



University of
Sistan and Baluchestan



Uppsala University

The Impact of Using Grammarly on Complexity, Accuracy, Fluency, and Self-Efficacy in Iranian EFL Learners' Argumentative Essay Writing

Hamed Mahsefat¹, Abdorreza Tahriri²

¹ PhD Candidate, English Language Department, Faculty of Humanities, University of Guilan, Rasht, Iran, Email: hamed.mahsefat@gmail.com

² *Corresponding author*, Associate Professor, English Language Department, Faculty of Humanities, University of Guilan, Rasht, Iran, Email: atahriri@gmail.com

Abstract

Artificial intelligence (AI) is reshaping language education by offering real-time, personalized writing feedback. This study assessed the impact of Grammarly, an AI-powered writing assistant that utilizes advanced natural language processing and generative AI, on the complexity, accuracy, fluency (CAF), and self-efficacy of Iranian EFL students' argumentative writing. A total of 120 high-intermediate learners from intact classes were screened for proficiency level via the Oxford Quick Placement Test and then randomly divided into an experimental group (Grammarly, $n=60$) and a control group (conventional teacher feedback, $n=60$). Over 12 weeks, a period deemed necessary for the development of complex writing skills, the experimental group used Grammarly for automated feedback on grammar, vocabulary, and style during weekly writing tasks, while the control group received conventional teacher feedback. ANCOVA analysis, controlling for pretest results and conducted after confirming key statistical assumptions, showed significant gains for the Grammarly group in complexity ($F=1277.009$, $p < .001$), accuracy ($F=2118.838$, $p < .001$), fluency ($F=49.535$, $p < .001$), and self-efficacy ($F=409.237$, $p < .001$), with the largest improvements in accuracy. These results align with the CAF framework, indicating that AI tools excel most in rule-based domains (e.g., grammar) rather than procedural fluency. The findings underscore Grammarly's value in scaffolding grammatical competence and learner confidence, specifying that the tool is most effective for grammatical scaffolding.

Keywords: AI-assisted education, grammarly, complexity, accuracy, fluency, self-efficacy, argumentative writing

Received: July 20, 2025

Revised: November 17, 2025

Accepted: December 22, 2025

Published: March 10, 2026

Article type: Research Article

DOI: 10.22111/ijals.2026.53481.2563

Publisher: University of Sistan and Baluchestan

© The Author(s).



How to cite: Mahsefat, H., & Tahriri, A. (2026). The impact of using grammarly on complexity, accuracy, fluency, and self-efficacy in Iranian EFL learners' argumentative essay writing. *Iranian Journal of Applied Language Studies*, 18(1), 43-62. <https://doi.org/10.22111/ijals.2026.53481.2563>

1. Introduction

The sudden multidimensional advent of artificial intelligence (AI) has provided unique opportunities for revolutionary change in education and language learning (Boden, 2018; Bozkurt et al., 2021; Creely, 2024). It is critical to note that while tools like Grammarly have existed in some form for years, their current functionality is deeply powered by contemporary AI, including large language models, which justifies their classification as AI-assisted learning tools for this study. A paradigm shift in AI-driven technologies can support language learning expertise due to the complexities and intricacies involved in exploring innovative ways to develop and enhance the learning experience (Trust et al., 2023; Williams, 2023). The facilitative nature of this technology attracts educational policymakers, stakeholders, teachers, and learners to adopt it in their educational journey (Galaczi, 2023). AI-assisted learning can assess individual learning needs and exigencies, provide an apt curriculum and feedback, and adapt to individual differences and necessities (Su & Yang, 2023). According to Zawacki-Richter et al. (2019), AI serves as a tool to enhance assignment feedback and facilitate administrative activities. In general, the core idea has been reiterated that using AI as a tool in the service of education is a necessity, if not a must (George & Wooden, 2023; Heilinger et al., 2023).

Writing in second language learning is a cumbersome task since L2 learners cannot say what they mean when it comes to retrieving their intended words or phrases (Abrams & Davis, 2016). L2 writing self-efficacy is unique and closely related to writing in a foreign language. Building on Bandura's theory, research in writing has identified self-efficacy as an important predictor of performance (Pajares & Johnson, 1994, as cited in Zhang, 2023). Bruning et al. (2013) proposed a model with three main components: Ideation, which refers to generating and organizing ideas; Writing Conventions, which refers to mastering writing mechanics; and Self-Regulation, which refers to managing the writing process. Teng et al. (2018) redefined L2 writing self-efficacy from a cognitive-social viewpoint. They proposed three dimensions: linguistic self-efficacy, which is confidence in vocabulary and grammar; self-regulatory self-efficacy, which is confidence in managing the writing process; and performance self-efficacy, which is confidence in completing writing tasks. More recently, Zhang et al. (2023) tackled the important issue of task specificity. They developed a genre-based scale that shows that a strong model of L2 writing self-efficacy needs to consider both the general writing processes and the specific requirements of different genres and contexts in L2 writing tasks. As proposed and supported by studies, incorporating AI-assisted teaching can provide personalized learning experiences and develop adaptive interactive feedback to meet the requirements of different individual learners (Fabro et al., 2024; Jia & Tu, 2024; Kantharaja et al., 2022). The use of AI in language learning can assist and improve student learning and efficacy and lead to active learning (Yuan & Liu, 2024).

Larsen-Freeman (2015) outlines how educators, policymakers, and instructional designers can gain advantages from a more in-depth comprehension of how consideration of individual

learner differences can enhance language learning results. In addition, using AI-supported materials to tackle the difficulties encountered by Iranian EFL learners could result in enhanced and stimulating learning experiences, as pointed out by Miles et al. (2017). Due to the development and prevalence of AI technology in language education, it is essential to examine how it affects self-efficacy and CAF in the writing skills of EFL learners. AI-enabled resources can improve language learning by providing tailored guidance, instant responses, and adaptable learning opportunities (Luckin et al., 2016).

Having examined the relevant literature, it is evident that while there have been studies on how AI-driven technology affects overall language proficiency and specific skills such as reading and writing, there is no study on the impact of AI-assisted education on CAF and its connection to self-efficacy in argumentative writing. This study intends to determine the probable impact of incorporating AI into language education, add to the existing research on technology-aided language teaching, shape educational guidelines, and enhance AI-based resources for EFL students. Hence, this study highlights how AI-assisted materials can support improvements in CAF and self-efficacy in the writing skills of Iranian EFL learners.

