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The Effect of Mobile-Assisted Flipped Learning on Iranian EFL Learners' Cohesive Devices Improvement in Writing

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Abstract

In recent years, some language teachers have made investments in approaches and models such as mobile assisted flipped language learning. Some studies in Iran have examined flipped learning impact on English as a foreign language (EFL) learners' language skills as well as language systems. However, no researches have been conducted on the impact mobile assisted flipped learning might have on improvement of intermediate EFL learners' cohesive devices and their motivation to learn cohesion which is the focus of the current study. To this end, 40 female intermediate EFL learners in an English language institute in Kerman, Iran were recruited. Employing a quasi-experimental design, subjects were assigned to two classes of experimental (EG- N = 20) and control (CG-N = 20). Oxford Placement Test, researcher-made writing achievement tests, and Academic Motivation Scale (AMS) were utilized to collect the required data. The findings indicate that participants in mobile assisted flipped language learning group outperformed those in the control group. Moreover, the results of a chi-square test showed a significant relationship between mobile assisted flipped language learning and intermediate EFL learners' motivation to learn cohesive devices. The findings might help stakeholders design, introduce, and address mobile assisted flipped language learning to their context-specific needs, thereby facilitating the language learning process.

Keywords: cohesive devices, flipped language learning, mobile assisted language learning, motivation, writing

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1. Introduction

Due to various evident reasons, the importance of learning English has recently increased and, therefore, numerous individuals study English. In addition to the importance of language learning, it is apparent that teachers have a great impact on student achievement. According to Boyd et al. (2007), new statistical and analytic techniques employed by a wide range of researchers suggest that a significant portion of students' test scores can be attributed to the quality of the teacher. Successful language institutes and effective language teachers are required to update teachers' beliefs, practices, and attitudes in accordance with the most recent research and innovations, as this leads to a better understanding of and improvement in educational processes, which is advantageous for both teachers and students. One of these innovations is the integration of technology into pedagogy which resulted in emergence of models such as mobile-assisted and flipped language learning. In flipped learning, new knowledge can be acquired by viewing online videos of the teacher's lecture over the material, conducting research on a topic using classroom-approved websites, or reading the material before the class (Brame, 2013).

In recent years, instructors have made significant investments in incorporating technology into foreign language learning and teaching in order to empower learners in novel ways. Although language teachers in Iran have developed their teaching techniques in recent years as a result of numerous teacher training courses and professional development activities, the majority of teachers still rely heavily on traditional methods of teaching languages. Toto and Nguyen (2009) assert that "we must immediately implement a shift in English language teaching methodology and develop new strategies" (p.7). According to Strayer (2012) and Bishop and Verleger (2013), new models such as flipped language learning, which have developed alongside advances in computer and mobile device technology, were utilized by educators to teach English. As mentioned by Fulton (2012), the flipped classroom's use of technology enables students to study outside of class and participate in active learning to boost their language proficiency.

Cohesive devices, as one of the central components of successful writing, play a significant role in readers' comprehension. Therefore, EFL teachers need to take cohesive devices teaching and learning more seriously. Cohesion teaching has been mostly performed through explicit and traditional teaching. This investigation attempts to examine if mobile assisted flipped learning, as a relatively new model, might facilitate cohesion learning in English class. Recent research internationally and in Iran has examined the effect of flipped learning on EFL learners' language skills (e.g. Amiryousefi, 2019; Fardin et al., 2022; Ghufron & Nurdianingsih, 2021; Yousofi, & Bashiri, 2023), as well as language systems, such as lexis (e.g. Jalili et al., 2020) and grammar (e.g. Amini et al., 2022; Fardin et al., 2021). However, no studies have been conducted on the impact of flipped learning on improvement of Iranian EFL learners' use of cohesive devices, according to a review of the relevant literature. Therefore, considering the paucity of research in this area, the knowledge gap, current importance of flipped learning and the important role of cohesive devices in EFL learners' writing, some investigations are required to examine the effectiveness of mobile-assisted flipped learning on EFL learners' improvement of cohesive devices in writing.

