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Interaction Levels in Flipped Online EFL Classrooms: Implications for Critical Descriptive Writing Development

Mohammadi Davoudi[1], Afshari Asghar[2], Bagherpour Nasibehibeh[3]

[1]Department of English, South Tehran Branch, Islamic Azad University, Iran. davoudmohammadi345@gmail.com

[2] Department of English, Islamic Azad University, South Tehran Branch, Iran. asghar.afshari@iau.ac.ir

[3]Department of Foreign Languages, Qo.c., Islamic Azad University, Qom, Iran. bagherpour.ns@gmail.com

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Abstract

Recently, flipped classes have been used across many language skills (Li & Li, 2022). Although traditional writing instruction has emphasized product- or process-oriented approaches, with limited attention to interactional scaffolding (Rakhimova, 2025), critical descriptive writing is a complex skill that combines detailed observation with analytical thinking and reflective insight, posing considerable challenges for most EFL learners. As such, this study explored the impact of interaction-rich versus interaction-limited flipped online instruction on the critical descriptive writing skills of English as a Foreign Language (EFL) Learners. Sixty intermediate learners studying in a language institute in Tehran were selected via stratified sampling, homogenized using the Oxford Placement Test, and assigned to two experimental groups. The interaction-rich group received instructional videos followed by collaborative engagement and feedback via WhatsApp, while the low-interaction group accessed only instructional content, with minimal peer interaction and only minimal teacher interaction. Pre- and posttests of learners' performance in critical descriptive writing were assessed by two experienced raters with ascertained inter-rater reliability, using a rubric they had been familiarized with and practiced. Using the paired-samples and independent-samples t-tests, the results revealed a significant improvement in the interaction-rich group, whereas no statistically significant improvement was observed in the interaction-limited group. An independent samples t-test confirmed a significant between-group difference favoring the interaction-rich condition. These findings highlight the importance of interaction in online flipped instruction for developing learners' writing proficiency and critical thinking. The study provides practical implications for instructional designers, which is discussed.

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Introduction

Over the past two decades, English as a Foreign Language (EFL) instruction has experienced significant methodological transformations, driven by increased emphasis on learner autonomy, digital integration, and communicative competence. Among these innovations, the flipped classroom model has gained prominence. This model inverts the traditional learning sequence by shifting content delivery to pre-class settings (e.g., instructional videos) and dedicating in-class time to active learning. Such an approach aligns with constructivist learning theories, which emphasize interaction and reflection as central to knowledge construction (Brewer & Movahedazarhouligh, 2018; McNally et al., 2017).

The online flipped approach represents a newer iteration of the traditional flipped classroom, relocating all instructional processes to a virtual environment (Hew et al., 2020). Similar to conventional flipped models, it requires learners to complete preparatory work—such as viewing recorded lectures—before attending class. The key distinction, however, is that all real-time interaction in the online flipped model occurs through videoconferencing platforms (e.g., Zoom or Tencent Meeting) rather than in a physical classroom (Jiang et al., 2021). Although this model has become increasingly popular due to its entirely digital and potentially interactive nature, research examining its pedagogical outcomes and challenges, especially in EFL contexts, remains limited (Hew et al., 2020; Jiang et al., 2021). Another distinction between two interaction modes includes interaction-embedded, which intends to integrate interaction opportunities into existing artifacts, devices, and environment within specified time in virtual environment and interaction-limited, which consists of providing offline educational lessons at an unspecified time within a virtual classroom environment (Shabani & Jabbari, 2023).

The rapid expansion of online education, accelerated by the COVID-19 pandemic, has further digitized flipped instruction. However, implementation practices vary: some models integrate synchronous and asynchronous interaction, while others rely primarily on one-way content delivery (Young et al., 2014). Asynchronous learning affords flexibility and convenience while synchronous sessions promote social connectedness, immediate communication, and environmentally friendly practices (Green et al., 2011). For this reason, Stöhr et al. (2020) highlight the fully online flipped model as an instructional design that combines the strengths of both modes. Still, they acknowledge that empirical evidence regarding its advantages and drawbacks is at a very early stage (Jia et al., 2023). Although prior studies have demonstrated the benefits of flipped learning for language achievement (Sung, 2015), few have isolated the role of interaction within online flipped environments, particularly regarding EFL learners' development of higher-order writing skills such as critical descriptive writing. Many scholars maintain that online learning is most effective when asynchronous and synchronous modes are intentionally integrated

Critical descriptive writing is a complex skill that combines detailed observation with analytical thinking and reflective insight, posing considerable challenges for most EFL learners

(Nejmaoui, 2019). Traditional writing instruction has often emphasized product- or process-oriented approaches, with limited attention to interactional scaffolding (Rakhimova, 2025). Emerging evidence indicates that digital tools can support collaborative writing and critical thinking (Zou et al., 2023); however, more empirical research is needed on the flipped classroom model. Despite its potential, the adoption of online flipped instruction faces several challenges. First, although a growing number of studies have examined flipped classrooms, research on online flipped instruction remains limited, especially in the context of developing EFL learners' descriptive writing. The integration of critical thinking into descriptive writing is even more neglected, despite its potential to enhance analytical and reflective skills (Borglin, 2012; Puspitaloka, 2019; Syafika et al., 2024).

