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Flipped and Micro-flipped Instructional Approaches: A Comparative Study on Autonomy in Iranian EFL Learners

Verisheh Shakeri[1], Mahnaz Saeidi[2]✉, Nasrin Hadidi Tamjidi[3]

1. Department of English Language Teaching, Ta. C., Islamic Azad University, Tabriz, Iran

2. Department of English Language Teaching, Ta. C., Islamic Azad University, Tabriz, Iran, mnsaeidi@yahoo.ca

3. Department of English Language Teaching, Ta. C., Islamic Azad University, Tabriz, Iran

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ABSTRACT

Objective: This study aimed to examine the effects and relative impact of flipped and micro-flipped instruction on the autonomy of Iranian EFL learners.

Methods: A total of 63 female learners from a language institute were selected through the Oxford Placement Test (OPT) and divided into three groups: one control group and two experimental groups. All participants completed an autonomy questionnaire prior to the intervention. The first experimental group received advanced flipped instruction, the second received micro-flipped instruction, and the control group was taught through traditional lecture-based methods. After the instructional period, the autonomy questionnaire was administered again. The collected data were analyzed using analysis of covariance (ANCOVA) to compare post-test autonomy scores while controlling for pre-test differences.

Results: The results revealed no significant difference in learners' autonomy among the three groups at the pre-test stage. However, significant differences emerged in the post-test. Pairwise comparisons indicated that micro-flipped instruction was more effective than both flipped and traditional instruction in enhancing learner autonomy. Additionally, flipped instruction led to higher autonomy levels than the traditional lecture-based approach.

Conclusions: Both flipped and micro-flipped instructional approaches positively influenced EFL learners' autonomy, with micro-flipped instruction showing the greatest impact. These findings highlight the pedagogical potential of incorporating technology-supported, student-centered teaching models to promote learner autonomy in language classrooms. The results also encourage language educators and curriculum developers to reconsider traditional teaching methods and design more autonomy-supportive learning environments.

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Introduction

In pedagogy, classes are supposed to be highly interactive and participatory. However, student-teacher interaction remains limited. Students' participation primarily consists of asking questions, but most of the time, they focus on note-taking and completing exercises that mainly require them to memorize information and textbook content. Although this contradicts various learning theories (Chen & Lucas, 2010; McNulty, 2011), it remains a prevalent practice. As a result, education experts have called for changes to develop more engaging and participatory learning approaches. Modern learners have specific needs that necessitate changes in the educational system. The distinctions between earlier ideas of specialized technology usage in language instruction have become hazier due to rapid technological advancements (Palacious Hidalgo, 2020; Wei, 2022; Zhang & Zou, 2022). Together, they provide a whole educational experience. Wagner (2008) emphasizes that innovation, creativity, and fresh approaches to thinking are essential for progress in education. In this regard, the integration of technology into language learning has emerged as a potential solution to the limitations of traditional teaching methods (Golshan & Tafazoli, 2014). One notable blended learning approach that combines virtual and in-person instruction is the flipped classroom model (Bonk & Graham, 2006). This model has gained significant popularity in recent years. As described by Bergmann and Sams (2012), it shifts learning from the classroom to an external environment. Before starting a new lesson, teachers use videos and other instructional aids as input materials for observations. They expect students to actively engage in discussions, group work, and projects to foster a higher degree of independence in learning. This particular way of teaching is an example of active learning. In a systematic review of literature, Aburayash (2021) conclude that one of the most popular techniques to encourage self-learning is the flipped classroom method.

One of the benefits that flipped classroom instruction offers is the development of self-directed learning for students (Kurniawati et al., 2025). In their works, short, targeted instructional videos can empower students to take control of their learning, leading to improved engagement and outcomes. As noted by Holec (1981), learner autonomy indeed involves self-control over several aspects of learning, which includes, but is not limited to, setting objectives, selecting materials, formulating teaching and methodological strategies, and evaluation. Accomplishing this requires a shift from the traditional teacher-directed learning approach to more progressive, student-

directed approaches, where students have agency over their learning (Sohrabi & Iraj, 2016). Even so, the literature on learner self-dependence in EFL classes employing flipped pedagogical techniques is scarce. There is a significant gap in research concerning learner autonomy in EFL within the context of a flipped classroom approach.

