaluation while participating in classroom activities guided by their instructor. Although some of the interviewees were reluctant about the teacher's unavailability, the flipped classroom is intended to transform teaching into a student-centered model that most of the learners in the present study considered a merit to the course. Because in this model, class time is allocated to go deeper into topics and provide effective learning activities, with students learning about new topics outside of the classroom.

6. Conclusion

To the best of our knowledge, this study is the first to investigate the effectiveness of metacognitive awareness raising via explicit reading strategy instruction in flipped

teaching environments on the reading comprehension of low-intermediate level EFL learners. The results showed that EFL learners in the treatment group outperformed the control group in reading comprehension from pre-test to post-test. However, the learners were satisfied with this kind of learning strategy due to its cooperative, fun, and informative nature. In sum, the results confirm that integrating flipped classrooms with metacognitive development increased EFL learners' reading comprehension.On the one hand, the flipped classroom encourages more active use of metacognitive strategies to help learners monitor and evaluate their learning process and product.

This study has some pedagogical implications for EFL teachers and learners. By being aware of this efficacious technique in teaching reading skills, instructors may put it into practice to supply students with reading texts. The results suggest that teaching reading skills in a flipped classroom using metacognition methodologies should take precedence over teaching traditional reading skills. Furthermore, EFL students can experience a variety of learning strategies, such as raising metacognitive awareness through explicit reading in a flipped classroom instead of traditional rote learning. By employing this technique, they can learn to critically analyze the reading passages and connect ideas or concepts that are similar to one another.

Various elements made the generalizability of the result of this study open to question. One of these was that the researchers could not continuously track student engagement inside and outside the classroom due to time and resource limitations. As a result, the extent of students' participation in out-of-class learning in the flipped context can only be inferred from their self-reported data. Therefore, it is unclear how much the participants took part in the flipped classroom. Also, the small size of the sample, as a limitation, could affect the results. However, further studies are needed to consider the effect of age and gender on reading comprehension and the effect of this strategy on the chunks and collocations as a group of words that are taken as single entities, different language skills and sub-skills, such as grammar and idioms.

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