However, some researchers have identified some challenges that can impede the implementation of the flipped classroom approach. Many EFL teachers avoid flipped instruction due to the substantial time and effort required to create instructional videos and meaningful pre-class tasks (Bergman & Sam, 2012; Haque, 2007; Hu, 2002; Noughabi, 2017). As a result, critical descriptive writing—a skill requiring active learner engagement—is often overlooked. Moreover, online flipped instruction demands clear teacher roles, structured offline assignments, learner accountability, and readiness to engage independently, particularly in interaction-limited modes. Without adequate preparation, discrepancies between instructional expectations and actual practice are likely, potentially leading to frustration and inefficient use of time and resources.

While online instruction can support meaningful interaction and collaboration (Sun et al., 2022) and may perform as well as traditional classroom teaching (Nguyen, 2015), its effectiveness depends heavily on the level and quality of teacher–learner interaction (Huang et al., 2015). Various obstacles—including insufficient learner readiness for online communication (Yilmaz, 2017), low self-efficacy (Jiang et al., 2021), limited digital skills (Nkonge & Gueldenzoph, 2006), and anxiety about making errors (Ebadi & Ebadijalal, 2022)—can interfere with smooth communication. Such constraints may prompt teachers or learners to resort to lecture-heavy, minimally interactive instruction (Lederman, 2020). This raises an important question for EFL contexts (e.g., Iran) where teacher-centered approaches remain dominant (Kazemi & Soleimani, 2013, 2016); moreover, whether learners benefit more from a highly interactive version of the online flipped model or from a more teacher-driven, interaction-limited version integrated with critical descriptive writing.

To date, few studies have directly compared interaction-rich and interaction-limited flipped instruction in EFL writing contexts. Likewise, most available research relies on survey data rather than in-depth qualitative methods, limiting understanding of the nuanced ways learners experience interaction. The existing literature often underplays the challenges learners face, such as technological barriers, power dynamics in group work, and tensions between high- and low-interaction in flipped instruction. This gap is particularly notable given the increasing reliance on mobile communication platforms such as WhatsApp in online instruction across resource-constrained settings (Atmojo & Nugroho, 2020; Farrah & Al-Bakri, 2020). As a result,

the study addresses these gaps by comparing high- and low-interaction online flipped instruction on EFL learners' performance in critical descriptive writing and in flipped classrooms. By focusing on the interactional dimension of flipped pedagogy and learners' perspectives on this teaching method, this study seeks to contribute to the growing body of research on technology-mediated writing instruction and to inform pedagogical practices in digital EFL classrooms about how interaction-rich flipped models influence writing outcomes in online contexts. In line with what was mentioned, the following research questions were proposed in the current study:

- Does an interaction-rich mode of online flipped instruction have any significant effect on EFL learners' critical descriptive writing skills?
- Does the interaction-limited mode of online flipped instruction have any significant effect on EFL learners' critical descriptive writing skills?
- How do EFL learners perceive the role of interaction in their flipped online descriptive writing classes with a focus on critical thinking?

Literature Review

Flipped Instruction in Online EFL Contexts

The flipped classroom, first introduced by Nechkina (1984), has since been applied across different educational levels. Also called inverted instruction, it is a blended model in which students study core materials before class, allowing class time to focus on teacher-supported tasks such as problem solving, peer interaction, and personalized learning (Hao, 2016). In its traditional format, flipped instruction includes two stages: pre-class preparation, delivered online or offline, and in-class, face-to-face activities (Hung, 2015). Pre-class resources, typically videos or texts, activate learners' background knowledge and prepare them for discussion (Bergmann & Sams, 2012). Social media tools may also facilitate communication and feedback (Wu et al., 2020). During class, teachers act as facilitators to enhance the quality of interaction (Polat & Karabatak, 2022). Prior exposure to materials has been shown to increase engagement, deepen understanding, and foster higher-order thinking (Cann, 2016; Zou & Xie, 2019; Haghighi et al., 2019). This process promotes self-directed learning (Yavuzalp & Bahcivan, 2021) and reflects concepts from Schema Theory and Active Learning Theory (Thai et al., 2017; Yu & Zhu, 2019; Wang et al., 2018).

From an interactionist perspective, interaction as an essential part of language acquisition provides opportunities for the negotiation of meaning and for feedback, leading to language development; however, sociocultural theory emphasizes the importance of dialogic scaffolding and mediation in learners' zones of proximal development (Long, 1996; Vygotsky, 1978). In flipped classrooms, interaction is assumed to shift from teacher-dominated transmission toward more collaborative, peer-mediated exchanges. However, as recent studies highlight, the extent and quality of such interaction vary widely depending on task design, learner readiness, and technological affordances (Kim, Park, & Jang, 2022; Yang, 2023). The online flipped model

transfers both stages of learning to digital platforms such as Zoom, WeChat, QQ, and Google Meet, enabling synchronous interaction and asynchronous preparation (Sun et al., 2022; Jia et al., 2023). Modern technologies allow instructors to manage classes remotely, monitor progress, and increase learner motivation and autonomy (Mayadas, 1997; Lenkaitis, 2020). This model aligns with current trends in e-learning that emphasize flexibility, feedback, and cognitive development (Perveen, 2016; Alhazbi & Hasan, 2021).