Fidalgo-Blanco et al. (2016) suggests micro-flipped teaching as a blended solution to the problems encountered when attempting to put the flipped classroom model into practice. One significant problem associated with traditional flipped learning is the disparity in students' preparedness and engagement with pre-class materials. Many students may lack the motivation or skills to engage with video lectures or readings outside of class, leading to varying levels of understanding during in-class activities. This inconsistency can hinder collaborative learning and diminish the effectiveness of in-class discussions. Additionally, the reliance on technology can exacerbate accessibility issues, as not all students have equal access to devices or reliable internet connections, creating an inequitable learning environment. Furthermore, the extensive length of traditional flipped content can overwhelm students, making it difficult for them to digest information effectively (Gopalan et al., 2022). In response to these challenges, micro-flipped teaching has emerged as a more focused alternative, delivering shorter, targeted instructional videos that cater to specific learning objectives. This approach not only promotes better engagement by breaking down complex topics into manageable segments but also encourages self-directed learning, as students can revisit these concise resources at their own pace. This method has a distinctive feature called a "link activity," in which an instructor provides instructional support to students with out-of-class individual work in the class, which is the main difference between micro-flipped and flipped classroom .

Although flipped teaching and micro-flipped teaching both aim to enhance student autonomy in out-of-class situations, they differ significantly in their approach to delivering content. In traditional flipped teaching, instructors provide longer, more comprehensive lectures that students view outside of class, allowing for in-class time to be dedicated to collaborative activities and discussions. Conversely, micro-flipped teaching involves shorter, focused mini-lectures that are typically 5-10 minutes long, targeting specific skills or concepts within the course. This brevity allows for more frequent check-ins with students, enabling them to digest information in manageable segments and apply it immediately during class activities (Borchardt & Bozer, 2017).

However, there seems to be a gap in the literature concerning the effect of micro-flipped teaching on learner autonomy within the context of language teaching. Hence, this study seeks to explore this gap by examining the effect of both flipped and micro-flipped instruction on the learner autonomy of Iranian EFL students. This research is significant for two primary reasons. First, it contributes to the growing body of literature on modern teaching techniques, particularly how micro-flipped instruction enhances learner engagement during instruction. In this regard, autonomy, or self-responsibility in learning, is a crucial aspect of language acquisition. Second, this study addresses the lack of research on the focus of flipped and micro-flipped instruction on learner autonomy among EFL students. By evaluating the effectiveness of these teaching techniques in affecting autonomy, the study contributes to the ongoing discourse on improving language instruction in contexts where it is most needed.

In conventional language classes, students are expected to attend and listen to lectures presented by their teachers. However, this approach cannot often fully engage students, prompting them to resort to independent study to reach the required proficiency levels. Archambault and Crippen (2009) suggest that traditional, teacher-centered learning models have become ineffective in today's technology-oriented educational environment (Dishon, 2020).

One of the main challenges faced by learners is the absence of autonomy. As an example, instructors and language educators in Iran have observed that students struggle with independent writing tasks, even in their first language, which makes fostering autonomy in foreign language writing an even greater hurdle (Marashi & Hematabadi, 2011). The limited time available in classrooms often prevents the full exploration of the complexities involved in writing. By having students prepare outside of the class and practice in the class time can be utilized more effectively. This is offered as a potential solution through blended instruction.

Autonomy here is not just about writing; for the learner, it means being able to manage their learning experience as a whole. Lack of autonomy, according to research, can hamper an individual's ability to acquire a new language (Dafei, 2007; Zhang & Li, 2004). More recently, increasing attention has been given to fostering learner autonomy in language learning, enabling learners to take responsibility for their learning (Benson & Voller, 2014). Despite technological advances and the introduction of methods like flipped instruction or micro-flipped instruction,

there is still limited research investigating how such approaches influence learner autonomy in language classes (Reinders & White, 2016).

Micro-flipped instruction, a more adaptable form of flipped teaching, has been proposed as a solution to some of the challenges associated with fully flipped classrooms, particularly when students fail to complete pre-class assignments. However, there is still a lack of empirical studies examining its effectiveness in language learning (e.g., Borchardt & Bozer, 2017; Fidalgo-Blanco et al., 2016). Furthermore, to the best knowledge of the researchers, there is no study on the effects of flipped and micro-flipped instruction on EFL learners' autonomy. To bridge these research gaps, the present study aims to investigate the comparative effects of flipped and micro-flipped instruction on the autonomy of Iranian EFL learners.