2. Literature Review

2.1. The Concept of Complexity, Accuracy, Fluency, and Self-efficacy

CAF (complexity, accuracy, fluency) is elusive to define clearly (Housen & Kuiken, 2009). Accuracy is the simplest of the triad, indicating deviation from native-like proficiency (Hammerly, 1990; Pallotti, 2009; Wolfe-Quintero et al., 1998). Housen and Kuiken (2009) defined it as “appropriateness” and “acceptability” (p. 6). Complexity includes linguistic and cognitive aspects (Housen et al., 2005). Cognitive complexity refers to mental processing difficulty and linguistic complexity to formal L2 features. Fluency is the learner’s ease in productive skills (Chambers, 1997; Lennon, 1990). Later definitions (Skehan, 2003; Tavakoli & Skehan, 2005) identified subdimensions: speed (rate/density), disruption (pauses), and repair (self-correction). Divsar (2022) defined accuracy as “error-free T-units to total T-units” (EFT/T, p. 85) and fluency by word/clause counts (Wigglesworth & Storch, 2009). Complexity was measured via clause/T-unit ratios (Foster & Skehan, 1996).

Self-efficacy is a belief in one’s capability (Bandura, 1997). AI-assisted learning uses AI to improve learning (Zawacki-Richter et al., 2019). This study uses Grammarly, an AI-powered writing assistant that suggests improvements in writing based on grammar, spelling, punctuation, clarity, style, and correctness.

2.2. The Contributions and Cautions of AI in Language Learning

An overview of recent studies on AILL (AI language learning) reveals that almost all studies have highlighted the significant contributions of AI technologies to English language teaching and learning (Gutiérrez, 2023; Luo & Qiu, 2024; Manire et al., 2023; Patty, 2024; Sun, 2023). Many studies emphasize the facilitative role of AI in language education in general. According to Pamungkas et al. (2023), AI-based learning materials can be categorized as motivation enhancers for students. Likewise, Silitubun (2023) substantiated that self-confidence, AI support, and academic achievement were related to motivational factors. Similarly, it was found that AI-supported education can improve students' interaction skills, willingness to communicate, reading abilities, and motivation (Hwang & Chien, 2022; Zhai & Wibowo, 2021).

On the other hand, to determine the factors influencing EFL teachers' preferences for AI-assisted tools, Chou et al. (2022) identified several key determining factors that affect EFL teachers' adoption of AI-assisted learning, including perceived usefulness, ease of use, technological knowledge, and institutional support. It has been advocated that AI usage can enhance academic processes, provide adaptive individualized learning feedback, and serve as a bridge to educational materials (Wu & Lin, 2021). It was also argued that AI can improve learners' self-efficacy and engagement, particularly in experimental settings, yet raise a flag of caution, inferring that learners' problem-solving abilities may be enhanced when chatbots are integrated into educational systems, but the countereffects may lead to their overreliance, diminishing the exploration of alternative strategies (Anis, 2023; Gudipati et al., 2021; Martínez-Cerdá et al., 2021; Parsakia, 2023). It is believed that using AI-related technologies might have diverse results regarding students' critical thinking, presenting some positive influence yet expressing some limitations of context-related effects, and have the capabilities to enhance various aspects of education, including personalized learning feedback (Peng et al., 2020).

Despite being challenging in terms of ethical considerations and privacy policy, Vo and Nguyen (2024) found that AI-related technology increased the motivation of language learning experience, most notably in skill learning and personalized learning. Yet, Fabro et al. (2024) found that Filipino students had neutral perceptions regarding the use of AI in academic writing classes and settings but a strong positive view toward AI usage. In many similar yet relevant studies, the role of ChatGPT was found to be that of a facilitator for learners in their language learning journey (Fabro et al., 2024; Vo & Nguyen, 2024; Yeldiz, 2023), serving as a motivation booster.

2.3. The Impact of AI Support Materials on Self-Efficacy

Self-efficacy seems to be a crucial topic in AI-related studies in language learning. After Pudaruth et al. (2021) developed and validated a self-efficacy scale to measure students' perceptions of their capabilities to learn and work with artificial intelligence (AI) concepts as a pioneering effort, many scholars touched upon that area in their studies, claiming that students'

general self-efficacy, learning motivation, critical thinking awareness, and even teachers' self-efficacy can be facilitated and developed by AI-related technology (Chou et al., 2024; Jia & Tu, 2024; Shahzad et al., 2022).

Quite differently, Rodríguez-Ruiz et al. (2024), in their study, stated that learners with low self-efficacy apparently use AI-related technology more often. They argued that individuals who view themselves as capable of fulfilling a particular task despite challenges were less inclined to utilize AI-related technology to conduct scholarly tasks on their behalf. Additionally, they expressed that enhanced self-efficacy was associated with increased usage of AI-related technology for the requirement of engaging with an individual in interactional settings.

2.3. The Impact of AI on Writing Abilities in Language Learning

Numerous studies posit the importance and necessity, yet also the challenges, of developing and incorporating AI-assisted technology into writing (Conde et al., 2024; Escalante et al., 2023; Fathi & Rahimi, 2022; Godwin-Jones, 2022; Liu et al., 2024; Sutrisno & Evenddy, 2024). According to Gayed et al. (2022), an AI-supported platform could be beneficial, offering potential improvements in writing output, particularly regarding syntactic complexity, provided that instructors receive digital literacy training and technology familiarization, along with the integration of technology into educational contexts. Al-Sofi (2024) advocated for the efficiency of ChatGPT in improving students' scholarly writing abilities while identifying several difficulties linked to utilizing ChatGPT, along with issues such as plagiarism, dependence, insufficient documentation, risks to academic integrity, and misinformation, suggesting the judicious use of any AI-driven technology, including ChatGPT, and providing training sessions for students and educators to address expected problems.

Similarly, Kantharaja et al. (2022) argued that AI can boost the efficiency and accuracy of English language editing and proofreading mechanisms through grammar and spelling checks, plagiarism detection, and consistency verification. In a more conservative view, Koraishi (2024) expressed that AI can enhance grading efficiency and consistency; however, it should not completely replace human evaluators due to the nuanced nature of essay grading, underscoring the advantages of AI as a supplementary tool in educational assessments.