From the perspective of the Community of Inquiry framework (Garrison et al., 2010), online flipped classes encourage teaching, social, and cognitive presence, enabling purposeful collaboration (Antón & DiCamilla, 1998). Instructors can use various online communication cues to build immediacy and engagement (Dixson et al., 2017). Namely, this teaching method has gained considerable attention in language education for its potential to enhance learner engagement, autonomy, and higher-order thinking. In this model, instructional input is delivered asynchronously—typically through videos—while class time is devoted to interactive tasks (Bergmann & Sams, 2012; O'Flaherty & Phillips, 2015). This shift supports constructivist and sociocultural learning theories, which emphasize learning as an active, socially mediated process (Vygotsky, 1978).

A flipped classroom has the potential to significantly enhance learning and teaching productivity through a range of innovative approaches and strategies. Supported by a wealth of academic research, these methods offer compelling insights into how technology can positively improve learner motivation, participation, and academic outcomes (Webb & Doman, 2016; Zainuddin & Halili, 2016). However, findings remain uncleared regarding its impact on writing development in EFL contexts. Some studies suggest that without meaningful interaction, the flipped model risks replicating traditional lecture delivery in digital form (Bishop & Verleger, 2013).

Writing Instruction and Critical Thinking in EFL

Writing is a cognitively demanding skill, especially in a foreign language. It requires planning, drafting, revision, and reflection—skills that are further challenged by linguistic and cultural barriers in EFL contexts. Instructional approaches have evolved from product-based models, focused on accuracy, to process-oriented methods that emphasize revision and learner autonomy (Nunan, 1999; Zamel, 1982). More recent genre-based and socio-cognitive approaches position writing as a socially situated practice shaped by context, audience, and interaction (Hyland, 2003; Leki, 1990).

Developing EFL learners' writing proficiency increasingly requires integrating critical thinking into classroom instruction. When students analyse information, question assumptions, and justify their ideas, their writing becomes more coherent and academically purposeful, consequently, writing tasks that incorporate reasoning, evaluation, and problem-solving promote deeper cognitive engagement and lead to higher-quality written output (Paul & Elder, 2014). In EFL contexts, combining explicit writing instruction with critical-thinking activities helps learners organize arguments, select relevant evidence, and reflect on their perspectives

(Mehta & Al-Mahrooqi, 2015). Such instruction fosters greater autonomy and helps learners move beyond surface-level language use toward more analytical and meaningful communication.

Among the many linguistic and non-linguistic factors affecting the development of writing skills, critical thinking, meanwhile, is essential for academic writing but is often underemphasized in EFL instruction. Studies highlight that critical writing skills can be fostered through structured peer feedback, guided reflection, and engagement with meaningful, controversial topics (Alagozlu, 2007; Bailey et al., 2015). These elements align closely with the affordances of flipped classrooms—particularly when supported by digital tools that promote collaboration and dialogic learning (Hajizadeh et al., 2025). Accordingly, experimental studies have reported positive effects of flipped learning on various language skills, including grammar, reading, and writing. Ahmad (2016) found significant gains in EFL learners' writing performance and attitudes following flipped instruction. Lin et al. (2018) integrated gamification and observed reduced writing errors and increased learner motivation.

The online flipped approach reviewed in this study showed that it plays a significant role in enhancing language learning by providing time-saving, valuable pre-study materials that may not be available in traditional classrooms. Indeed, it enables learners to study at their own pace, contributing to student preparation and a more unified classroom around the content to be taught. However, the studies regarding the interaction level and critical thinking in writing skill and flipped approach showed that most of these studies do not distinguish between passive and interactive forms of flipped learning, nor do they examine writing alongside critical thinking.

Learners' Perceptions of Interaction in Flipped and Online Learning

The significant role of EFL learners' attitudes about the efficacy of flipped classes has been attested and studied in a lot of research (Al-Harbi & Alshumaimeri, 2016; Namaziandost et al., 2020; Webb & Doman, 2020). The connection between attitude and investment in any types of instructional activities such as flipped classes can be rationalized in the way that unless the EFL learners have the right and constructive attitudes and perceptions, they cannot be expected to exert their full potential in online flipped classes (Prastiwi, 2018; Sedighi & Zarafshan, 2006). As perceptions influence motivation, participation, and learning outcomes, learners' investigation of perspectives on interaction is crucial. In online and blended contexts, perceptions of interaction are often shaped by task design, peer dynamics, and technological affordances. A growing body of research has examined learners' views of interaction in flipped environments.

As Chen and Tsai (2021) reported, Taiwanese learners valued peer interaction in flipped English courses but expressed concerns about unequal participation. Yang (2023) similarly found that while Chinese learners appreciated opportunities for collaborative learning in flipped classrooms, they highlighted the need for clearer instructor guidance to ensure that discussions remained substantive. Regarding writing, Akbari et al. (2021) observed that Iranian learners in flipped writing courses perceived peer interaction as beneficial for idea generation and

organization, though some expressed frustration with unconstructive feedback. More recent work by Alshumaimeri and Alqahtani (2023) highlighted that learners' engagement in flipped English writing classes depended heavily on the teacher's ability to scaffold critical discussion rather than on assigning collaborative tasks. Syarifudin (2023) in his research showed that the perceptions of online communicative reversed composing class for EFL students. writing learners had positive perception for EFL composing program in terms of motivation, efficiency and composing skill.

