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Probing into the Effects of Multiple Intelligence-based Activities (MIBAs): Iranian EFL Students' Writing Performance in Focus

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A B S T R A C T

The present inquiry examined the impact of Multiple Intelligence-based Activities (MIBAs) on male and female EFL students' writing improvement. For this purpose, a quantitative quasi-experimental pretest/posttest design, with the independent variable (use of MIBAs) and the dependent variable (writing) was used. Sixty (37 females, 23 males) undergraduate Persian-speaking EFL students, who were taking classes in Jahad Daneshgahi of Isfahan University of Technology were selected from 100 volunteer students, and they were made homogeneous in terms of their proficiency level, through Oxford Quick Placement Test (OQPT) and they were divided into control and experimental groups in a non-random fashion. Moreover, IELTS writing test was administered as pretest and posttest to evaluate the participants' writing improvement. They were taught in some courses based on logical-mathematical, bodily-kinesthetic, visual-spatial, verbal-linguistic, intrapersonal, interpersonal, naturalistic, and musical intelligence activities. Participants were asked to follow traditional writing learning methods in the control group. Findings showed the outperformance of students in experimental group concerning the effect of MIBAs on increasing written performance, but there was no significant gender difference.

Keywords: *Multiple Intelligence; Multiple Intelligence-based Activities (MIBAs); Multiple Intelligences Theory (MIT); Writing Improvement.*

1. Introduction

The advent of Howard Gardner's Multiple Intelligences Theory (MIT) in 1983 reshaped educational discourse by redefining intelligence not as a monolithic ability, but as a composite of distinct modalities—ranging from linguistic and logical-mathematical to musical, kinesthetic, and interpersonal intelligences. Gardner's claim that individuals exhibit unique blends of these intelligences (Gardner, 1983) has since gained considerable traction, particularly in the field of language education where learner diversity and differentiated instruction are foundational. Within this framework, the integration of Multiple Intelligence-based Activities (MIBAs) into second language instruction has

emerged as a powerful pedagogical tool, offering targeted engagement and increased relevance to learners' cognitive profiles (Zeraatpishe et al., 2020).

Writing in English as a Foreign Language (EFL) represents one of the most cognitively demanding skills, intertwining linguistic knowledge, organization, creativity, and metacognitive awareness. Scholars increasingly recognize the importance of attending to learners' intelligence profiles to optimize writing instruction and performance (Fahim & Nejad Ansari, 2006; Marefat, 2007). The hypothesis underpinning this approach is that learners will exhibit heightened engagement and improved performance when instructional practices align with their dominant intelligence types (Akbari & Hosseini, 2008; Eng & Mustapha, 2010). MIBAs seek to operationalize this hypothesis by embedding differentiated tasks into the learning process—tasks that stimulate varied cognitive strengths such as visual-spatial creativity, bodily coordination, rhythmic sensitivity, or introspective thinking (Yalmanci & Gozum, 2013).

Despite the growing corpus of literature on MI-oriented pedagogy, particularly in vocabulary development (Savojbolaghchilar et al., 2020) and classroom motivation (Iyitoglu & Aydin, 2015), fewer studies have rigorously explored the causal impact of MIBAs on writing performance, especially through quasi-experimental designs in EFL contexts. Moreover, gender-based investigations remain underrepresented, although existing findings suggest nuanced differences in how males and females engage with intelligence dimensions in academic settings (Biria et al., 2014; Liliawati et al., 2017).

Previous studies have demonstrated that applying MI strategies in writing instruction can influence not only the organization and fluency of learners' written output but also their motivation and anxiety levels. For example, research has shown that linguistic, logical, and interpersonal intelligences significantly correlate with students' writing organization and coherence (Shafiee et al., 2020). Similarly, learners with pronounced musical and verbal intelligences have shown improved vocabulary sufficiency and conceptual clarity in their writing (Sigha, 2020). In contrast, weaknesses in spatial or kinesthetic domains have been linked to limited structural development in written tasks (Rahimi & Qannadzadeh, 2010).

More recent investigations into the psychological dimensions of writing performance—such as writing anxiety—have also emphasized the relevance of MI-based instruction. Writing anxiety has been identified as a pervasive barrier among EFL learners, often stemming from perfectionism, fear of negative evaluation, or a lack of self-efficacy (Khosravi et al., 2023; Sun et al., 2024). Li's (2023) study further confirmed that instructional practices which foster collaborative, interactive, and intelligence-responsive environments can mitigate writing apprehension and improve learner confidence (Li, 2023).