The aim of the current study is to analyze the effect of implementing mobile -assisted flipped learning on the improvement of cohesive devices and motivation among intermediate Iranian female learners. In other words, attempts are made to shed light on (1) the effect of mobile -assisted flipped learning on the performance of Iranian adult intermediate female learners when learning cohesive devices in English and (2) the impact of mobile-assisted flipped learning on the motivation of Iranian adult intermediate female learners to learn cohesive devices. Understanding the effects mobile-assisted flipped learning on the improvement of EFL learners' cohesive device use can help stakeholders design, introduce, and address this approach to their context-specific needs, thereby facilitating the language learning process. Moreover, policymakers can be informed by the findings. This investigation's findings are beneficial to language institutes and schools, supervisors, researchers, educators, language teachers, and curriculum designers. This investigation is guided by the two research questions listed below:

1. Does mobile -assisted flipped learning significantly improve the performance of adult female intermediate EFL learners in learning English cohesive devices?

2. Does mobile-assisted flipped learning significantly enhance motivation of adult female intermediate EFL language learners to learn cohesive devices?

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2. Literature Review

To become a proficient nonnative English speaker, language skills namely listening, speaking, reading, and writing plus language systems namely grammar, vocabulary, phonology, discourse and function need to be mastered. Writing is considered the most difficult aspect of language acquisition which was neglected in language instruction for a long time because emphasis was placed on oral language, which was deemed important , and writing was believed to be in secondary position; however, this language skill is now an integral part of language instruction (Brookes & Grundy, 1998). Writing is a means of inter-human communication which should adhere to specific conventions that connect letters to words and words to sentences, which need to be well-organized to result in a text that is coherent as a whole (Bader, 2007). Writing ability is neither inherent nor natural; it requires extensive practice to be learned and utilized in accordance with its principles; consequently, the author does not write for himself, but for the reader; therefore, he must state his ideas plainly in order to be comprehended.

As mentioned by Al-Mutawa and Taisser (1989), writing skill is a cognitively complex activity which requires (1) Thorough acquisition of the alphabet, (2) Understanding how letters combine to form words and the relationship between the word and the meaning, (3) Knowledge of the mechanics of writing: speaking, capitalization, punctuation, and other writing conventions, (4) Mastery of the most frequent rules and structures of sentences , (5) Ability of link sentences to build an effective paragraph and combining them to produce essays, and (6) Formalization with transitions to achieve coherence .

The role of cohesion is very important in writing (Barakatova, 2021; Kayonde, 2021). As Halliday and Hasan (2014) mention, ”cohesion is a semantic concept which refers to the meaning relationships that exist within the text and define it as a text” (p.212). Moreover, it is the linguistic resources in which the parts of an artistic discourse are related and provide continuity in a text, in addition to clause structures and clause complexes. Cohesion aids the reader or listener in comprehending crucial elements absent from the text that are essential to its interpretation. According to Eggins (2004), cohesion refers to certain characteristics of a text, such as its semantic cohesion and the consistency of its lexical connections. According to the theory of cohesive devices proposed by Halliday and Hasan (2014), there are two types of text elements: internal and external. An internal component known as cohesion and an external component known as coherence. Cohesion is constructed through the use of grammatical devices (i.e. reference, conjunction, substitution, and ellipsis) and lexical devices (i.e. repetition and collocation).

EFL teachers have instructed learners for generations by delivering lectures and assigning homework problems to be completed at home. The concept behind this method of instruction is that the teacher introduces students to new material in class, and then assigns them homework to reinforce their understanding (Brame, 2013). The flipped learning model proposed by Bergmann and Sams (2012) occurs when students use class time to augment what they had learned at home by completing worksheets, taking part in lab activities, or working on other projects demanding higher level thinking. In other words, by giving students lecture materials and presentations to see at home or outside of class at their own speed, flipped learning is a practice that enables teachers to priorities active learning during class time. Flipped learning methodology is usually achieved through technology incorporation such as mobile devices and computers. As claimed by Kukulska-Hulme and Viberg (2018) and Reinders and Benson (2017), mobile technology expands classroom learning to beyond-class contexts by giving the students independence from time and space limitations to decide on their L2 learning methods. Utilizing mobile platforms for language learning and teaching purposes is referred to as mobile-assisted language learning (Burston, 2015; Shadiev et al., 2017).

Yousofi and Bashiri (2023) conducted a mixed-method exploration of the impacts of a mobile-based flipped classroom writing proficiency of Iranian EFL learners. Quantitative findings indicated that the post-test mean score of the experimental group was notably more than that of the control group. Furthermore, the mobile-based flipped learning provided the experimental group with some features that contributed to the course effectiveness, including fostering self-confidence, preparation, and pre-class practice, as well as autonomous and independent learning. On the other hand, some factors related to the pre-class sessions made some obstacles for the experimental group, including being cost- and time-consuming.