2.4. The Review of Studies in Iran on the Use of AI in Language Learning

Using AI helps students improve their writing, particularly those with limited language proficiency (Ghafori, 2024; Nazari et al., 2021). Despite some infrastructural restrictions, the use of AI has received significant attention. In a study by Karimi and Kianmehr (2021), the effect of an AI-based writing assistant on Iranian EFL learners' self-efficacy in writing was studied. Having compared ProWritingAid and Grammarly, they argued that using the AI writing assistant improved students' writing abilities and their self-efficacy in writing. Conversely, Parviz (2024) raised the flag

of caution, asserting that although there is a positive perception regarding the integration of ChatGPT into English language programs in Iran, there are some challenges, constraints, and even drawbacks when it comes to using AI instruments such as ChatGPT, including instructors' lack of digital literacy and their apprehension about such adaptation, indicating that when using AI tools such as ChatGPT, "social-emotional development" and "higher-order skills" remain questionable. He proposed a more context-specific approach to integrating AI into a particular setting.

In recent research, Yousefi and Askari (2024) found that using AI, specifically ChatGPT, influenced reading comprehension among Iranian EFL learners. In a comparative study, Borna et al. (2024) examined the effects of two AI writing assistance tools, ProWritingAid and Grammarly, on the writing abilities of Iranian EFL learners at the intermediate proficiency level and found that using these AI-assisted tools led to performance improvement in the learners' writing skills. Besides, they argued that the group using Grammarly outperformed the group using ProWritingAid, indicating that Grammarly might offer better feedback or assistance for EFL students in enhancing their writing skills. They showed that integrating AI tools such as Grammarly and ProWritingAid into language education provides instant, tailored, and personalized feedback, which is essential for enhancing and advancing writing abilities, implying that integrating these tools into instructional methods can boost student involvement and improve learning outcomes. Yet, one important caveat of their study was the short duration of their treatment, eight sessions, which may not be adequate to evaluate the long-term effect of writing performance, requiring longer intervention periods.

In a different and revolutionary study, Oskoui et al. (2024) explored the techniques employed by Iranian EFL students while executing IELTS Academic Writing Task 2 with the help of an AI assistant. They indicated that although participants utilized different approaches to improve their writing, none completely relied on the AI results without further editing. Instead, they considered AI a writing aid, selectively incorporating modified parts from the AI while adding their own phrases, suggesting a careful stance on AI support and highlighting the importance of human supervision in scholarly writing activities. They emphasized that students need to stay vigilant regarding the quality and authenticity of their outputs.

2.5. Research Questions

1. Does using AI-supported education make any significant difference between experimental and control groups regarding their complexity, accuracy, and fluency (CAF) in their writing abilities?
2. Does using AI-supported education make any significant difference between the experimental and control groups regarding their self-efficacy in their writing abilities?

3. Methodology

A quantitative approach (Randomized Subjects, Pretest–Posttest Control Group Design) was applied in this regard to examine the impacts of AI-supported learning on the self-efficacy and CAF of Iranian EFL learners' writing. In this respect, it involved a quantitative methodology assessing CAF and self-efficacy when using an AI-supported learning tool.

3.1. Participants

The participants were 120 Iranian male EFL learners at a high-intermediate proficiency level to ensure a comparison of the effects of AI-supported learning. All participants provided written and verbal consent and were informed of the study's purpose, procedures, risks, benefits, confidentiality, voluntary nature, and right to withdraw without penalty. These participants were sampled from the ILI Language Institute in Rasht, Guilan, Iran. They were recruited from multiple intact classes following institutional approval. The study involved convenience sampling of participants aged 16 to 17, and their mother tongue was mainly Persian. They took the Oxford Placement Test (OPT) to ensure their proficiency-level homogeneity at the outset of the study. Those who met the proficiency criterion were then randomly assigned to either the experimental or control group.

3.2. Instruments

Oxford Quick Placement Test (OQPT): This test was administered to the students participating in the study to check and ensure their proficiency level homogeneity before the intervention. This test comprises 60 multiple-choice items that employ cloze passages/tests and gap-filling exercises, aiming to evaluate the participants' understanding of English regarding grammatical usage, prepositional usage, and lexical usage. They were given 30 minutes to complete the exam.

IELTS Writing Task 2 (Pretest): In order to evaluate the writing proficiency of the participants before the intervention, a topic from IELTS Writing Task 2 (https://www.english-exam.org/IELTS/ielts_writing) was chosen to determine the participants' writing proficiency and their capabilities concerning CAF.

IELTS Writing Task 2 (Posttest): Similar to the pretest, a different topic of approximately equal difficulty was chosen to evaluate the effect of instruction. The topic was sampled from IELTS Writing Task 2 (https://www.english-exam.org/IELTS/ielts_writing).

They were supposed to compose 140 to 150 words on the specified topic in 40 minutes. Despite consulting an authentic and valid source for the topic, based on the nature of the topic and participants, care was taken to choose the topics of both the pretest and posttest so that they would not differ in nature or be biased for or against any group in a way that could affect the results. Two

evaluators graded the written tasks to guarantee reliable scoring. To assess the overall writing quality of the participants, the rating scale designed by Jacobs et al. (1981), which evaluates writing quality, organization, correct grammar usage, vocabulary choice, and content accuracy, was employed. Inter-rater reliability findings indicated strong agreement (0.84), implying that the differences between the two raters were not substantial. The inter-rater reliability for the CAF measures was also calculated, yielding a Cohen's kappa of 0.87. The assessment of writing competencies for CAF was conducted using the rating scales described below. As implied and inspired by Divsar (2022), the average scores on each subcomponent for both groups were assessed to validate the comparability of the groups regarding CAF before the intervention. To guarantee the inter-rater reliability of the numerical results taken from the participants' work based on the rubrics, two experienced and trained raters evaluated the students' tasks separately and independently.

Self-Efficacy Questionnaire: The participants were asked to fill in a questionnaire to assess their self-efficacy in English writing. In this regard, the researcher employed the writing self-efficacy questionnaire adapted by Khojesteht et al. (2016). It is a Likert-scale questionnaire containing 25 questions related to the students' writing, showing how confident they feel when performing writing tasks.

3.3. Procedure

This study tried to discover the impact of AI-assisted learning on the CAF and self-efficacy of Iranian EFL learners in argumentative writing through a systematic, step-by-step process. Pursuing this research study involved the following steps.