Material and Methods

Participants

In the present quasi-experimental study, two experimental groups, labeled as Flipped Learning (FL) group, Micro-flipped Learning (MFL) group, and one control group labeled as Lecture-based (L) group who were at high-intermediate level from a Language Institute, located in Shabestar, Iran, participated. All participants were female, with Azeri Turkish as their first language, though they were also fluent in Farsi, the official language of Iran. The participants' ages ranged from 15 to 22 years. As random selection from the entire population (N = 322) was not feasible, the sampling was based on intact group design. Before the main study, the Oxford Placement Test (OPT) was administered to 107 high-intermediate learners in three classes, which were chosen based on convenience sampling, at the institute to ensure homogeneity. Sixty-three learners who scored within one standard deviation above and below the mean were selected and these three classes were randomly assigned to two experimental groups and one control group.

Instruments

The following instruments were employed in the study:

Oxford Placement Test (OPT, V. 1.1)*:* Published by Oxford University Press, this test evaluates grammatical understanding and usage in context. It was administered to participants to ensure a homogeneous sample. The OPT consists of 60 multiple-choice questions, to be completed in 50 minutes.

Learner Autonomy Questionnaire*:* Zhang and Li's (2004) questionnaire was used to measure learners' autonomy both before and after the study. The participants spent roughly 20 minutes on the survey, which had 21 items in a Likert scale format. In the pilot study, the internal consistency reliability using Cronbach's Alpha was measured, the result of which was 0.87 for the autonomy level of the participants.

Material

The teaching material used in this study was the Longman Academic Writing Series – Essays to Research Papers (Vol. 5) by Meyers (2014). This book is designed for high-intermediate EFL learners and covers various genres of academic writing. Chapter eight, which focuses on argumentative essays, was the primary material used in all groups. The writing process combines essay construction, vocabulary and grammar, language mechanics, and other related components.

Procedure

Before the main study commenced, a Learner Autonomy Questionnaire was given to 30 students for a pilot study. This group was similar to the intended participants of the main study, completing the reliability checks for the instruments, while the tools' validity was confirmed by specialists, expert views.

Initially, the Oxford Placement Test was administered, and learners whose scores fell within one standard deviation above and below the mean were selected. Afterward, the Learner Autonomy Questionnaire was administered to all participants across the groups to gather baseline data, twenty minutes were allocated for completing the questionnaire. Following that, the treatment phase began. The first experimental group received writing instruction based on flipped learning (FL). In this group, the instructional approach involved a two-part system where students first engaged with pre-recorded lectures and supplementary materials at home before coming to class. Teachers provided students with access to recorded video lectures (approximately 20-30 minutes in length) covering essential grammar, vocabulary, and writing skills. These materials were uploaded to the Telegram group one week prior to each class session. Additionally, readings and relevant online resources were suggested for further exploration. As the second part of the treatment procedure in this group, during the class time, the teacher facilitated interactive activities designed to deepen

understanding and application of the concepts learned at home. These activities included reviewing key points from the videos using questions to promote engagement, group discussions and writing tasks, peer reviews of writing and collaborative problem-solving tasks. To assess the participants' level of progress in this group, the teachers utilized formative assessments such as quizzes and in-class writing tasks to gauge student comprehension. Immediate feedback was also provided to address misconceptions and reinforce learning. Teachers also encouraged self-assessment and reflection on learning outcomes.

The second experimental group received instruction through the Micro-Flipped Learning (MFL) approach. This model largely mirrors the Flipped Learning framework in terms of classroom activities, pedagogical objectives, and assessment strategies (Bergmann & Sams, 2012; Lo & Hew,2017). Similar to the flipped model, micro-flipped instruction incorporates components such as tasks such as group discussions, peer review of writing tasks, collaborative writing, error analysis, and in-class writing exercise all of which foster deeper understanding, critical thinking, and improvement in writing proficiency (Mehring, 2018; Zainuddin & Halili, 2016). Both instructional methods also emphasize formative assessment, immediate teacher feedback, and self-reflection (Lo & Hew, 2017; van Alten et al., 2020). As a result, the nature and structure of instructional activities remains consistent across both approaches.