Shooli et al. (2022) addressed the impact of the flipped language classroom on the learning outcomes of Iranian students enrolled in English composition courses. This study aimed to determine the deficiencies of traditional classroom instruction and improve learning among Iranian EFL learners at the upper-intermediate level by implementing flipped classroom instruction. Using flipped classroom instruction, the objective was to improve the

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writing outcomes of English language learners, or more specifically, their attitudes and experiences with English writing. The results indicated that students viewed flipped writing instruction classrooms favorably. The posttest scores of the flipped students were statistically superior to those of their non-flipped counterparts.

Nourinezhad et al. (2022) investigated the impact of flipped language learning on the English writing performance and confidence of 50 Iranian medical students. This study examines the impact of flipped instruction on medical students' writing self-efficacy and writing performance at Shiraz University of Medical Sciences. The results discovered that flipped instruction had a greater impact on the improvement of learners' writing self-efficacy and writing performance than traditional instruction.

Challob (2021) investigated the influence of flipped learning on the writing performance, autonomy, and motivation of EFL learners. As the findings showed, the learners' English writing skills, independence, and motivation are all positively impacted by this learning environment. The results also showed that the main elements that aided students in enhancing their English writing performance, independence, and motivation were the interactivity of the learning environment, the flexibility of time and place, the feedback of the teacher and peers, and the abundance of learning resources. The study concluded that because of the substantial language and writing abilities learned, flipping the English writing sessions provided a collaborative learning environment that was user-friendly. As they were able to write more comfortably, students' performance, independence, and motivation all increased when writing in English.

Susana and Brahma (2020) investigated the application of flipped learning in a writing class during the pandemic, focusing on learners' perceptions and reflections. This research aimed to determine the efficacy and impact of implementing flipped learning on the improvement of students' English persuasive essay writing skills on IT. Students responded positively to the application of flipped learning because it can be tailored to each student's level of understanding the material in depth, increasing interaction during online discussion, and improving project management.

Abedi et al. (2019) investigated the impact of flipped classroom employment on the writing ability of Iranian upper-intermediate EFL learners. The results of independent samples t-test and one-way ANCOCA revealed that the experimental group fared better on the post-test than the control group. In addition, It was found that the post-test performance of the experimental and control groups differed significantly.

Fauzan and Ngabut (2018) investigated the perceptions of EFL students regarding flipped learning in writing class at an Indonesian university in the province of Central Kalimantan. Students were in their fourth semester of writing instruction. After collecting and analyzing questionnaires quantitatively and qualitatively, the findings of this study indicate that students viewed the execution of Flipped Learning in writing class favorably. Chung and Lee (2018) conducted a study to analyze the influence of the flipped learning model on the learning motivation of 97 students enrolled in a physical therapy college. The findings revealed that this model can lead to increased motivation. Similarly, Winter's (2018) investigation focused on the motivational and performance aspects of a middle school class in Hawai'i that was introduced to flipped learning. The results suggested that technology-based content in flipped learning enhances motivation and performance of students.

3. Methodology

3.1 Study Design

The present study was conducted utilizing a quasi-experimental design. This particular research design was intended to establish a cause-and-effect relationship between an independent variable, mobile-assisted flipped learning, and two dependent variables, namely improvement in the use of cohesive devices and motivation to learn cohesion. It is worth noting that unlike a true experimental setting, the current investigation did not rely on random assignment of participants due to practical constraints. Consequently, the participants were assigned to the control or experimental groups based on non-random criteria.

3.2 Participants

A total of 46 Iranian female EFL intermediate learners enrolled in a private English language institute in Kerman, Iran were designated to participate in this investigation through the method of convenience sampling. Although the students were enrolled in intermediate classes based on the language institute's oral and written placement tests, Oxford Placement Test was administered to determine the participants' actual level of English proficiency. Forty learners

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whose scores were within the range of 120-149 (M=139.75, SD= 2.62), equals B1 and B2 levels in CEFR and intermediate proficiency level, were recruited in this study. The sample consisted only of female students whose age ranged from 18 to 30 (M = 23.30). The participants were locals and native Persian speakers and EFL learners.