At the beginning of the study, two evaluations were utilized: the Oxford Quick Placement Test and a preliminary writing test. The aim of the first was to assess the participants' proficiency in the English language, whereas the second intended to measure their initial L2 writing proficiency. Through the administration of these assessments, the researchers intended to measure the participants' language skills and guarantee a consistent sample regarding their L2 writing and proficiency levels. Having investigated their proficiency level, the researchers assigned them randomly to two groups for further treatments and comparisons. Subsequently, their writing assignments were examined regarding CAF. The purpose of the pretest was to ensure the writing ability of the participants before the treatment. Inter-rater reliability was validated with a randomly chosen sample of 10 written pieces.

The participants in both groups received a similar course on teaching argumentative writing over 10 sessions. The 10-session intervention was designed to provide sufficient time for the internalization of argumentative writing skills and the consistent use of the feedback tool, aligning with studies on the time required for writing skill development. The experimental group received instruction on how to write argumentative essays with prompts, samples, and exercises focusing on

different aspects of argumentative writing, such as thesis statements, body paragraphs, providing evidence, taking a stance, refutation, etc. They were asked to create an account in Grammarly, an AI-powered writing assistant that suggests improvements in writing based on grammar, spelling, punctuation, clarity, style, and correctness, to upload their writing into the application, submit their writing text along with its review suggestions, and send the report to the researcher to ensure their full involvement and adherence to the study procedure. They were required to complete each related writing exercise and submit it after checking it with Grammarly. The students in the control group went through a quite similar routine to the experimental group, except that they did not use Grammarly's AI-assisted learning but relied on conventional classroom instructional tips and submitted their writing assignments.

Course description: This supplementary course was designed for EFL learners to enhance their writing skills, with a focus on argumentative writing. The course comprised 10 instructional sessions, as outlined in the appendix (see Table 6).

3.4. Data Analysis

To address the initial research question examining whether AI-supported education makes any significant difference between the experimental and control groups regarding their complexity, accuracy, and fluency (CAF) in writing abilities, a one-way analysis of covariance (ANCOVA) was applied for each component of the CAF triad. The scores taken from the students' pretests were used as the covariate to "control" for the differences that already existed within the groups. Similarly, the posttest scores for the CAF triad were taken as the dependent variables, and "grouping" (e.g., experimental and control group) was considered a fixed factor (independent variable). The same procedure was applied to the second research question. Since this research required a comparison of two instructional techniques while considering the initial writing abilities of learners, ANCOVA was the most suitable option. Key assumptions of ANCOVA were tested, including linearity, homogeneity of regression slopes, and homogeneity of variances, as shown in Table 1 for Levene's test. Employing pretest scores as a covariate, ANCOVA contributed to isolating Grammarly's actual impact on writing performance (complexity, accuracy, fluency) and self-efficacy while statistically managing baseline variations among groups. This method ensured that any enhancements seen in the experimental group could be more reliably linked to the AI tool instead of prior skill levels while also boosting the statistical power of the analysis. The method's appropriateness was validated by examining essential ANCOVA assumptions, such as linear dependencies and consistent regression slopes among groups.

4. Results

The purpose of this study was to investigate the impact of AI-assisted education (Grammarly) on CAF and self-efficacy in the argumentative writing of Iranian EFL learners. In other words, it was meant to examine whether there was any significant difference between the students in both groups (experimental and control group) regarding complexity, accuracy, fluency, and self-efficacy in their writing abilities (argumentative writing). ANCOVA was used to address this study. Before doing so, the assumption related to the linearity of the relationship between the posttest of complexity, accuracy, fluency (CAF), and self-efficacy (dependent variables) and the pretest of CAF and self-efficacy (covariate) is demonstrated in Table 1.

Table 1

The Results of Levene's Test for CAF and Self-efficacy

Variables	Levene's Statistic	df1	df2	Sig.
Complexity	2.486	1	58	.120
Accuracy	2.085	1	58	.154
Fluency	2.244	1	58	.140
Self-efficacy	1.386	1	58	.244

As is obvious from Table 1, the significance levels of Levene's test for complexity, accuracy, fluency, and self-efficacy were 0.12, 0.154, 0.140, and 0.244, respectively, which are far greater than 0.05, indicating that we can confidently conclude that the variances of the results in complexity, accuracy, fluency, and self-efficacy among the groups satisfy the assumption of homogeneity.

Research question 1: The purpose of the first research question was to examine if there is any significant difference among the students in both groups (experimental and control group) regarding complexity, accuracy, and fluency in their writing abilities (argumentative writing).

Table 2

ANCOVA Results for Complexity(C) in Argumentative Writing

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6.242 ^a	2	3.121	639.709	.000	.957
Intercept	.408	1	.408	83.545	.000	.594
Complexity Pretest	.033	1	.033	6.787	.012	.106
Grouping	6.230	1	6.230	1277.009	.000	.957
Error	.278	57	.005			
Total	59.801	60				
Corrected Total	6.520	59				

Table 2 presents the results taken from ANCOVA. After evaluating the results of the participants concerning the pretest of complexity, there was a significant main difference between the groups regarding their scores on the complexity posttest, $F(1, 57)=1277$, $p<.001$, partial

$\eta^2=.957$. Moreover, it indicated that there was a fair relationship between the pretest and posttest of complexity, $F(1, 57) = 6.787$, $p < .05$, indicating that the effect size of the scores was almost .10.

The same procedure was followed for the second component of this triad, accuracy. The following tables illustrate the statistical results taken from ANCOVA regarding accuracy.

Table 3

ANCOVA Results for Accuracy (A) in Argumentative Writing

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1826.023 ^a	2	913.011	1178.465	.000	.976
Intercept	25.403	1	25.403	32.789	.000	.365
accuracy Pretest	.006	1	.006	.008	.930	.000
Grouping	1641.562	1	1641.562	2118.838	.000	.974
Error	44.161	57	.775			
Total	181943.000	60				
Corrected Total	1870.183	59				

Table 3 presents the results taken from ANCOVA. Analysis of the accuracy pretest results revealed a marked discrepancy. Table 4 presents the results taken from ANCOVA. Analysis of the accuracy pretest results revealed a marked discrepancy between the participating groups in terms of their performance on the accuracy posttest, as indicated by $F(1, 57) = 164$, $p < .05$, with a large effect size, as denoted by a partial eta squared of .974. Furthermore, a robust association was observed between the pretest and posttest scores of accuracy, $F(1, 57) = 0.0008$, $p < .05$, suggesting a substantial effect size of .930, which highlights the substantial impact of the intervention on accuracy outcomes.