Multiple Intelligences Theory also offers a constructive lens to re-examine traditional notions of academic aptitude and success. According to Hansen (2014), educational achievement should be framed not solely through linguistic or mathematical aptitude, but also through a broader understanding of "successful intelligence"—a term encompassing creative, practical, and analytical capacities (Hansen, 2014). This broader perspective aligns with the MI framework's tenet that instruction should be customized to engage multiple intellectual pathways simultaneously, fostering more holistic and sustainable learning outcomes (Alizadeh et al., 2014; Wahyuni & Umam, 2022).

The Iranian EFL context offers a compelling site for investigating the effectiveness of MIBAs. In many local institutions, traditional methods of writing instruction often emphasize rote memorization, grammatical accuracy, and rigid essay structures. These methods may neglect learners' cognitive diversity and overlook the motivational dimensions of writing. As Barton et al. (2024) noted, effective writing instruction in contemporary settings requires an adaptive, reflexive approach that acknowledges the interplay between identity, cognition, and sociocultural context (Barton et al., 2024). Therefore, the application of MI theory in Iranian classrooms may serve as both a pedagogical innovation and a corrective to entrenched instructional orthodoxies.

Several empirical studies have laid the foundation for the current investigation. For example, Zeraatpishe, Seifoori, and Hadidi Tamjid (2020) found that MI-oriented writing tasks significantly improved learners' writing fluency, accuracy, and organization (Zeraatpishe et al., 2020). In another Iranian study, Rafizade Tafti et al. (2023) explored the differential impacts of audio corrective feedback on micro and macro-level writing improvement, further confirming the pedagogical utility of MI-aligned strategies (Rafizade Tafti et al., 2023). Additionally, Shirvan et al. (2021) used an ecological lens to investigate how language mindsets—beliefs about one's writing abilities—are shaped by intelligence-oriented learning environments, emphasizing the role of classroom ecology in developing writer identity (Shirvan et al., 2021).

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In light of these developments, the current study seeks to address two critical gaps in the literature: (1) the underexplored impact of MIBAs on Iranian EFL learners' writing development, and (2) the gender-related differences in response to MI-based instruction. Drawing on the work of Kusumawarti et al. (2020), who found that Visual, Auditory, and Kinesthetic (VAK) models effectively enhanced narrative writing through targeted activation of linguistic intelligence (Kusumawarti et al., 2020), the present study hypothesizes that learners exposed to MIBAs will demonstrate significantly greater writing gains compared to peers taught via traditional methods. Additionally, it considers the possibility that male and female learners may differentially benefit from specific intelligence pathways, a pattern observed in earlier MI research (Husain, 2015; Yeganehfar, 2005).

This inquiry also builds on the assertion that MI-based instruction provides students with autonomy and agency, enabling them to learn through strengths-based practices that foster resilience and reduce performance anxiety. As Salajegheh and Hassani (2023) argued, technology-enhanced instruction aligned with learners' intelligence profiles has the potential to elevate self-concept and academic self-regulation in EFL learners (Salajegheh & Hassani, 2023). Hence, by integrating MIBAs into writing curricula, instructors may not only address linguistic deficits but also promote positive emotional and cognitive development in their students. The following research questions were posed to find whether MIBAs have a significant influence on enhancing writing performance:

RQ1. Do MIBAs significantly affect the Iranian EFL learners' writing improvement?

RQ2. Do Iranian male and female EFL students differ in terms of the impact of MIBAs on writing improvement?

2. Methods and Materials

2.1. Study Design and Participants

The current investigation employed a quantitative quasi-experimental design the purpose of which was to establish a cause-effect relationship between the independent variable (use of MIBAs) and dependent variable including writing. The study included a quasi-experimental pretest/posttest design, utilizing both a control group and an experimental group. In the course of this study, the Multiple Intelligence-based Activities (MIBAs) were exclusively employed to instruct the experimental group, while conventional methods including writing knowledge questions, were employed for the control group, then the participants of the both groups answered the posttest to examine the effect of the teaching process on their writing improvement, also the difference between males and females' improvement was considered.