3.3 Materials and Instruments

3.3.1 Oxford Placement Test

A language proficiency test called The Oxford Placement Test (Allan, 2004) was utilized to gauge the participants' language levels. This test contains 200 items in the form of multiple-choice questions, listening, structure, and vocabulary portions and a 100-minute time limit. This test's reliability and validity have a strong track record (Allan, 2004). Scores within the range of 120-149 determine intermediate proficiency level. The researchers used Cronbach's alpha to calculate the reliability of the instrument. The results indicated the reliability index of 0.79 for the whole test and reliability indices of 0.81 to 0.83 for the subsections.

3.3.2 Writing Motivation Questionnaire

The EFL learners' writing motivation was measured through a writing motivation questionnaire developed by Taguchi, Magid, and Papi (2009). "This questionnaire includes items on students' intended efforts for writing in second language, desire to write in second language, and second language writing motivational intensity" (Taguchi et al., 2009, p.7). Cronbach's alpha test was used to assess the internal consistency of the items of this questionnaire (α=.87).

3.3.3 Writing Tests

Among 5 general topics, the learners were asked to select two and write two 200 to 250-word essays. The essays were subsequently collected, evaluated, and graded by two English teachers who had been trained as IELTS writing examiners. The mean score of the two essays of each learner was calculated and considered as her pre-test score. The examiners were required to grade the essays using the IELTS writing cohesion criteria, and paying particular attention to the cohesive devices categories mentioned in the theoretical framework section provided by Halliday and Hasan (1976). Two faculty members with expertise in writing confirmed the validity of the pre-test. Similar to the pre-test, the post-test contained five topics, and the learners were asked to write about one of them applying the cohesive devices they had learned to better connect the parts of their essays. The same raters evaluated the essays using the same criteria they applied to the pre-tests. The post-test was run to determine the effect of mobile-assisted flipped learning, on the participants' improvement in essay writing using cohesive devices. It should be noted that the validity of the post- test was confirmed by two writing-expert faculty members.

3.4 Procedure

To ensure the homogeneity of the EFL learners, the participants were required to undergo OPT. After determining that the participants' true level of English proficiency was intermediate, a pre-test essay writing was administered to all participants to measure their ability to compose cohesive paragraphs and assess their knowledge of cohesive devices based on the study's theoretical framework. Moreover, the writing motivation questionnaire developed by Taguchi, Magid, and Papi (2009) was administered as a pretest to assess the learners' motivation status about writing. Utilizing a quasi-experimental design, the participants were assigned to control and experimental groups. The intervention, mobile assisted flipped learning instruction, was applied only to the experimental group. As for the control group, traditional instruction was provided. Finally, post-tests were administered to determine whether or not the intervention had produced a statistically significant difference. The classes met twice a week for 2 months, and each session took 1.30 minutes.

The researchers used a teaching pamphlet based on Halliday and Hasan's (2014) taxonomy of cohesive devices, describing and explaining all cohesive devices and their categories along with some examples. Later, they were engaged in controlled practice, such as multiple-choice and gap-filling, cohesion identification in essays, and connecting sentences using appropriate cohesive devices. Following the controlled practice phase of the class, in the freer practice stage, the learners wrote paragraphs applying cohesive devices they had learned and practiced. They received feedback on their paragraphs and essays.

In the experimental group, the researchers chose the WhatsApp application for online communication between the teacher and study participants. The teacher created a WhatsApp group for this purpose and added the experimental

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group students to the group. Both the instructor and the students knew how to use this application. In the flipped classroom, the same cohesive devices' pamphlet was used. Students listened to audio lectures and read PowerPoint presentation files that explained detailed cohesive devices and presented the homework assignments they were to complete at home. The audio delivered via the WhatsApp application one day before class introduced the focus for classroom activities, tasks, and discussion. Only the flipped classroom participants had access to the audio files in advance. Since the students had already been engaged with the lesson's material, the teacher no longer lectured in class. Students were required to participate in a variety of controlled and free activities in class to show what they had learned at home. The feedbacks on learners' paragraphs and essays were sent to the WhatsApp group.

Finally, among 5 suggested topics, the learners were asked to select two topics and write two 200 to 250-word essays applying the cohesive devices they had learned to better connect the parts of their essays. The mean score of the two essays of each learner was calculated and considered as her post-test score. The same raters evaluated the essays using the same criteria they applied to the pre-tests. Moreover, once more, the learners took the writing motivation questionnaire developed by Taguchi et al. (2009) in the end of the course.