The primary distinction between micro-flipped and traditional flipped learning lies in the timing and scale of content delivery. Rather than assigning full-length instructional videos to be watched at home before class, the teacher initiated each class session by presenting a short, focused video (typically 5-10 minutes in length) to introduce or reinforce a single writing skill (Brame, 2013; van Alten et al., 2020). In this model, teacher adapted a segmented approach, by designing a series of micro-videos-each targeting specific writing skills or concepts. These micro-videos were shared via the Telegram group one week prior to each class. To supplement the videos, short readings and practice activities were also provided to enhance comprehension. During class sessions, the teacher delivered brief mini-lectures related to each micro-lesson, after which students engaged in peer interaction and collaborative problem-solving. This approach exemplifies the concept of "just-in-time" instruction, where key concepts are immediately followed by active application in class

(Bishop & Verleger, 2013). By integrating these concise instructional segments into classroom time, the need for extensive out-of-class preparation was significantly reduced.

Additionally, the use of "linking" or "binding" activities _ interactive tasks aimed at connecting learners to the material, their peers, and the instructor promoted active engagement, reinforced understanding, and fostered a sense of community within the learning environment (Fidalgo-Blanco et al., 2016). The in-class phase was structured around active learning strategies that enabled students to apply the micro-lessons immediately. Despite the pedagogical similarities to flipped learning, micro-flipped instruction typically operates on a more compact instructional scale. Tasks are shorter and more focused, owing to the reduced instructional input delivered prior to class (Brame, 2013). This structure makes micro-flipping particularly suitable for learners with limited access to digital resources or constrained time outside the classroom (Zainuddin & Halili, 2016; Lo & Hew, 2017).

To monitor student learning and retention, the teacher implemented quick formative assessments, such as exit tickets and mini-quizzer, at the end of each session. Feedback was provided promptly to help students identify areas of difficulty and make adjustments before processing to new content.

The control group received lecture-based traditional instruction. The teacher delivered content through face-to-face lectures in this group. These lectures included explanations of grammar rules, vocabulary lists, and writing techniques without any prior engagement from students outside the classroom. Following the lecture, students participated in guided practice activities where they applied the concepts discussed during the lecture. These activities were primarily teacher-led, with limited opportunities for student interaction or collaboration. At the end of the instruction period, teachers administered a final exam that assessed students' knowledge and skills based on the content covered throughout the course. Feedback was provided only after the assessment was completed.

The treatment lasted for 15 sessions, each 75 minutes long. After the treatment phase, the Learner Autonomy Questionnaire was re-administered to assess post-treatment autonomy levels.

Common Procedures across Groups

In all groups, the instructor introduced the key features of the argumentative genre, emphasizing that an argumentative essay aims to persuade readers and that constructing strong arguments is essential.

The Main Difference between Flipped and Micro-flipped Instruction

For the FI group, a social media group (e.g., Telegram or WhatsApp) was established to share instructional videos, which the learners watched outside of class, with in-class activities focused on applying the content. In the MFI group, shorter videos (less than 10 minutes) were provided, with activities carried out both at home and in class. The teacher also gave mini-lectures about each segment so that if any students have not been previously prepared for interactive activates, they make use of it. Generally speaking, it might affect all the students positively as it reminds them and provides them with the summary of the material.

Design

The study employed a quasi-experimental design with a pre-test, post-test, and one control group alongside two experimental groups. Due to the non-random selection of participants, the quasi-experimental approach, based on intact classes, was used. The independent variable was the instructional method, which had three levels: flipped, micro-flipped, and traditional. The dependent variable was the participants' autonomy.

Data Analysis

SPSS (v. 24) was used for data analysis, with both descriptive and inferential statistics. Inferential analysis was conducted to identify any significant differences between groups before and after treatment. ANCOVA was used to address the research questions, with pre-test scores as covariates to adjust for initial differences.

Results

As stated in the method section, the participants' homogeneity was evaluated using the Oxford Placement Test (OPT). Initially, all 107 learners took the OPT, and within the study's parameters, only those who scored within one standard deviation above and below the mean were selected. The descriptive statistics of participants OPT scores are presented in Table 1.