Table 4

ANCOVA Results for Fluency (F) in Argumentative Writing

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2425.565 ^a	2	1212.783	29.800	.000	.511
Intercept	.001	1	.001	.000	.996	.000
Fluency Pretest	25.101	1	25.101	.617	.435	0.11
Grouping	2015.897	1	2015.897	49.535	.000	.465
Error	2319.717	57	40.697			
Total	179542.240	60				
Corrected Total	4745.282	59				

Table 4 illustrates the results taken from ANCOVA. Evaluating the outcomes after analyzing the participants' results related to the pretest of fluency, a notable difference between groups was revealed in their scores on the posttest of fluency ($F(1, 57) = 49.5$, $p < .005$, partial eta squared = .465). Additionally, the pretest scores were a major covariate affecting the levels of fluency scores on the posttest ($F(1, 57) = .435$, $p < .05$), suggesting the impact of the score sizes was nearly 0.11.

Research question 2: The second research question sought to identify potential differences between participants in the two groups concerning their self-efficacy in writing.

Table 5

ANCOVA Results for Fluency (F) in Argumentative Writing

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2425.565 ^a	2	1212.783	29.800	.000	.511
Intercept	.001	1	.001	.000	.996	.000
Fluency Pretest	25.101	1	25.101	.617	.435	0.11
Grouping	2015.897	1	2015.897	49.535	.000	.465
Error	2319.717	57	40.697			
Total	179542.240	60				
Corrected Total	4745.282	59				

Table 5 shows that despite adjusting for the initial variations in self-efficacy scores, significant differences persisted in the participants' average self-efficacy scores on the posttest, highlighted by an F ratio of $F(1, 57)=409.26$ and a p value below .005. The effect size observed was substantial, indicated by a partial η^2 of .878. Furthermore, the scores obtained before the intervention were a notable predictor of self-efficacy scores on the posttest, resulting in an F ratio of $F(1, 57)=15.27$ and a p value below .005. Together, these results highlight the ongoing presence of significant variation in self-efficacy, even when accounting for initial disparities in self-efficacy.

5. Discussion

The research investigated how Grammarly-based AI education affects Iranian EFL students' argumentative writing skills through its impact on CAF (complexity, accuracy, fluency) and self-efficacy. The experimental group participants demonstrated better results than the control group participants in all three CAF dimensions and self-efficacy measurements. The research results confirmed previous studies while providing additional evidence about how AI technology improves L2 writing abilities in Iranian students across all three CAF elements: complexity, $F(1, 57)=1277.009$, $p<.001$, $\eta^2=.957$; accuracy, $F(1, 57)=2118.838$, $p<.001$, $\eta^2=.974$; and fluency, $F(1, 57)=49.535$, $p<.001$, $\eta^2=.465$.

The ANCOVA results demonstrated that Grammarly produced substantial improvements in complexity, accuracy, and fluency. The research by Gayed et al. (2022) and Nazari et al. (2021) supports the current findings, which demonstrate that AI technology improves syntactic complexity, reduces errors, and enhances writing fluency.

The three CAF dimensions showed significant improvement through Grammarly's real-time feedback system because of its grammar correction and style suggestion features, which produced large effect sizes (η^2). The effect size order from highest to lowest shows that AI tools like Grammarly perform best at correcting grammar and spelling rules but are limited in their ability to enhance cognitive fluency for idea development and connection-making. The development of

fluency at this level needs human assistance, which shows that AI tools help with mechanical fluency aspects but struggle to enhance cognitive fluency abilities, such as idea creation and coherence. Skehan (2003) supports this finding because fluency consists of cognitive processes that need to advance.

The effect size for fluency ($\eta^2=.465$) was the smallest, which shows that AI tools help with mechanical fluency aspects but struggle to enhance cognitive fluency abilities, such as idea creation and coherence. The complex elements of fluency extend beyond basic surface-level corrections to include processing speed and strategic planning abilities. The improvement of language fluency through Grammarly requires human assistance to develop advanced fluency abilities.

The CAF dimension of accuracy received the greatest improvement ($\eta^2=.974$) because Grammarly excels at detecting and fixing explicit rule-based errors, including grammar and spelling mistakes (Borna et al., 2024). The grammatical prompts from Grammarly led to significant improvements in complexity ($\eta^2=.957$) because they helped students develop subordination skills and use more varied vocabulary (Foster & Skehan, 1996). The moderate fluency improvements demonstrate AI's ability to enhance procedural aspects of performance, which operate outside rule-based systems. The AI system demonstrates better performance in rule-based operations than in creative or cognitive work because of its accuracy > complexity > fluency ranking.

The experimental group participants demonstrated a statistically significant increase in self-efficacy, $F(1, 57) = 409.237$, $p < .001$, $\eta^2 = .878$, which supports Bandura's (1997) theory that mastery experiences and vicarious learning through Grammarly's mistake correction enhance self-efficacy. The research by Jones and Ushioda (2021) demonstrates that AI systems create motivational effects.

Nonetheless, excessive use is an issue (Parsakia, 2023; Rodríguez-Ruiz et al., 2024), as the focus on success might shift from improving students' learning abilities to the effective application of the AI tool, potentially undermining learners' independence. This discovery indicates that AI may enhance self-efficacy. Nonetheless, direct instructional design must be utilized to enhance the active involvement of learners in evaluating and, ultimately, determining AI application, thus fostering self-efficacy.

The findings support the results of the studies of Fathi and Rahimi (2022), Liu et al. (2021), and Dale and Viethen (2021), which claim that AI-based tools may make the learning process more effective, as knowledge gaps can be closed, learners' active participation can be increased, and writing skills may improve. Additionally, the real-time personalized feedback from Grammarly may be the reason why users not only corrected errors but also diversified their sentence structures and increased their confidence, especially in rule-based areas such as articles and subject-verb agreement.

Moreover, these achievements might also be synchronized with the results of the studies by Pudaruth et al. (2021) and Jia and Tu (2024), indicating the enhancement of pupils' self-efficacy

and the growth of critical thinking skills when learning English as a foreign language (EFL) as a consequence of the employment of AI dashboards.