3.5 Data Analysis

Chi-square test was used to determine whether mobile assisted flipped learning had an impact on the learners' motivation to learn cohesive devices, while t-test was employed to determine whether mobile assisted flipped learning improved the learners' performance of writing more cohesive essays. Moreover, Cronbach's alpha was run to examine the reliability of the questionnaires.

4. Results

4.1 Research Questions

4.1.1 RQ1: Does mobile -assisted flipped learning significantly improve the performance of adult female intermediate EFL learners in learning English cohesive devices?

The first objective of this study is to determine if the employment of mobile assisted flipped learning improves female intermediate EFL learners' cohesive devices use in writing skill. Table 1 shows the mean scores and standard deviation of control and experimental groups' pre and posttests. As can be seen, the mean scores of participants in control and experimental groups' pretest are 8.95 (SD = 1.66) and 9.25 (SD = 1.91) respectively which is relatively close. The reason the scores are low might be the learners have not been exposed to cohesive devices before the intervention and the pretests served as a placement test to determine their actual knowledge concerning cohesion implication in writing. On the other hand, comparing the mean scores of participants in posttest in both control and experimental groups reveals a different story. As shown in Table 1, the posttest mean score in experimental group, 16.95 (SD = 0.88), is much higher than its counterpart's, 12.9 (SD = 1.48). Although, it is evident that in both groups a level of improvement has happened since the participants in both experimental and control groups were exposed to cohesive devices learning, those in experimental group outperformed the control group.

Table 1. Mean scores of participants in the control and experimental groups

	CONT_ Pretest	CONT_Posttest	EXP_Pretest	EXP_Posttest
Mean	8.95	12.9	9.25	16.95
SD	1.66	1.48	1.91	0.88
Observations	20	20	20	20

Table 2 compares the pretest mean scores of the control and experimental groups to determine whether or not the scores of the learners were significantly different prior to undergoing the teaching procedures in both groups. As can be seen, there is a slight difference between the pretest mean scores of participants in the control and experimental groups (M = 8.95, SD = 1.66 and M = 9.25, SD = 1.91, respectively). In addition, the result of the Paired Samples t Test indicates that there is no statistically significant difference between the learners' pre-test results t (38) = -052, p= 0.60. It is concluded that the learners' knowledge of cohesion in writing skill did not differ significantly between the

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experimental and control groups, so the participants could be considered homogeneous in terms of their knowledge of the use of cohesive devices prior to the teaching process.

Table 2. Paired-samples *T-Test for* control and experimental groups pretests

	CONT_ Pretest	EXP_Pretest
Mean	8.95	9.25
Standard Deviation	1.66	1.91
Observations	20	20
Pooled Variance	3.228947368	
Hypothesized Mean Difference	0	
df	38	
t Stat	-0.527947541	
P(T<=t) one-tail	0.300302686	
t Critical one-tail	1.68595446	
P(T<=t) two-tail	0.600605371	
t Critical two-tail	2.024394164	

The t-value is -0.52795. The p-value is .600605. The result is not significant at $p < .05$.

Table 3 displays the differences between the pre-test and post-test mean scores of the control group. As can be seen, the pre-test and post-test mean scores of 20 participants in the control group are M = 8.95, SD = 1.66 and M = 12.9, SD = 1.48, respectively. In addition, the result of the Paired Samples t Test *comparing the means shows that* there is a statistically significant difference between the participants' pre- and post-test mean scores, $t(19) = 9.4$, $p = 0.00001$. As can be inferred, meaningful learning occurred in the control group, which may be attributable to the learners' lack of prior knowledge in relation to cohesion. What is more important is comparing the posttests of the control and experimental groups to determine whether or not there is a significant difference.

Table 3. Paired-samples *T-test for* control group's pretest posttest

	CONT_ Pretest	CONT_Posttest
Mean	8.95	12.9
Standard Deviation	1.66	1.48
Observations	20	20
Pearson Correlation	0.295456587	
Hypothesized Mean Difference	0	
df	19	
t Stat	-9.410519593	
P(T<=t) one-tail	6.93821E-09	
t Critical one-tail	1.729132812	

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P(T<=t) two-tail	1.38764E-08
t Critical two-tail	2.093024054

The value of t is 9.41052. The value of p is < .00001. The result is significant at p < .05.