Table 1. Descriptive Statistics of the Participants OPT Scores

	N	Minimum	Maximum	Mean	Std. Deviation
OPT	107	21	60	42.54	10.372
Valid N (listwise)	107				

The initial participants had an overall mean OPT score of 42.54 with a standard deviation of 10.372, as shown in Table 1. Out of these learners, 63 EFL learners with scores between 33 and 52 were selected. Descriptive statistics for the autonomy scores of participants in the first experimental group, who received flipped instruction, are detailed in Table 2.

Table 2. Results of Participants in the Flipped Instruction Group (FIG) Based on Pre-test and Post-test Phases

	N	Minimum	Maximum	Mean	Std. Deviation
Autonomy Pre-Test in FIG	21	50	77	60.10	7.293
Autonomy Post-Test in FIG	21	70	91	78.62	5.661
Valid N (listwise)	21				

The results from the autonomy survey given in Table 2 indicated that the average score in the autonomy pre-test was 60.10 (SD = 7.293) while the average in its post-test was 78.62 (SD = 5.661). In Table 3, the descriptive statistics for the autonomy scores of the second experimental group, who underwent micro-flipped instruction, are presented.

Table 3. Results of Participants in the Micro Flipped Instruction Group (MFIG) Based on Pre-test and Post-test Phases

	N	Minimum	Maximum	Mean	Std. Deviation
Autonomy Pre-Test in MFIG	21	46	68	57.95	7.145
Autonomy Post-Test in MFIG	21	88	105	98.24	4.614
Valid N (listwise)	21				

Based on the results (Table 3), the mean score for the autonomy questionnaire was 57.95 in the pre-test and 98.24 in the post-test. The participants' autonomy score statistics in the control group are displayed in Table 4.

Table 4. Results of the Control Group (CG) Participants Based on Pre-test and Post-test Phases

	N	Minimum	Maximum	Mean	Std. Deviation
Autonomy Pre-Test in CG	21	42	77	60.81	9.026
Autonomy Post-Test in CG	21	59	89	71.24	7.489
Valid N (listwise)	21				

According to the data collected, as presented in Table 4, the average autonomy score was 60.81 in the pre-test and 71.24 in the post-test. An ANCOVA analysis was conducted to assess the impacts of flipped, micro-flipped, and traditional instruction on the autonomy of Iranian EFL students. Before performing the analysis, the autonomy scores for each of the three instructional groups

were evaluated for normality using the One-Sample Kolmogorov-Smirnov Test. The results of these tests are displayed in Table 5.

Table 5. Results of the One-Sample Kolmogorov-Smirnov Test for Autonomy Scores in the Three Groups Across Pre-test and Post-test Phases

		Pre-test				Post-test		
		FIG	MFIG	CG		FIG	MFIG	CG
N		21	21	21		21	21	21
Kolmogorov-Smirnov Z		.120	.179	.167		.163	.185	.126
Asymp. Sig. (2-tailed)		.200	.077	.128		.152	.060	.200

As shown in Table 5, the p-value for each set of scores exceeded 0.05, indicating normal distribution and justifying the use of the parametric ANCOVA test. Equality of variances among groups is another assumption of ANCOVA. Levene's test was used to assess variance equality between the two groups. The results of Levene's test are presented in Table 6.

Table 6. Results of Levene's Test for Autonomy Scores

F	df1	df2	Sig.
1.329	2	60	.272

Based on Table 6, it is evident that the criterion for the homogeneity of variance in the one-way ANCOVA was met, since F (1, 60) = 1.329 and p = 0.272, is greater than the significance level of 0.05. Since the dependent variable (autonomy post-test) and the covariate (autonomy pre-test) needed to be controlled for each group, the homogeneity of regression lines was checked initially, as stated in Table 7.