37 females, 23 males) undergraduate Persian-speaking EFL students, both male and female, with the age range of 18-40, who were taking classes in Jahad Daneshgahi of Isfahan University of Technology, were selected from 100 volunteer students. They were made homogeneous in terms of their proficiency level, through Oxford Quick Placement Test (OQPT) and were divided into control and experimental groups in a non-random fashion. Students whose scores were from 30 to 39 were lower intermediate based on OQPT score interpretation, and considered as the target participants of the current research.

Authentic materials from different sources, comprehension tasks, language and writing exercises, and extension activities enable students to face new language in context. For the purposes of the present study, the book Collins Writing for IELTS (2012) was used, based on which the tests and the appropriate activities were designed. This book focuses on academic English and general English writing.

A writing pretest was applied in order to determine the students' previous writing knowledge. This test was designed based on Collin's writing for IELTS. The writing posttest was exactly the same as the writing pretest with the same objective. The test was administered after the treatment to examine whether MIBAs affected the students' writing improvement.

This study began after the researcher ascertained that the participants were homogeneous in their level of proficiency via OQPT. As mentioned earlier, a group of 60 undergraduate English students from among 100 students were selected based on their scores for experimental and control groups. They were taught in two different classes. Each class had 30 male and female students. Writing pretest was first administered to both groups to measure their knowledge before the treatment. Then, the control group was taught through traditional methods (i.e. writing knowledge questions), while the experimental group was taught the lessons through verbal-linguistic, visual-spatial, logical-mathematical, bodily-kinesthetic, interpersonal, intrapersonal, musical and naturalistic intelligence techniques. This treatment lasted twelve weeks. To facilitate learning, the participants were encountered with the most interesting activities designed on the basis of Gardner's (2011) definition of eight types of intelligence. The materials

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for the treatment were extracted from Collins Writing for IELTS (2012), the posttest was administered to both groups to investigate the impact of the teaching process on their writing improvement. The difference between males and females' improvement was considered as well.

2.2. Measures

2.2.1. Oxford Quick Placement Test (OQPT)

The OQPT is an efficient placement assessment, commonly employed as a discrete point test for evaluating overall proficiency. Its primary utility is in grouping students with comparable aptitudes for inclusion in the designated study cohort. The application was intended to offer both English students and instructors a swift and efficient means of assessing the anticipated level of proficiency across various skills and subskills. In this study, the paper and pencil version of the OQPT was used as a means to gauge the participants' overall proficiency in the English language and mitigate the potential for substantial variance among the students.

2.3. Data Analysis

The data analysis for the present study was conducted using both descriptive and inferential statistical techniques to evaluate the impact of Multiple Intelligence-based Activities (MIBAs) on EFL learners' writing performance. Initially, the Oxford Quick Placement Test (OQPT) scores were analyzed to ensure participant homogeneity in language proficiency. A writing pretest and posttest were administered to both experimental and control groups. The Shapiro-Wilk test revealed that the data were not normally distributed; therefore, the non-parametric Mann-Whitney U test was employed to compare writing performance between the two groups. Additionally, an independent samples t-test was used to examine gender differences within the experimental group on the posttest scores. All statistical analyses were conducted using SPSS software, and a significance level of $p < 0.05$ was adopted to determine the presence of statistically meaningful differences.

3. Findings and Results

To answer the research questions of the study, descriptive statistics of the OQPT test were first analyzed. The results are illustrated in Table 1.

Table 1

Descriptive Statistics of the OQPT

	N	Min	Max	M
OQPT	100	24	52	35.5

Valid N = 100

According to Table 1, the mean of OQPT scores were 35.5. Based on the OQPT results, 60 out of a pool of 100 Iranian EFL male and female learners who scored from 30 to 39 and were lower intermediate according to OQPT rubric were selected. Then, the selected participants were divided into two experimental and control groups.

To ensure the data normality, tests of normality; namely, Kolmogorov-Smirnov and Shapiro-Wilk were run. Table 2 illustrates the results.

Table 2

Results of the Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Writing_pretest	.179	60	.000	.897	60	.000
Writing_posttest	.165	60	.000	.931	60	.002

a. Lilliefors Significance Correction

Given the fact that the sample size for each group was 30, the Shapiro-Wilk test was utilized for checking normality. As the p-value for the Shapiro-Wilk test was smaller than 0.05, the normality assumption was not met for this data set.

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Therefore, in the following sections, the non-parametric counterpart of independent samples t-test, that is Mann-Whitney U test will be employed for data analysis.