Table 4 shows the differences between the pre-test and post-test mean scores of the experimental group. As can be seen, the pre-test and post-test mean scores of 20 participants in the control group are M = 9.25, SD = 1.91 and M = 16.95, SD = 0.88, respectively. Moreover, the result of the Paired Samples t Test *comparing the mean scores reveals that* there is a statistically significant difference between the participants' pre- and post-test mean scores in experimental group, t(19) = 19.67, p = 0.00001. Evidently, mobile-assisted flipped learning led to significant learning in the experimental group, which may be attributed to the treatment. However, the result of the Paired Samples t Test *comparing the posttests' mean scores of participants in experimental and control groups reveals if the* learners in mobile-assisted flipped language learning group outperformed those who participated in traditional instruction.

Table 4. Paired-samples *T-test for* experimental group's pretest posttest

	EXP_Pretest	EXP_Posttest
Mean	9.25	16.95
Standard Deviation	1.91	0.88
Observations	20	20
Pearson Correlation	0.410320463	
Hypothesized Mean Difference	0	
df	19	
t Stat	-19.67528497	
P(T<=t) one-tail	2.14383E-14	
t Critical one-tail	1.729132812	
P(T<=t) two-tail	4.28767E-14	
t Critical two-tail	2.093024054	

The value of t is 19.675285. The value of p is < .00001. The result is significant at p < .05.

Table 5 addresses whether there is a statistically significant difference between the posttests' mean scores of the control and experimental groups. As mentioned earlier, learners in both the control and experimental groups experienced significant differences between their pre- and post-tests, indicating that both traditional and flipped learning processes had significant effects on the cohesion learning development of EFL learners. Nonetheless, the first research question this study seeks to answer is whether mobile-assisted flipped learning significantly improves EFL learners' cohesive device use in comparison to traditional teaching. As seen in Table 5, the posttests' mean scores in the control and experimental groups are M = 12.9, SD = 1.48 and M = 16.95, V = 0.88, respectively, which indicates experimental group's higher mean score. In addition, the result of the Paired Samples t test *comparing the mean scores* shows a statistically significant difference between the participants' post-tests mean scores in experimental and control groups t(38) = -10.48, p = 0.00001. Therefore, it can be claimed that those who participated in mobile-assisted flipped learning to learn cohesion in writing outperformed those who participated in traditional instruction.

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Table 5. Paired-samples *T-test for* experimental and control group's posttests

	CONT_Posttest	EXP_Posttest
Mean	12.9	16.95
Standard Deviation	1.48	0.88
Observations	20	20
Pooled Variance	1.493421053	
Hypothesized Mean Difference	0	
df	38	
t Stat	-10.48006288	
P(T<=t) one-tail	4.56354E-13	
t Critical one-tail	1.68595446	
P(T<=t) two-tail	9.12709E-13	
t Critical two-tail	2.024394164	

The t-value is -10.48006. The p-value is < .00001. The result is significant at p < .05.

4.1.2 RQ2: Does mobile- assisted flipped learning significantly enhance motivation of adult female intermediate EFL language learners to learn cohesive devices?

The second research question attempst to determine whether mobile-assisted flipped learning significantly increases EFL learners' motivation to learn cohesive devices in writing. To this end, a writing motivation questionnaire developed by Taguchi, Magid, and Papi (2009) was used to assess learners' motivation in control and experimental groups before and after they underwent treatment. Table 6 displays the results of the chi-square calculation in the control group to determine if there is a statistically significant difference between the participants' motivation pretest and posttest scores. As seen in the pre-test row, only 6 out of 20 students in the control group who received traditional instruction were motivated to learn cohesive devices, and this number remained unchanged in the posttest.

This may suggest that traditional instruction of cohesive devices did not have a significant impact on the motivational development of learners. More statistically, the results of a chi-square test, as shown in Table 6, indicate that the relationship between the traditional teaching process used to teach cohesive devices and the improvement of learners' motivation is not significant, X2 (1, N = 40) = 0.119, p = 0.73. Therefore, it can be claimed that traditional instruction, as opposed to mobile-assisted flipped learning in this study, did not significantly increase the motivation of Iranian adult female intermediate EFL learners to learn cohesive devices.

Table 6. Control group and motivation Chi-square

	YES	NO	*Marginal Row Totals*
CONT_Pretest	6 (6) [0]	14 (14) [0]	20
CONT_Posttest	6 (6) [0]	14 (14) [0]	20
Marginal Column Totals	12	28	40 (Grand Total)

The chi-square statistic is 0. The *p*-value is 1. *Not* significant at $p < .05$.