Method

Design

This study employed an exploratory mixed-methods design, conducted in two phases: a quantitative and a qualitative phase, since recent literature indicates a pressing need for qualitative insights into learners' experiences of interaction in flipped writing classrooms. While quantitative findings show general improvement in writing outcomes (Akbari et al., 2021; Lo & Hew, 2020), less is known about how learners themselves perceive and negotiate the interactive processes underpinning these outcomes. Hence, this study addresses both qualitative and quantitative approaches to examine how EFL learners perceive interaction when engaged in flipped online descriptive writing tasks explicitly oriented toward critical thinking. The qualitative inquiry phase was deemed appropriate because it allows for an in-depth investigation of learners' lived experiences, capturing the meanings they assign to interactions in complex instructional contexts (Creswell & Poth, 2018). Specifically, a case study approach was employed, as it enables detailed examination of a bounded system (Yin, 2018).

Participants

The researchers selected 87 intermediate-level EFL learners from Afghanistan, Iran, and Iraq enrolled in private English institutes in Tehran. The participants were initially selected via convenience sampling and then screened using the Oxford Online Placement Test (OOPT) to ensure homogeneity in language proficiency. Only learners within one standard deviation of the mean were retained, resulting in a final sample of 60 participants. These participants were randomly assigned to one of two experimental groups: interaction-rich (n = 30) and interaction-limited (n = 30). All participants were adults aged 18 to 35, with comparable educational backgrounds and English-learning experience, which further ensured group comparability.

The participants in the qualitative phase comprised 18 undergraduate English majors (11 female, 7 male) aged 19 to 32. Some were Persian L1 speakers with intermediate to upper-intermediate English proficiency, and the others were from Afghanistan and Iraq (B1–B2 on the CEFR scale). They were recruited through convenience sampling, as they were directly engaged in the instructional context under study and thus able to provide relevant insights (Palinkas et al., 2015). Informed consent was obtained from all participants, and pseudonyms are used throughout this paper to protect confidentiality.

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Instruments

Language Proficiency Test

The Oxford Online Placement Test (OOPT), a standardized, computer-adaptive assessment, was employed to measure grammar, vocabulary, reading, and listening skills. Its automated scoring system provided objective and reliable data for participant selection, ensuring equivalence between the experimental groups.

Writing Pre- and Posttests

Critical descriptive writing proficiency was assessed using pre- and posttests, each requiring participants to select one of five prompts and write a 280–320-word composition within 45 minutes. Prompts were carefully designed to elicit both descriptive and analytical responses, for example: "Describe a place that left a lasting impression and explain why." The prompts ensured consistency across participants while allowing for demonstration of critical thinking and descriptive skills.

Scoring Rubric and Raters

An analytic scoring rubric adapted from Khatin and Mirzaii (2016) was used to evaluate written responses. The rubric assessed coherence, organization, language accuracy, and critical engagement. Three experienced EFL instructors validated the rubric for content relevance and clarity, and it was piloted on five writing samples outside the main study. Two independent raters evaluated all pre- and posttest writings. To ensure consistency, inter-rater reliability was calculated using 30 randomly selected scripts, yielding $r = .79$ ($p < .001$), which indicates acceptable reliability. The raters participated in five calibration sessions with the researchers to clarify scoring criteria, resolve discrepancies, and determine component weightings. Clear descriptors and practice exercises were used to enhance rating consistency.

Table 1

Descriptive Statistics on Inter-rater Reliability

	Mean	Std. Deviation	N
Rater one	13.06	1.50	30
Rater two	13.86	1.16	30

According to the analysis of data presented in Table 4.1, the mean score of the first rater of the 30 writing samples was 13.06 with a standard deviation of 1.50. For the second rater, the mean score was 13.85, and the standard deviation was 1.16. The Pearson correlation results are presented in Table 4.2.

Table 2

Pearson Correlations for Inter-rater Reliability

	Rater one	Rater two

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Rater one	Pearson Correlation	1	.790**
	Sig. (2-tailed)		.000
	N	30	30
Rater two	Pearson Correlation	.790**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

According to the data analysis, the correlation between the first and second raters was .79, which is an acceptable level of correlation and indicates inter-rater reliability. As mentioned, this was achieved by scoring, observing each other's scores, and negotiating potential differences between the two raters repeatedly until they reached partial agreement on the quality of the writing samples. In the remaining data analysis, the rater means will be used to analyze participants' pretest and posttest scores to answer the research questions.

Interview

The semi-structured interviews were conducted with all 18 participants in small groups of 2–3 to encourage dialogue while allowing individual perspectives to surface. Each interview lasted 30–40 minutes and focused on learners' experiences of interaction in flipped classes, perceptions of peer and teacher roles, and perceived impact on critical descriptive writing. Interviews were conducted in English, though participants were permitted to code-switch into their mother tongue when needed for clarity.