This study declares the impact of AI on communicative efficiency in Iran, which is a very recent topic with very few papers about it (Oskoui et al., 2024), and it tackles it by merging CAF and self-efficacy theories in the context of AI-assisted learning.

Grammarly should be a very useful assistant in the writing process, particularly for the accuracy and complexity of the text. However, due to its minor function in fluency and the possibility that users may become so dependent on it that they lose control of their writing skills, the recommended strategy is to combine it with a human instructor to guarantee the progress and richness of writing skills, as well as the development of skills in a holistic manner.

6. Conclusion

This study shows that using AI tools like Grammarly in English as a Foreign Language (EFL) writing classes can help students write better. Their writing becomes more complex, accurate, and fluent, and they feel more confident. The results suggest that AI language tools could improve how we usually teach and make learning more personal and student-centered. More studies are needed to examine the long-term and broader results of these tools in EFL writing instruction. However, the early results suggest that teachers might consider using them to help students learn independently, stay interested, and perform well.

The findings have a strong impact on EFL writing education. They point out the possible role of AI-supported tools like Grammarly in enhancing conventional teaching approaches and practicing critical writing skills. Particularly, the considerable improvements in accuracy and complexity indicate that Grammarly can be successfully employed in the drafting and revision stages so that students are assisted in creating texts that are both linguistically accurate and sophisticated. However, the gains in fluency are less significant; thus, teachers may need to put more emphasis on activities that develop idea generation, planning, and coherence. The integration of Grammarly or similar AI-supported tools in teaching by educators and curriculum developers should be considered as a means of improving student learning outcomes and furthering student independence.

Later studies should look at how Grammarly use really changes how English as a Foreign Language students write and whether they can use what they have learned in the real world, not just in class. Also, studies that include student interviews could help provide a better idea of what they think about using AI tools and how these tools change their motivation, engagement, and confidence.

References

- AL-Sofi, A. (2024). Artificial intelligence-powered tools and academic writing: To use or not to use ChatGPT. *Saudi Journal of Language Studies*, 4(3), 1–12.
<https://doi.org/10.1108/SJLS-06-2024-0029>
- Anis, M. (2023). Leveraging artificial intelligence for inclusive English language teaching: Strategies and implication for learner diversity. *International Journal of Multidisciplinary Education Research*, 5(16), 54–70. <http://ijmer.in.doi./2023/12.06.89>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Macmillan.
- Boden, M. A. (2018). *Artificial intelligence: A very short introduction*. Oxford University Press.
- Borna, P., Mohammadi, R., & Karimi Nia, R. (2024). Investigating the effect of AI writing assistance tools on Iranian intermediate EFL learners' writing performance: A comparative study of ProWritingAid and Grammarly. *Research in English Language Pedagogy*, 12(3), 478–504. <https://doi.org/10.30486/RELP.2024.897162>
- Bozkurt, A., Karadeniz, A., Baneres, D., Guerrero-Roldán, A. E., & Rodríguez, M. E. (2021). Artificial intelligence and reflections from the educational landscape: A review of AI studies in half a century. *Sustainability*, 13(2), 800. <https://doi.org/10.3390/su13020800>
- Bruning, R., Dempsey, M., Kauffman, D. F., McKim, C., & Zumbunn, S. (2013). Examining dimensions of self-efficacy for writing. *Journal of Educational Psychology*, 105(1), 25–38. <https://doi.org/10.1037/a0029692>
- Chou, C.-M., Shen, T.-C., Shen, T.-C., & Shen, C.-H. (2024). Developing and validating an AI-supported teaching applications' self-efficacy scale. *Research and Practice in Technology Enhanced Learning*, 19(1), 1–35. <https://doi.org/10.58459/rptel.2024.19035>
- Conde, J., et al. (2024). Understanding the impact of artificial intelligence in academic writing: Metadata to the rescue. *Computer*, 57(1), 105–109. <https://doi.org/10.1109/MC.2023.3327330>
- Creely, E. (2024). Exploring the role of generative AI in enhancing language learning: Opportunities and challenges. *International Journal of Changes in Education*. 1(3), 158–167. <https://doi.org/10.47852/bonviewIJCE42022495>
- Dale, R., & Viethen, J. (2021). The automated writing assistance landscape in 2021. *Natural Language Engineering*, 27(4), 511–518. <https://doi.org/10.1017/S1351324921000164>
- Divsar, H. (2022). The comparative effect of rehearsal, strategic, and online planning on the fluency, accuracy, complexity, lexical variety, and attentional allocation of EFL learners' argumentative writing. *Teaching English as a Second Language Quarterly*, 41(2), 75–111. <https://doi.org/10.22099/tesl.2021.41004.3017>
- Escalante, H. J., Kumar, A., & Godwin-Jones, B. (2023). The evolution of automated writing evaluation: Implications for second language learning. *Language Learning & Technology*, 27(1), 1–25. <https://doi.org/10.125/llt.47126>
- Fabro, R. B., Rivera, J. C., Sambrano, L. C., Dinoy, M. L., Alcozer, N. G., & Agustin, M. C. (2024). Perceptions and extent of utilization of generative artificial intelligence (AI) among Filipino