Table 3 below shows the participants' performance in terms of their obtained mean ranks. The results revealed that the learners in the experimental group (Mean rank=33.22) outperformed the control group (Mean rank=27.88) with a mean rank difference of 5.34.

Table 3

Descriptive Statistics of the Participants' Performance on the Pretest of Writing

	Group	N	Mean Rank	Sum of Ranks
Writing_pretest	Experimental group	30	33.22	996.50
	Control group	30	27.78	833.50
	Total	60		

To find out whether the two groups were homogenous prior to the treatment phase, a Mann-Whitney U test was conducted as the normality assumption was not assumed. As indicated in Table 4 below, there was no statistically significant difference between the experimental and control groups in terms of their writing competence (z=1.242, p=0.214, two-tailed). Hence, the homogeneity of the participants concerning their writing ability was assumed prior to the treatment.

Table 4

Descriptive Statistics of the Participants' Performance on the Posttest of Writing

	Group	N	Mean Rank	Sum of Ranks
Writing_posttest	Experimental group	30	41.15	1234.50
	Control group	30	19.85	595.50
	Total	60		

To find out whether the observed difference was statistically significant, the inferential Mann-Whitney U test was conducted as the normality assumption was not met. The results, as displayed in Table 5, indicated that there was a statistically significant difference between the two groups (z=4.757, p=0.000). Therefore, the second null hypothesis which indicated that there was no significant difference between the experimental and control groups in terms of the effect of MIBAs on writing improvement is rejected.

Table 5

Mann-Whitney U Test Results of the Posttest of Writing

	Writing_posttest
Mann-Whitney U	130.500
Wilcoxon W	595.500
Z	-4.757
Asymp. Sig. (2-tailed)	.000

Figure below depicts a bar graph comparing the performance of the two groups across pretest and posttest phases of the study. The figure reveals the efficacy of MIBAs on the writing improvement of the EFL learners. The mean performance of the experimental group in the writing tests has undergone a significant improvement from the pretest (M=4.18) to the posttest (M=5.23), whereas such an improvement is not visible for the control group.

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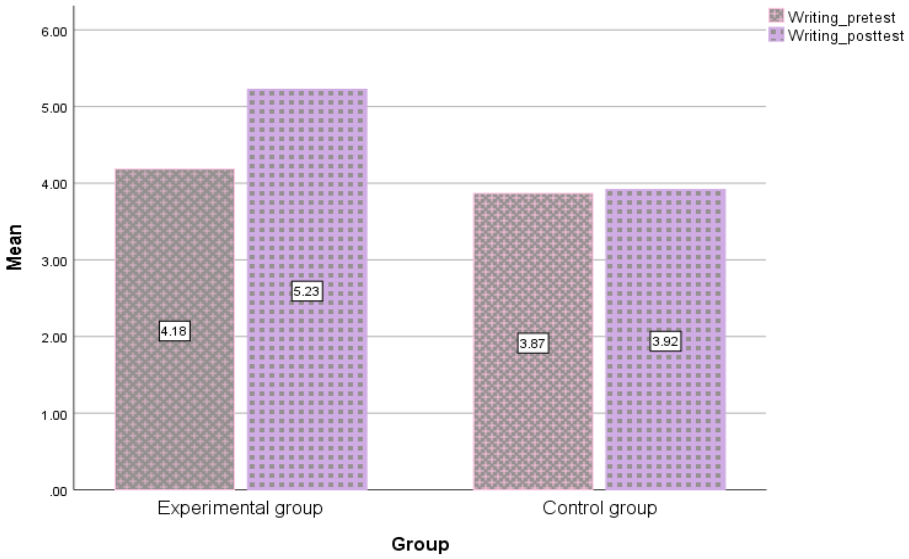
Figure 1

Comparison of the Participants' Performance on the Writing Test Across Pretest and Posttest Phases



The second research question aimed to explore whether Iranian male and female EFL learners differ in terms of the effect of MIBAs on writing improvement. In other words, it addressed the role of gender with regard to the enhancement of writing in EFL learners. To address this research question, the participants of the experimental group were selected for data analysis (12 males and 18 females). The participants of the control group were excluded for data analysis as they did not receive any treatment concerning MIBAs.

Table 6 displays the results of the gender variable on improving writing competence when MIBAs are included. As can be seen, the female learners (M=5.28, SD= 1.02) outperformed the male counterpart (M=5.15, SD=1.13) with a mean difference of 0.13.