Reflective Journal

The learners were asked to maintain weekly journals over the 14-week semester, reflecting on their interaction experiences in both asynchronous and synchronous components. Prompts encouraged students to describe challenges, benefits, and specific instances of interaction that supported or hindered their writing development. Both the semi-structured and the reflective journals provided triangulation, capturing both real-time reflections and retrospective accounts of interaction experiences (Yin, 2018).

Procedure

Following participant homogenization and pretesting, both groups received identical instruction in critical and descriptive writing using New Headway Intermediate over four weeks (450 minutes in total). Each week included a 15-minute pre-class video and 60 minutes of offline activities (teacher-produced videos). Pre-class materials were delivered asynchronously via WhatsApp, including teacher-generated video lectures aligned with weekly writing topics. The groups differed in interaction conditions during offline activities:

Interaction-Rich Group: Participants engaged in peer-to-peer and teacher-facilitated discussions, conducted both synchronously and asynchronously. Learners shared links, voice messages, and files to collaboratively explore ideas before in-class tasks. The teacher provided feedback, and learners were encouraged to revise their writings based on peer and teacher input. All messages remained accessible for asynchronous participation to accommodate scheduling conflicts.

Interaction-Limited Group: Learners received the same video materials but experienced minimal interaction, with no peer discussion and limited teacher feedback. Learners completed assignments independently, leveraging online resources or AI tools to revise and enhance their writing. Critical thinking in this mode involved independently evaluating source relevance, logical coherence, and revising successive drafts without collaborative support.

At the end of the intervention, participants completed the posttest. All responses were anonymized and rated using the same validated rubric and procedures as the pretest. The rubric components, including critical engagement and language mechanics, were equally weighted, reflecting both linguistic and higher-order thinking skills. Any scoring discrepancies were resolved through discussion and argument-based validation (Kane, 2013; Lavery et al., 2018).

Data Analysis

Quantitative data were analyzed by SPSS software version 26. Paired samples t-tests were conducted to measure within-group improvements, while independent samples t-tests compared posttest performance between groups. Levene's test was used to assess variance homogeneity. Effect sizes were calculated using eta-squared to assess the practical significance of the findings.

Regarding the qualitative data analysis, the transcribed data were analyzed using thematic analysis to identify features and to investigate patterns in the reflective journals and interview data. Following Braun and Clarke's (2006) six-phase model: (1) familiarization with the data through repeated reading, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. NVivo 12 software was used to manage and organize the data. Coding proceeded inductively, allowing themes to emerge from the data rather than being imposed a priori. However, the analysis was also informed by theoretical frameworks of interaction (Long, 1996; Vygotsky, 1978) and critical thinking (Ennis, 2018), thereby ensuring conceptual grounding.

Representative excerpts from interviews and journals were selected to illustrate each theme, prioritizing diversity of perspectives and depth of expression. Likewise, the trustworthiness of the study was rigorously ensured through multiple strategies (Lincoln & Guba, 1985). Triangulation across interviews and journals strengthened the credibility of the findings; moreover, member checking was conducted with participants on preliminary codes. On the other hand, transferability was maintained through a thick description of the research context, ensuring that the sample accurately reflected the population of interest. Regarding dependability and confirmability, transparency was upheld throughout all phases of data

collection, analysis, and interpretation. This evaluator examined the transcriptions, codes, emerging categories, and themes to address potential biases or subjectivity arising from the researchers' deep involvement in the research context.

Findings

Quantitative Findings

According to Stevens et al. (2012), violations of assumptions can lead to unstable results; hence, before running the t-test, a preliminary analysis of the data using parametric statistics was conducted. The second assumption was that the scores were obtained from a random sample of the population. In the current study, due to the limitations mentioned, a quasi-experimental design was chosen, with participants randomly assigned to the experimental and control groups. The third assumption was that the treatments in the data must be independent. Any other observations or measurements did not influence either treatment or measurement. Therefore, the assumption of independence of treatment was observed. The next assumption is normality, which assumes that the populations from which samples are drawn follow a normal distribution. However, in many research fields, especially in the social sciences, scores on the dependent variable do not always follow a normal distribution. According to Pallant (2020), most statistical methods are fairly robust, meaning they can handle violations of this assumption without significant issues. If the sample size is sufficiently large (e.g., 30 or more), as in the current study, these violations are unlikely to cause serious problems (Gravetter & Wallnau, 2000, p. 302; Stevens et al., 2012).

The last assumption for using parametric statistics, such as the t-test, is homogeneity of variance. This assumes that samples are drawn from populations with equal variances, meaning the variability of scores across the groups is similar. To test this assumption, SPSS conducts Levene's test for equality of variances as part of the t-test and analysis of variance procedures. The results are included in the output of these analyses. When interpreting the test results, the researcher needs to find that the test is not significant (i.e., a significance level greater than .05). A significance value below .05 indicates that the variances of the two groups are unequal, thus violating the homogeneity of variance assumption. However, there is no need to worry if this occurs, as analysis of variance is fairly robust to such violations, especially when the group sizes are reasonably similar (e.g., the ratio of the largest to the smallest group size is 1.5; Stevens et al., 2012).