- students. *International Journal of Education and Research*, 12(7), 107–126. <https://doi.org/10.1007/s10639-024-12906-6>
- Fathi, J., Rahimi, M., & Derakhshan, A. (2024). Improving EFL learners' speaking skills and willingness to communicate via artificial intelligence-mediated interactions. *System*, 121, 103254. <https://doi.org/10.1016/j.system.2024.103254>
- Foster, P., & Skehan, P. (1996). The influence of planning and task type on second language performance. *Studies in Second Language Acquisition*, 18(4), 299–323.
- Galaczi, E. (2023). *English language education in the era of generative AI: Our perspective*. Cambridge University Press and Assessment. <https://www.cambridgeenglish.org/Images/685411-English-language-education->
- Gayed, J. M., Carlon, M. K. J., Oriola, A. M., & Cross, J. S. (2022). Exploring an AI-based writing assistant's impact on English language learners. *Computers and Education: Artificial Intelligence*, 3, 100055. <https://doi.org/10.1016/j.caeai.2022.100055>
- George, B., & Wooden, O. (2023). Managing the strategic transformation of higher education through artificial intelligence. *Administrative Sciences*, 13(9), 1–20. <https://doi.org/10.3390/admsci13090196>
- Ghafouri, M., Hassaskhah, J., & Mahdavi-Zafarghandi, A. (2024). From virtual assistant to writing mentor: Exploring the impact of a ChatGPT-based writing instruction protocol on EFL teachers' self-efficacy and learners' writing skill. *Language Teaching Research*, 0(0). <https://doi.org/10.1177/13621688241239764>
- Godwin-Jones, B. (2022). Beyond the correction: How AI tools can foster language learning. *Journal of Second Language Writing*, 56(2), 1–24. <https://doi.org/10.1016/j.jslw.2022.100840>
- Gutiérrez, L. (2023). Artificial intelligence in language education: Navigating the potential and challenges of chatbots and NLP. *Research Studies in English Language Teaching and Learning*, 1(3), 180–191. <https://doi.org/10.62583/rselt.v1i3.44>
- Heilinger, J.-C., Kempt, H., & Nagel, S. (2023). Beware of sustainable AI! Uses and abuses of a worthy goal. *AI and Ethics*, 26, 1–12. <https://doi.org/10.1007/s43681-023-00259-8>
- Housen, A., & Kuiken, F. (2009). Complexity, accuracy, and fluency in second language acquisition. *Applied Linguistics*, 30(4), 461–473. <https://doi.org/10.1093/applin/amp048>
- Jia, X. H., & Tu, J.-C. (2024). Towards a new conceptual model of AI-enhanced learning for college students: The roles of artificial intelligence capabilities, general self-efficacy, learning motivation, and critical thinking awareness. *Systems*, 12(74), 1–25. <https://doi.org/10.3390/systems12030074>
- Kantharaja, K. P., Srinivasalu, M., Rajashekara, M. N., Vishvanath, M., & Sanjeev, P. (2022). Exploring the impact of artificial intelligence on the future of English language editing and proofreading. *Educational Administration: Theory and Practice*, 30(1), 669–681. <https://doi.org/10.53555/kuey.v30i1.5226>
- Karimi, S., & Kianmehr, H. A. (2021). The effect of an AI-based writing assistant on Iranian EFL learners' self-efficacy in writing. *Computer Assisted Language Learning*, 34(5), 873–897. <https://doi.org/10.30486/RELP.2024.897162>

- Khojasteh, L., Shokrpour, N., & Afrasiabi, M. (2016). The relationship between writing self-efficacy and writing performance of Iranian EFL students. *International Journal of Applied Linguistics & English Literature*, 5(4), 29–37. <https://doi.org/10.7575/aiac.ijalel.v.5n.4p.29>
- Koraishi, O. (2024). The intersection of AI and language assessment: A study on the reliability of ChatGPT in grading IELTS writing task 2. *Language Teaching Research Quarterly*, 43(5), 22–42. <https://doi.org/10.32038/ltrq.2024.43.02>
- Larsen-Freeman, D. (2015). Research into practice: Grammar learning and teaching. *Language Teaching*, 48(2), 263–280. <https://doi.org/10.1017/S0261444814000394>
- Lennon, P. (1990). Investigating fluency in EFL: A quantitative approach. *Language Learning*, 40(3), 387–417.
- Liu, W., Chen, Y., & Wang, Z. (2024). The role of AI tools in multimodal composing for EFL learners. *Journal of Second Language Writing*, 59(2). <https://doi.org/10.1016/j.jslw.2024.101278>
- Manire, E., Kilag, O. K., Cordova Jr., N., Tan, S. J., Poligrates, J., & Omaña, E. (2023). Artificial intelligence and English language learning: A systematic review. *Excellencia: International Multi-Disciplinary Journal of Education*, 1 (5), 485–497. <https://multijournals.org/index.php/excellencia-imje/article/view/147>
- Martínez-Cerdá, J. F., González-Santiuste, C., & Ortega-Sánchez, C. (2021). Are artificial intelligence platforms the future of higher education? An experimental study on the impact of Slack and bots on motivation, learning satisfaction, and academic performance. *Journal of Computing in Higher Education*, 33(2), 357–385. <https://doi.org/10.1007/s12528-021-09228-5>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2017). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage Publications.
- Nazari, N., Shabbir, M. S., & Setiawan, R. (2021). Application of artificial intelligence powered digital writing assistant in higher education: Randomized controlled trial. *Heliyon*, 7(1), 1–9. <https://doi.org/10.1016/j.heliyon.2021.e07014>
- Oskoui, K., Mirzaeian, V. R., & Nafissi, Z. (2024). AI-assisted EAP testing: A case of academic IELTS writing by Iranian EFL learners. *Journal of English Language Teaching and Learning*, 16(34), 307–330. <https://doi.org/10.22034/elt.2024.63345.2691>
- Pamungkas, B. E., Rondonuwu, M. K., Oktaviani, S., & Hadi, T. W. M. (2023). Artificial intelligence and English classroom: The implications of AI toward EFL students' motivation. *Edumaspul: Journal Pendidikan*, 7(2), 2444–2454. <https://doi.org/10.33487/edumaspul.v7i2.6669>
- Parsakia, K. (2023). The effect of chatbots and AI on the self-efficacy, self-esteem, problem-solving and critical thinking of students. *Health Nexus*, 1(1), 71–76. <https://doi.org/10.61838/kman.hn.1.1.11>
- Parviz, M. (2024). The double-edged sword: AI integration in English language education from the perspectives of Iranian EFL instructors. *Complutense Journal of English Studies*, 32, e97261. <https://doi.org/10.5209/cjes.97261>
- Patty, J. (2024). The use of AI in language learning: What we need to know. *Journal Review Pendidikan dan Pengajaran*, 7(1), 642–654. <https://doi.org/10.31004/jrpp.v7i1.24609>