Table 6

Descriptive Statistics of the Gender Differences for the Posttest of Writing

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Writing_posttest	Male	12	5.1458	1.13046	.32634
	Female	18	5.2778	1.02501	.24160

The superiority of the female learners was further probed in terms of inferential statistics. As indicated in Table 7 the results of the independent samples t-test did not reveal a significant difference between the male and female participants concerning their writing ability [$t^{(28)}$=0.332, p=0.743].

Table 7

Results of the Independent Samples t-test for gender effect in the Writing Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Writing_posttest	Equal variances assumed	.085	.77	-.332	28	.743	-.13194	.39790	-.9470	.68312
	Equal variances not assumed			-.325	22.072	.748	-.13194	.40603	-.9738	.70996

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4. Discussion and Conclusion

The present study set out to explore the impact of Multiple Intelligence-based Activities (MIBAs) on the writing performance of Iranian EFL learners and whether gender played a role in moderating this impact. The findings of this quasi-experimental study offer strong support for the hypothesis that the integration of MIBAs significantly enhances learners' writing abilities, as evidenced by the statistically significant improvements observed in the experimental group compared to the control group. Furthermore, while female learners slightly outperformed their male counterparts in posttest writing scores, this difference was not statistically significant, indicating that both genders can benefit comparably from MI-based instruction.

The improvement in writing performance among learners exposed to MIBAs can be attributed to the diversified and engaging nature of intelligence-aligned activities. By tapping into learners' strengths across multiple modalities—whether visual-spatial, verbal-linguistic, interpersonal, or musical—the instructional approach increased motivation, reduced writing anxiety, and promoted deeper cognitive engagement. The experimental group's success reflects the hypothesis proposed by Gardner's theory, which posits that individuals possess multiple intelligences, and educational experiences should be designed to engage these varied intelligences in complementary ways (Akbari & Hosseini, 2008; Hansen, 2014).

One of the most important findings is that the gains in writing performance were not restricted to one particular aspect of writing (e.g., vocabulary or organization), but rather spread across dimensions such as fluency, coherence, accuracy, and creativity. This broad-spectrum improvement supports prior evidence showing that MIBAs can positively influence various writing traits (Zeraatpishe et al., 2020). Specifically, the incorporation of activities based on bodily-kinesthetic, interpersonal, and intrapersonal intelligences provided learners with new avenues for processing and expressing ideas, beyond the narrow confines of traditional instruction (Marefat, 2007).

Moreover, the insignificant gender difference found in this study is a notable result that aligns with certain strands of MI literature. Although some prior studies have noted gender-based disparities in dominant intelligence types and academic outcomes (Biria et al., 2014; Liliawati et al., 2017), our findings suggest that MIBAs can serve as a leveler, helping both male and female students to achieve writing improvement irrespective of their differing MI profiles. This conclusion is supported by findings from Husain (2015), who showed that both male and female EFL students benefited significantly from MI-based instruction in writing classes (Husain, 2015).

The observed effectiveness of MIBAs aligns with the findings of multiple researchers who have demonstrated the advantages of employing MI-informed strategies in EFL writing instruction. In a foundational study, Fahim and Nejad Ansari (2006) found that learners exposed to differentiated feedback conditions rooted in MI theory showed improved writing performance, emphasizing that alternative modalities of feedback can activate learners' latent intelligences and boost writing outcomes (Fahim & Nejad Ansari, 2006). Similarly, Marefat (2007) noted that EFL students' writing benefited from an MI-informed classroom environment that emphasized interaction, creativity, and multiple cognitive pathways (Marefat, 2007).

Shafiee et al. (2020) further confirmed that individual intelligences such as logical, musical, verbal, and interpersonal significantly contributed to various aspects of writing performance—coherence, vocabulary, and content relevance—among EFL learners. Their findings mirror the multifaceted improvement seen in this study's experimental group, suggesting that a holistic MI-based approach can address the diverse needs of language learners in the writing classroom (Shafiee et al., 2020).

The current findings are also consistent with Zeraatpishe et al. (2020), who emphasized that learners exposed to MI-aligned writing tasks showed superior gains in accuracy, fluency, and organization compared to peers who received traditional instruction. Their conclusion that MIBAs are effective scaffolds for cognitive and linguistic development is reaffirmed by the results of the present research (Zeraatpishe et al., 2020).