Answering the first research question, the results in Table 3 showed that the mean pretest score for this group was 13.13, with a standard deviation of 1.25. In the posttest, the mean score was 14.06, and the standard deviation was 1.04.

Table 3

Descriptive Statistics of the Pretest and Posttest in Interaction-Embedded Experimental Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Interaction embedded pre	13.133	30	1.252	.228

	Interaction embedded post	14.066	30	1.048	.191

However, the paired-samples t-test in Table 4 indicates whether this difference is significant. The paired-samples t-test presented in Table 4.5 shows a significant difference between the pretest and posttest in the interaction-embedded experimental group (29) = 6.9, sig.). = .000, which can be attributed to the treatment effect of implementing interaction in the preparatory phase of the flipped class. Eta square was calculated via t squared/t squared plus number of participants minus one. The value turned out to be 0.62. To interpret eta-squared values, the following guidelines can be used (from Cohen, 1988): .01 = small effect, .06 = moderate effect, .14 = large effect. Given our eta squared value of .62, it can be concluded that there was a large effect, with a substantial difference in the interaction-embedded effect before and after the intervention.

Table 4

Paired Samples T-test of the Pretest and Posttest in Interaction-Embedded Experimental Group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Interaction embedded pre – interaction embedded post	-.933	.739	.135	-1.209	-.657	-6.911	29	.000

A paired-samples t-test was run between the second experimental group, which received the interaction-limited treatment, and the group that received the assignment and the necessary instructions on how to do it; however, without any interaction that the other group was allowed to have. The descriptive statistics and paired-samples t-test results are presented in Tables 5 and 6, respectively.

Table 5

Descriptive Statistics of the Pretest and Posttest in Interaction-limited Experimental Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Interaction limited pre	13.10	30	1.709	.312
	Interaction n limited post	13.33	30	1.582	.289

As shown, the mean score for this group in the pretest was 13.10 (standard deviation = 1.7), and in the posttest, it was 13.33 (standard deviation = 1.58). The paired-samples t-test results in Table 4.6 indicate whether the difference is significant.

Table 6

Paired Samples T-test of the Pretest and Posttest in Interaction-limited Experimental Group

	Paired Differences	t	df

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			Sig. (2-tailed)
Pair 1	Interaction limited pre – interaction	-.233	.727	.132	-.505	.038	-1.75	29	.090

The result of the paired-samples t-test presented in Table 6 shows that there was no significant difference between the pretest and posttest for this experimental group (29) = 1.75, sig. = 09. This indicates that an interaction-limited treatment could not have a significant effect on writing quality in this experimental group during the preparatory phase of the online flipped classes.

Qualitative Findings

The qualitative findings from semi-structured interviews and reflective journals examined students' perceptions and the role of interaction in their flipped, online descriptive writing classes, with a focus on critical thinking. As a result, the following themes were identified to answer the last question:

- Interaction as collaborative meaning-making.
- Interaction as Cognitive Mediation.
- Challenges and constraints of interaction.

Interaction as Collaborative Meaning-Making

Learners consistently described interaction as a process of co-construction of meaning and refinement of ideas through dialogue with peers and the instructor. While pre-class materials provided essential input, it was the synchronous and asynchronous discussions that deepened comprehension and facilitated collaborative knowledge construction.

> As Sara mentioned, "When we discussed our descriptions with peers, I realized that my ideas were too general. My classmates helped me think of examples I had not considered, which improved my writing."
>
> Similarly, Ali reflected that "working together on the pre-assigned tasks online allowed us to notice each other's mistakes and suggest improvements." Such excerpts illustrate the reciprocal nature of peer scaffolding, where learners act simultaneously as knowledge providers and receivers.
>
> Teacher guidance further enhanced this co-construction process. As Maryam explained, "The teacher does not give us the answers but asks questions that make us think about why a description works or not."

This aligns with the interactionist and sociocultural views of learning (Long, 1996; Vygotsky, 1978), wherein meaning negotiation and guided questioning facilitate cognitive and linguistic development through scaffolding by peers or teachers and co-construction. Consequently, receiving feedback led to reflecting on assumptions and self-regulation.

Interaction as Cognitive Mediation: Dialogic Transfer from Description to Critique

Learners emphasized that interaction promoted deeper reflection and critical engagement with their own writing. Exposure to peers' ideas prompted self-evaluation and metacognitive awareness.

> As Reza noted that "listening to others made me realize I had missed important points," while Neda reflected that "peer feedback makes me question my assumptions."

This process demonstrates the critical dialogic scaffolding at work. The reflective journal showed that when a learner was asked to describe a local restaurant, he first stated,

> "The food was good." However, after peer/teacher prompting to justify why it was good (critical thinking), the learner revised to "The food was good because it has very delicious and high-quality ingredients," moving from surface description to a justified evaluation.
>
> It was a fantastic place' (description) to 'It was a fantastic place, but it took too long to get there.'