The chi-square statistic with Yates correction is 0.119. The *p*-value is .73007. *Not* significant at $p < .05$.

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Table 7 compares the experimental group's motivation pretest and posttest and determines whether mobile-assisted flipped learning intevention significantly increases the motivation of adult female EFL language learners to learn cohesive devices. As can be seen in Table 7, 6 out of 20 students were motivated to learn cohesion prior to mobile-assisted flipped learning in the pretest, however this number rose significantly to 17 students in the posttest. In addition, the results of a chi-square test show that there is a statistically significant difference between the motivation pretest and posttest' scores X2 (1, N = 40 = 10.23, p = 0.0013). Therefore, it can be concluded that there is a significant relationship between the mobile-assisted flipped learning process used to teach cohesive devices and the improvement in students' motivation to learn cohesion. In other words, mobile-assisted flipped learning, as opposed to traditional instruction in this investigation, significantly increased the motivation of Iranian adult female intermediate EFL learners to learn cohesive devices.

Table 7. Control group and motivation Chi-square

	YES	NO	*Marginal Row Totals*
EXP_Pretest	6 (11.5) [2.63]	14 (8.5) [3.56]	20
EXP_Posttest	17 (11.5) [2.63]	3 (8.5) [3.56]	20
Marginal Column Totals	23	17	40 (Grand Total)

The chi-square statistic is 12.3785. The *p*-value is .000434. *Not* significant at $p < .05$.

The chi-square statistic with Yates correction is 10.2302. The *p*-value is .001382. *Not* significant at $p < .05$.

5. Discussion

Regarding the first research question, it was found that mobile-assisted flipped learning had a significant effect on EFL learners' cohesive devices' learning. This may be explained by specific features of flipped learning model. Flipped learning creates a collaborative learning environment, encourages learner autonomy and independent learning skills, improves learners' motivation to learn, and provides learners with more input. Moreover, the flexibility of time and place, feedback of the teacher and classmates, and the abundance of learning sources are the factors that contribute to a better learning. Last but not least, teachers have more class time since the engagement and presentation phase of the lesson is performed before the class. Therefore, teachers can design more engaging lessons and practices which might lead to deeper comprehension and active learning.

The findings of this investigation are in line with Shooli, Rahimi Esfahani, and Sepehri's (2022) investigation in which they examined the impact of the flipped classroom on the learning outcomes of Iranian students enrolled in English composition courses. The results of their study indicated that students viewed flipped writing instruction classrooms favorably. The posttest scores of the flipped students were statistically superior to those of their non-flipped counterparts. Similarly, Nourinezhad, Hadipourfard, and Bavali (2022) investigated the impact of flipped learning on the English writing performance and confidence of Iranian medical students. The results of that study revealed that flipped instruction had a greater impact on the improvement of learners' writing self-efficacy and writing performance than traditional instruction.

The findings are consistent with a study conducted by Challob (2021) in which the impact of flipped learning on the writing performance, autonomy, and motivation of EFL students was examined. According to the findings of that study, flipped learning environment has a positive effect on students' English writing ability, autonomy, and motivation. Similarly, the findings are supported by an investigation carried out by Susana and Brahma (2020). They investigated the implementation of flipped learning in a writing class during the pandemic, focusing on students' perceptions and reflections. The results of the questionnaire to determine students' perspectives on the implementation of flipped learning and aspects of their writing skills indicated that students responded positively to the application of flipped learning because it can be tailored to each student's level of understanding the material in depth, increasing interaction during online discussion, and improving project management. Likewise, Abedi, Namaziandost, and Akbari (2019) investigated the effect of flipped classroom instruction on the writing ability of Iranian upper-intermediate EFL learners. In agreement with the findings of this study, their results demonstrated that there was a significant difference between the experimental and control groups' post-tests' performance.

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Concerning the second research question, it was found that mobile-assisted flipped learning has a significant impact on the motivation of EFL learners to learn cohesive devices. The fact is, due to its specific features, mobile assisted flipped learning affects EFL learners' psychological states. This technology-based active learning model promotes learners' participation, interactions, autonomy, engagement, and self-regulation. Moreover, being fun, flexibility and learning at one's own pace and the existence of variety of materials which engage all learning styles might contribute to optimized learning and increase in learners' motivation.