Beyond Iran, international studies echo these findings. Eng and Mustapha (2010) found that MI-based strategies such as storytelling, music integration, and graphic organizers significantly improved learners' writing engagement and output in Malaysian EFL contexts (Eng & Mustapha, 2010). Similarly, Kusumawarti et al. (2020) showed that VAK-based models rooted in linguistic intelligence improved narrative writing skills among Indonesian EFL learners, providing empirical support for the global applicability of MIBAs (Kusumawarti et al., 2020).

Additionally, the findings converge with the psychological dimension of writing. Several researchers have examined how MIBAs impact not just linguistic

performance but also affective variables such as writing anxiety and motivation. For example, Sun et al. (2024) and Wahyuni and Umam (2022) both reported that writing anxiety—often a significant barrier for EFL learners—was alleviated when instruction was differentiated and intelligence-responsive, thus enabling students to write more confidently and competently (Sun et al., 2024; Wahyuni & Umam, 2022).

Other recent studies have also highlighted the role of self-concept and learner agency in EFL writing improvement. Salajegheh and Hassani (2023) demonstrated that students' self-concept improved when writing instruction was paired with technology and aligned with their cognitive preferences, reinforcing the value of personalization in education (Salajegheh & Hassani, 2023). In a related vein, Li (2023) found that collaborative online writing instruction boosted learners' self-efficacy and motivation—two crucial factors for sustained writing success (Li, 2023).

From a metacognitive standpoint, the results also support findings by Shirvan et al. (2021), who emphasized that students' beliefs about their writing abilities (i.e., mindsets) are closely tied to classroom ecology and instructional design. Their research confirms that MIBAs not only facilitate performance improvement but also foster a more constructive writing mindset by creating a supportive, diverse, and inclusive learning environment (Shirvan et al., 2021).

Lastly, our study adds to the body of literature that examines MI and writing through the lens of gender. Although earlier research such as Alizadeh et al. (2014) and Biria et al. (2014) reported stronger writing improvement among females with verbal and interpersonal intelligence dominance, our findings suggest that these gender-based differences may be diminishing in MI-enhanced environments (Alizadeh et al., 2014; Biria et al., 2014). This may reflect a more egalitarian distribution of access to diverse cognitive strategies in classrooms that adopt MI-based instructional frameworks.

While this study provides valuable insights into the impact of MIBAs on writing performance, several limitations must be acknowledged. First, the study was conducted in a single language institute in Iran, which restricts the generalizability of the findings to other cultural or educational settings. The sample size, although adequate for statistical analysis, was relatively small and non-randomly assigned, which may introduce selection bias. Additionally, while the study controlled for English proficiency using the Oxford Quick Placement Test, it did not account for variables such as students' prior exposure to intelligence-based instruction, their intrinsic motivation, or socio-economic background. Furthermore, the duration of the intervention (12 weeks) may not have been sufficient to capture the long-term effects of MI-based instruction on writing development.

Future studies should consider expanding the scope of this investigation to include larger and more diverse samples from multiple institutions and geographical regions. Longitudinal research designs could offer deeper insights into how sustained MI-based instruction influences writing performance over time. Researchers are also encouraged to explore the intersection of MI-based instruction with technology-mediated learning environments, such as flipped classrooms or digital storytelling platforms. Mixed-methods approaches combining quantitative outcomes with qualitative data—such as interviews or reflective journals—would also enrich understanding of how learners perceive and interact with MIBAs. Finally, future research might delve into how specific combinations of intelligences predict success in various genres of writing, such as argumentative, descriptive, or narrative tasks.

Educators should consider adopting MI-based instructional strategies to accommodate diverse learner profiles and enhance writing instruction effectiveness. Teachers can design classroom tasks that engage multiple intelligences simultaneously—for example, integrating visual aids, musical rhythm, physical movement, and collaborative group work into writing lessons. Lesson plans should allow students to approach writing from their cognitive strengths while also nurturing underdeveloped intelligences. Additionally, teacher training programs should incorporate modules on MI theory to equip instructors with the knowledge and tools necessary for implementing MIBAs. Institutions can support this approach by providing flexible curricula and classroom resources that enable the application of diverse learning strategies. Creating inclusive, interactive, and personalized writing environments can motivate students and lead to better writing outcomes.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

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Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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