These findings suggest that interaction serves not only a communicative but also a cognitive function, operating as a prompt or trigger for critical reflection and higher-order thinking (Brookfield, 1995). Both synchronous discussion and asynchronous peer review encouraged learners to analyze, evaluate, and justify their linguistic and conceptual choices—abilities central to the development of critical thinking (Anderson & Krathwohl, 2001). Moreover, learners' reflective engagement aligns with self-regulated learning principles, as they used peer insights to revise their drafts and monitor progress. This indicates that structured interaction in flipped contexts can stimulate internal dialogue, fostering independent yet collaborative critical reasoning.

Challenges and Constraints of Interaction

Despite overall positive perceptions, learners identified constraints that limited interactional effectiveness. The most frequent issues were unequal participation, technological disruptions, and superficial peer engagement, all of which can reduce the effectiveness of blended learning.

> Samina noted that "a few students always talk and share ideas, but others stay silent," suggesting an imbalance that reduced inclusivity.
>
> Ali similarly complained that "the system crashes or messages don't appear on time," which hindered group collaboration.

Some learners also perceived peer feedback as overly general—e.g., "good" or "needs more detail"—and as offering limited critical depth. Such findings highlight the need for explicit training in feedback literacy (Carless & Boud, 2018) and structured peer interaction to ensure all students contribute meaningfully. These challenges underscore that while flipped learning fosters opportunities for interaction, its success depends on pedagogical orchestration: equitable

task design, digital support, and clear scaffolding that promotes balanced participation and critical engagement.

Discussion

This study extends the Interaction Hypothesis (Long, 1996) by showing that negotiation of meaning in a flipped setting not only aids linguistic uptake but, critically, mediates the conceptual gap between describing an object and critically evaluating its implications—a process we term critical dialogic scaffolding. These results extend existing literature by demonstrating how interaction within flipped environments specifically facilitates higher-order cognitive engagement in descriptive writing, rather than solely promoting surface-level linguistic improvements (Li, 2022; Kim, Park, & Jang, 2022).

The findings showed a significant within-group difference between the pretest and posttest in the interaction-embedded group, but not in the interaction-limited group. The independent-samples t-test comparing the between-group difference in pretest and posttest scores showed no significant difference in pretest scores. The current study's results on the supremacy of the interaction-embedded not the interaction-limited mode are supported by Shabani and Jabbari (2023), who showed that this supremacy can also be observed in improving speaking skills among EFL learners.

Accordingly, the use of pre-class instructional materials, followed by in-class tutorials, was found to support the improvement of EFL learners' critical descriptive abilities. The asynchronous, offline content allowed participants to engage with assignments ahead of time, absorb the material at their own pace and convenience, and feel more confident participating in online discussions, points supported by studies in the field (e.g., Hung, 2019; Ökmen & Kiliç, 2021). These results align with Ekmekci's (2018) assertion that guidance provided within learners' Zone of Proximal Development through a flipped online model helps boost academic achievement. The offline, asynchronous resources functioned as computer-mediated communication (CMC) tools that equipped students to participate more actively in synchronous online sessions and better understand the tutorial content (e.g., Payne, 2020; Yesilçinar, 2019). It assisted learners in sorting out their problems, either through interaction with other group members or autonomously by taking appropriate measures aligned with their preferred learning strategies.

Despite differences in the efficacy of these two modes of input reception, the qualitative phase revealed mixed results among EFL learners and teachers. The research question, which aimed to find out EFL learners' attitudes toward the advantages and challenges of an interaction-embedded mode of online flipped classes, elicited different viewpoints on both sides. On the positive sides, they mentioned innovation, usefulness, collaboration and interaction/engagement, investment, (affectively) encouraging, (cognitively) scaffolding, time-saving, and a sense of comfort and privacy. The challenges included a sense of isolation, internet connectivity issues, technological glitches, and disorientation with the software. Namely, the qualitative analysis uncovered additional dimensions of online flipped instruction

that were not fully captured through the quantitative data. Thematic findings showed that participants from both groups generally held positive views about the online flipped approach, describing it as innovative, beneficial, and engaging, even though it came with certain challenges. This aligns with previous research (Adnan, 2017; Cann, 2016; Haghighi et al., 2019; Samiei & Ebadi, 2021; Wang et al., 2018; Zou & Xie, 2019). These favorable characteristics functioned as motivating factors that encouraged learners' participation. One possible reason for this positive perception is that flipped instruction differs significantly from conventional classroom practices. For instance, online group work supports effective collaboration, enabling students to work together more smoothly. Grouping students can also foster a stronger sense of competition and accomplishment, which may enhance their external motivation (Hung, 2016; Chen Hsieh et al., 2017). Likewise, every element is likely to be affected by many variables, such as English proficiency, technical literacy, motivation, and personality type.

The recurring theme across both groups was Internet connectivity as a major issue, which appears particularly problematic in Iran due to political factors. This seems to be in line with previous findings, such as those of Shabani and Jabbari (2023), who found that learners objected to the internet connection, which frequently interrupted class-time discussions. This observation corroborates existing literature findings that online learning, including online flipped classes, is prone to internet connectivity and technical problems (Ebadi & Rahimi, 2018; Egbert et al., 2015). The implication might be that, before embarking on implementing online classes in general and online flipped classes in particular, the technological infrastructure needs to be established and maintained to an optimal, functional level. With the exorbitant price of the Internet and the excruciatingly low speed, it amounts to nothing more than a reduction in the quality of education and dissatisfaction among all those involved (Aryan et al., 2013; Hashemzadegan & Gholami, 2022).