The findings are consistent with a number of investigations such as those of Challob (2021), Susana and Brahma (2020), Fauzan and Ngabut (2018), Chung and Lee (2018), and Winter (2018). Challob (2021) examined the impact of flipped learning on the writing performance, autonomy, and motivation of EFL students. According to the findings of that study, flipped learning environment has a positive effect on students' motivation which might be attributed to interactivity of the learning environment, the flexibility of time and place, the feedback of the teacher and peers, and the abundance of learning sources. The study concluded that flipping the English writing classes created a collaborative learning environment that was user-friendly due to the extensive language and writing skills acquired. Students' English writing performance, autonomy, and motivation improved as they were able to practice writing more comfortably.

Moreover, the findings are in line with an investigation carried out by Susana and Brahma (2020) who investigated the implementation of flipped learning in a writing class during the pandemic, focusing on students' perceptions and reflections. The results of the questionnaire to determine students' perspectives on the implementation of flipped learning and aspects of their writing skills indicated that students responded positively to the application of flipped learning because it can be tailored to each student's level of understanding the material in depth, increasing interaction during online discussion, and improving project management. Similarly, in agreement with the findings of this study, Fauzan and Ngabut's (2018) investigation which addressed the perceptions of EFL students regarding flipped learning in writing class, indicated that students viewed the implementation of flipped learning in writing class favorably.

Furthermore, Chung and Lee (2018) conducted a study on the effects of flipped learning on college physical therapy students' learning motivation and attitudes. These results suggest that flipped learning increases motivation and attitudes toward learning. Although their study did not address EFL context, the findings of their study are in line with the current investigation's results. Last but not least, Winter (2018) addressed performance and motivation in a flipped learning course for middle school students. The findings indicate that average-performing students benefit from flipped learning through differentiated instruction. Winter's (2018) study finding concerning students' motivation improvement in flipped learning courses, therefore, is consistent with that of the current study.

6. Conclusion and Implication(s)

Despite the existence of numerous investigations on mobile assisted flipped learning, not even one investigation was found to address the impact of mobile-assisted flipped learning on the performance and motivation of adult EFL learners in learning English cohesive devices in an Iranian context. Therefore, this study analyzed the impact of mobile assisted flipped learning on the performance of female intermediate EFL learners in learning English cohesive devices in an Iranian context. Moreover, the impact mobile-assisted flipped learning might have on motivation of female intermediate EFL language learners to learn cohesive devices was investigated. The result of this research indicates that there was a significant difference between the flipped classroom and conventional strategy on students' cohesive devices learning improvement. Therefore, it was concluded that those who participated in mobile-assisted flipped learning to learn cohesive devices in writing outperformed those who participated in traditional instruction. Similarly mobile-assisted flipped learning significantly increased the motivation of female intermediate EFL learners to learn cohesive devices.

There are a number of benefits of mobile-assisted flipped learning that may lead to improved performance in language learning and an increase in student motivation. These factors have promoted the adoption of mobile-assisted flipped learning in a variety of contexts, including EFL classes. Students can have more input and control over their own education. Students are allowed to learn at their own pace. It encourages collaboration and student-centered learning. Lessons and content are more accessible. Students acquire independent learning skills which is a valuable skill for every student. Instructors are able to design more engaging lessons. Students are capable of developing a deeper comprehension through active learning. Teachers are able to deliver a more tailored approach. Students find classroom instruction and class time to be more engaging.

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This study might fill a gap in academic knowledge. Moreover, the results of the current study can help stakeholders design, introduce, and address this approach to their context-specific needs, thereby facilitating the language learning process. Moreover, policymakers can be informed by the findings. In details, this investigation's findings are beneficial to language institutes and schools, supervisors, researchers, educators, language teachers, and curriculum designers. The current investigation adopted a quasi-experimental quantitative design. Comparable investigations with an experimental design could be beneficial. In addition to the measures employed in this study, it is suggested that a motivation structured interview be employed to obtain more concrete and qualitative data. This study focused on female EFL learners at the intermediate level in an Iranian context. Consequently, similar studies focusing on both male and female students with varying levels of language proficiency, such as advanced and upper-intermediate and elementary in various contexts are recommended. This investigation used essay typed writing tasks to test learners' achievement of cohesive devices. Using other survey questions such as multiple-choice and fill-in-the-blank tests in addition to essay-typed assignments could strengthen the findings.

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