Table 7. Homogeneity of Regression for Autonomy Scores in the Three Groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10160.337[a]	5	2032.067	559.735	.000
Intercept	1587.325	1	1587.325	437.230	.000
Groups	288.633	2	144.317	39.752	.000
Autonomy Pre-Test	1809.461	1	1809.461	498.418	.000
Groups * Autonomy Pre-Test	21.771	2	10.885	2.998	.107
Error	206.933	57	3.630		
Total	441226.000	63			
Corrected Total	10367.270	62			
a. R Squared = .980 (Adjusted R Squared = .978)					

Based on the data presented in Table 7, the calculated p-value for the interaction between the groups and the autonomy pre-test was 0.107, which is greater than the significance level of 0.05. Therefore, the interaction between the independent variable (teaching method) and the covariate (autonomy pre-test) was not significant, and the homogeneity of regression slopes was confirmed. Thus, the ANCOVA test could be conducted. Based on the null hypothesis of this study, which states that there is no significant difference among the effects of flipped, micro-flipped, and traditional teaching methods in language classes on Iranian EFL learners' autonomy, ANCOVA was conducted. The results of this analysis are presented in Table 8.

Table 8. Results of ANCOVA for Autonomy Scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	10138.566[a]	3	3379.522	871.833	.000	.978
Intercept	1594.735	1	1594.735	411.402	.000	.875
Autonomy Pre-Test	1959.867	1	1959.867	505.597	.000	.896
Groups	9261.974	2	4630.987	1194.680	.000	.976
Error	228.704	59	3.876			
Total	441226.000	63				
Corrected Total	10367.270	62				
a. R Squared = .978 (Adjusted R Squared = .977)						

Based on the results presented in Table 8, the first underlined row shows the relationship between participants' autonomy pre-test and post-test scores, which was statistically significant ($p < 0.05$) with a correlation coefficient of 0.896. The subsequent line reflects the main effect of the type of instruction on the dependent variable (autonomy post-test). Group differences were significant after accounting for pre-test scores, $F (1, 59) = 1194.680$, $p < 0.05$, partial $\eta^2 = 0.976$. Given the p-value of less than 0.05, there was a significant difference between the three groups, leading to

the rejection of the null hypothesis of this study. To determine which pairs of groups exhibited significant differences in their effects on participants' autonomy scores, the researcher conducted the LSD Post Hoc test on the data, with the results presented in Table 9.

Table 9. The Pairwise Analysis of Autonomy Scores

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
FIG	MFIG	-21.176*	.612	.000	-22.399	-19.952
	CG	7.900*	.608	.000	6.683	9.117
MFIG	FIG	21.176*	.612	.000	19.952	22.399
	CG	29.076*	.615	.000	27.846	30.305
CG	FIG	-7.900*	.608	.000	-9.117	-6.683
	MFIG	-29.076*	.615	.000	-30.305	-27.846
*. The mean difference is significant at the .05 level.						

According to the findings in Table 9, the mean autonomy score of participants in the MFL group was significantly different from both the FL group ($p < 0.05$) and the control group ($p < 0.05$). Additionally, the autonomy mean score of the FL group was also significantly different from that of the control group ($p < 0.05$). The mean differences suggest that MFL instruction had a more favorable impact on participants' autonomy compared to both FL instruction (I-J = 21.176) and traditional teaching (I-J = 29.076). Furthermore, FL Instruction was found to be more effective than traditional teaching (I-J = 7.900) regarding its impact on the participants' autonomy.

Discussion

The present study sought to compare the effects of flipped instruction (FI), micro-flipped instruction (MFI), and traditional lecture-based teaching on Iranian EFL learners' autonomy. An ANCOVA analysis revealed that MFI had the most significant impact on learner autonomy, followed by FI. Both instructional approaches significantly outperformed the traditional lecture-based method.

The MFI group's superior performance can be attributed to its segmented, just-in-time delivery of content. This approach minimized cognitive overload and allowed for focused comprehension (Brame, 2013; van Alten et al., 2020). The combination of pre-class micro-videos and in-class mini-lectures provided learners with scaffolded learning opportunities that supported immediate feedback and interaction—factors critical for fostering autonomy (Lo & Hew, 2017).

Unlike traditional flipped classrooms where students' engagement with pre-class materials varies (Fidalgo-Blanco et al., 2016), MFI ensures all learners receive concise, targeted instruction at the start of each class. This uniformity enhances peer collaboration and supports consistent classroom discussions. These findings align with recent evidence suggesting microlearning formats are particularly effective for self-regulated learning (Kurniawati et al., 2025; Zhang & Zou, 2022).