Further qualitative data analysis revealed that some participating learners felt uneasy about live interactions and were intimidated by participating in class activities in both modes of input reception. However, they appreciated the sense of community and group belonging, which helped ease their anxiety. Peer collaboration and student-to-student interaction played a crucial role in reducing their fear of speaking, as expressed by the learners. The teacher's engagement with students in small groups fostered a supportive atmosphere, helping students overcome their initial shyness and become more open to participating. Students noted that the teacher's approach, including her flexible methods for guiding discussions and classroom tasks, contributed to a friendly, psychologically safe learning environment. These observations support previous research (Chen & Hwang, 2019; Amini et al., 2022; Aydin & Demirer, 2022) that suggests flipped instruction can reduce stress. It was found that collaborative learning and problem-solving activities helped mitigate communication anxiety and fear of negative evaluation in speaking classes.

From a constructivist perspective, the online sessions created a learning community with a positive emotional climate, where less experienced learners could receive support and guidance/scaffolding from both the teacher and peers, accelerating their learning (Sun et al.,

2022). The teacher and learners worked together to establish an active social, cognitive, and instructional presence (Garrison et al., 2010; Zheng et al., 2021), forming a cohesive group that shared ideas and took shared responsibility for completing tasks (Li & Zhang, 2023; Wu et al., 2020).

Although some learners reported issues such as fear of online participation, avoidance of failure, and limited digital skills (Jiang et al., 2021), the negative effects of these factors can be mitigated through gradual gaming of the required skills and literacy. Some prior claims challenge the notion that e-learning readiness is a critical determinant of student success (Yavuzalp & Bahcivan, 2021; Yilmaz, 2017). However, additional analysis showed that fully online instruction can lead to feelings of isolation for some learners in both groups. These findings align with McInnerney and Roberts' (2004) assertion that isolation in online courses, caused by physical distance, technical difficulties, and low computer literacy, can negatively affect student satisfaction-issues that educators may alleviate but not eliminate. Learners in both groups mentioned this sense of isolation, but more so in the interaction-limited group. However, the exact dynamics of this sense of isolation or seclusion, and the ways to alleviate it, can be a further point of investigation, as it can have considerable educational and psychological implications.

The study also corroborates findings from recent flipped learning research indicating that pre-class preparation alone is insufficient; interaction during synchronous and asynchronous activities is crucial for knowledge co-construction and application (Hung, 2022; Yang, 2023). Students' reflections revealed that teacher scaffolding, particularly through probing questions and structured prompts, enhanced the quality of peer dialogue, fostering critical engagement with ideas rather than merely correcting errors. This aligns with sociocultural perspectives emphasizing the importance of mediation within learners' zones of proximal development (Vygotsky, 1978). However, the study highlights persistent challenges that constrain interaction. Unequal participation, technological limitations, and occasional superficial engagement echo concerns reported in recent empirical studies (Chen & Tsai, 2021; Alshumaimeri & Alqahtani, 2023). These findings suggest that for flipped instruction to achieve its full potential, interaction must be deliberately structured and guided. Simply providing opportunities for discussion or peer review does not guarantee deep engagement or cognitive growth.

Conclusion

The analysis of the collected data via pretest and posttest showed a significant within-group difference between the pretest and posttest in the interaction-embedded group, but not in the interaction-limited group. The independent-samples t-test comparing the between-group difference in pretest and posttest scores showed no significant difference in pretest scores. The result of the qualitative data in the interaction-embedded group showed more innovation, use of technology, usefulness, collaboration, engagement, active learning, tailored learning paths, and instructor as facilitator. The findings in the interaction-limited mode revealed learner

autonomy, self-paced learning, anxiety reduction, and convenience. More challenges were identified in this group, including wasted time, lack of immediate feedback, a sense of isolation, limited engagement, difficulty with collaboration, limited adaptability to different learning styles, increased responsibility for self-monitoring, and technical glitches.

Regarding the pedagogical implications, EFL teachers and learners can set realistic expectations for either mode of input reception and avoid untenable ones, as these might lead to disillusionment. The important fact is that this disillusionment is not stemming from the interaction-limited mode but from the unrealistic expectations of those who try to use it, as well as the qualitative results on the advantages and challenges of the interaction-embedded and interaction-limited modes. The point is that some of these themes must be similar everywhere, while some challenges are restricted to Iran. The case in point is the challenge of Internet connectivity, which disrupts most online classes (Payandeh, 2024; Rabiee et al., 2013). To address technological and equity issues, institutions should ensure reliable access to learning platforms and support learners facing connectivity challenges and intentionally integrate structured peer engagement into digital L2 writing curricula.

Additionally, establishing norms for equitable participation can reduce dominance by more confident students and encourage contributions from quieter learners. Moreover, promoting critical thinking in writing: Embedding reflective prompts, scaffolded peer evaluation, and iterative revision cycles can strengthen learners' critical thinking skills. Interaction should be designed to elicit justification, evaluation, and comparison rather than simply error correction

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First Author: collected data, designed, conducted the procedure, and wrote the first draft.
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