The autonomy gains in the MFI group also resonate with Vygotsky's (1978) theory of social constructivism, emphasizing that learning is enhanced through structured social interactions. MFI's real-time micro-instruction promotes such interactions, enabling students to participate in peer-assisted learning while taking responsibility for their academic progress (Wei, 2022).

Furthermore, the flipped instruction group outperformed the control group, corroborating studies that emphasize the active learning benefits of flipped classrooms (Muldrow, 2013; Aaron & Bergmann, 2012). However, FI's reliance on pre-class preparation might have disadvantaged students who lacked discipline or access, a limitation that MFI seems to overcome by integrating essential content delivery into class time (Borchardt & Bozer, 2017; Hasumi & Mei-Shiu, 2024).

These results also reflect Holec's (1981) notion of learner autonomy as a self-initiated process. By providing students with more control over their learning pace and environment, especially in MFI, the instructional model allows for autonomy in both planning and evaluation of learning (Benson & Voller, 2014; Reinders & White, 2016).

Overall, this study demonstrates that while both flipped and micro-flipped approaches positively affect learner autonomy, MFI offers more consistency, accessibility, and instructional clarity. The structured, brief, and timely delivery of content in MFI, combined with interactive, feedback-rich classroom environments, optimally nurtures learner autonomy in EFL contexts.

The findings of this study align with those of Muldrow (2013), who suggests that flipped learning meets learners' needs, thereby improving their autonomy by combining technology with effective methods. Similarly, Aaron and Bergmann (2012) highlight that the flipped classroom promotes learner autonomy by allowing them to take control of their learning and fostering an appreciation for individual learning needs. The current study also supports Dafei's (2007) conclusion that learners' proficiency in English is significantly related to their autonomy. Therefore, it can be inferred that language achievement and autonomy reinforce each other, with the flipped classroom indirectly influencing both. Likewise, Hamciuc and Roux (2014) concluded that combining

classroom and self-directed learning strategies could enhance learner achievement while meeting curriculum requirements.

Conclusion

This research posits that flipped teaching yields the best learning environment to facilitate students' opportunities and experiences for the autonomous development of English writing skills. The results are likely applicable in similar contexts, although they are limited in scope. In particular, the flipped model of instruction benefits all EFL learners, not only advanced ones. It is especially beneficial for less competent and more apprehensive students due to its flexible pacing, which allows them to participate in writing exercises at their own pace and foster autonomy in an appropriate manner. For apprehensive and less competent learners, the MFI group fosters a learning environment that enables them to receive help from instructors and peers without limitations. The research results highlight that the respondents could take control of their learning, exercise judgment, and develop adequate confidence in undertaking novel tasks. They demonstrated readiness to learn English writing beyond the classroom confines, with special attention given to studying and writing argumentative essays. This development in writing skills was especially notable in fostering independence in writing and was, in part, the result of using the flipped instructional model. In micro-flipped instruction, when learners are given direction and sufficient time to work independently, the learning environment becomes productive. Students learned to manage their negative feelings about writing by cultivating self-confidence in their ability to participate freely in their writing classes. These experiences strengthened their motivation to continue learning English writing beyond the classroom and apply their skills to various essay types.

Therefore, the outcomes of these approaches can vary; while flipped teaching may foster deeper understanding through extended content exploration, micro-flipped teaching can enhance immediate application and retention of writing skills due to its concise nature. Students engaged in micro-flipped environments might demonstrate increased motivation and autonomy, as they can focus on specific challenges in their writing without feeling overwhelmed. Ultimately, the choice between these methods may depend on the learning objectives and the specific needs of the students, with micro-flipped teaching potentially offering a more tailored approach to skill acquisition in writing.

This study enhances the body of knowledge in EFL practice by exploring the use of flipped and micro-flipped techniques in increasing learner autonomy. It emphasizes the need to merge technology with conventional writing courses, as both integrate and motivate students to learn and actively engage in lessons. Teachers are advised to adopt these techniques in instruction to shift toward a more flexible, student-centered teaching and learning approach that fosters autonomous learning. Moreover, the research illustrates the need to be open-minded regarding Western teaching styles in terms of culture. Where students are resistant to the idea of self-learning, teachers need to provide gradual support and motivation to enhance learner independence.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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