- Pudaruth, S., Andujar, M., Biswas, G., Baker, C. R., Graesser, A. C., Maass, J. K., & Nyberg, E. (2021). A self-efficacy scale for artificial intelligence education. *IEEE Transactions on Education*, 64(3), 178–187. <https://doi.org/10.1109/TE.2021.3093758>
- Rahmi, R., Amalina, Z., Andriansyah, & Rodgers, A. (2024). Does it really help? Exploring the impact of AI-generated writing assistant on the students' English writing. *Studies in English Language and Education*, 11(2), 998–1012. <https://doi.org/10.24815/siele.v11i2.35875>
- Rodríguez-Ruiz, J., Marín-López, I., & Espejo-Siles, R. (2024). Is artificial intelligence use related to self-control, self-esteem and self-efficacy among university students?. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-024-12906-6>
- Shahzad, M. F., Xu, S., & Zahid, H. (2022). Exploring the impact of generative AI-based technologies on learning performance through self-efficacy, fairness & ethics, creativity, and trust in higher education. *International Journal of Artificial Intelligence in Education*, 1(1), 15–26. <https://doi.org/10.1002/jeap.00015>
- Silitubun, E. (2023). The relationship between student self-confidence, AI support, and academic achievement: A study in the psychology of motivation and learning. *International Journal of Psychology and Education*, 6(1), 45–53. <https://doi.org/10.51214/002023051066000>
- Skehan, P. (2003). Task-based instruction. *Language Teaching*, 36(1), 1–14.
- Skehan, P. (2009). Modelling second language performance: Integrating complexity, accuracy, fluency, and lexis. *Applied Linguistics*, 30(4), 510–532.
- Storch, N., & Wigglesworth, G. (2009). Pair versus individual writing: Effects on fluency, complexity and accuracy. *Language Testing*, 26(3), 445–466.
- Su, J., & Yang, W. (2023). Unlocking the power of ChatGPT: A framework for applying generative AI in education. *ECNU Review of Education*, 6(3), 355–366. <https://doi.org/10.1177/20965311231168423>
- Sullivan, M., Kelly, A., & McLaughlan, P. (2023). ChatGPT in higher education: Considerations for academic integrity and student learning. *Journal of Applied Learning & Teaching*, 6(1). <https://doi.org/10.37074/jalt.2023>
- Sun, T. (2023). The potential use of generative AI in ESL writing assessment: A case study of IELTS writing tasks. *Irish Journal of Technology Enhanced Learning*, 7(2), 42–51. <https://doi.org/10.22554/ijtel.v7i2.137>
- Sutrisno, S., & Evenddy, M. (2024). Investigating AI's automated feedback in English language learning. *Foreign Language Instruction Probe*, 3(1). <https://doi.org/10.54213/flip.v3i1.401>
- Tavakoli, P., & Skehan, P. (2005). Strategic planning, task structure, and performance testing. In R. Ellis (Ed.), *Planning and task performance in a second language* (pp. 239–277). John Benjamins.
- Teng, L. S., Sun, P. P., & Xu, L. (2018). Conceptualizing writing self-efficacy in English as a foreign language contexts: Scale validation through structural equation modeling. *TESOL Quarterly*, 52(4), 911–942. <https://doi.org/10.1002/tesq.432>

- Trust, T., Whalen, J., & Mouza, C. (2023). Editorial: ChatGPT: Challenges, opportunities, and implications for teacher education. *Contemporary Issues in Technology and Teacher Education*, 23(1). <https://citejournal.org/volume-23/issue-1-23/editorial/editorial-chatgpt-challenges-opportunities-and-implications-for-teacher-education>
- Vo, A., & Nguyen, H. (2024). Generative artificial intelligence and ChatGPT in language learning: EFL students' perceptions of technology acceptance. *Journal of University Teaching and Learning Practice*, 21(6), 1–19. <https://doi.org/10.53761/fr1rkj58>
- Williams, T. (2023, March 15). GPT-4's launch “another step change” for AI and higher education. *Times Higher Education*. <https://www.timeshighereducation.com/news/gpt-4s-launch-another-step-change-ai-and-higher-education>
- Wigglesworth, G., & Storch, N. (2009). Pair versus individual writing: Effects on fluency, complexity, and accuracy. *Language Testing*, 26(3), 445–466.
- Wu, Y., & Lin, Y. (2024). Application of artificial intelligence in teaching English as a foreign language: Progress, challenges, and trends. *English Language Teaching and Linguistics Studies*, 6(4), 215. <https://doi.org/10.22158/eltls.v6n4p215>
- Yeldiz, T. A. (2023). The impact of ChatGPT on language learners' motivation. *Journal of Teacher Education and Lifelong Learning*, 5(2), 527–598. <https://doi.org/10.51535/tell.1314355>
- Yousefi, M., & Askari, M. I. (2024). Exploring the effectiveness of artificial intelligence (AI) on reading comprehension among Iranian EFL learners. *Journal of New Trends in English Language Learning*, 3(Special Issue), 1–12. <https://doi.org/10.71528/2024.202406221123351>
- Yuan, L., & Liu, X. (2024). The effect of artificial intelligence tools on EFL learners' engagement, enjoyment, and motivation. *Computers in Human Behavior*, 162, 108474. <https://doi.org/10.1016/j.chb.2024.108474>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gagnon, M. (2019). Systematic review of research on artificial intelligence applications in higher education—where are the educators?. *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>
- Zhai, C., & Wibowo, S. (2021). A systematic review on artificial intelligence dialogue systems for enhancing English as foreign language students' interactional competence in the university. *Computers and Education: Artificial Intelligence*, 4, 1–26. <https://doi.org/10.1016/j.caeai.2023.100134>
- Zhang, J., Zhang, L. J., & Zhu, Y. (2023). Development and validation of a genre-based second language (L2) writing self-efficacy scale. *Frontiers in Psychology*, 14, 1181196. <https://doi.org/10.3389/fpsyg.2023.1181196>
- Zhu, M., & Wang, C. (2023). A systematic review of artificial intelligence in language education from 2013 to 2023: Current status and future implications. SSRN. <https://doi.org/10.2139/ssrn.4684304>

Appendix

Table 6

Session	Topic	Content
1	Overview of Argumentative Writing	- Analyzing sample essays (structure: intro, thesis, body, counterarguments, conclusion) - Purpose & examples of argumentative essays - Sample topic: "Should college education be free?"
2	Developing a Thesis Statement	- Importance of strong thesis - Examples of effective thesis statements - Exercise: Write thesis statements for prompts
3	Gathering Evidence	- Identifying credible sources - Evaluating relevance - Exercise: Research evidence for assigned topics
4	Counterarguments and Refutation	- Understanding/addressing counterarguments - Exercise: Develop counterarguments & refutations (e.g., "Fast food is to blame for obesity")
5	Writing the Introduction	- Elements of engaging introductions - Examples - Exercise: Write introductions (e.g., "Should cellphones be allowed in schools?")
6	Writing Body Paragraphs	- Structure of body paragraphs - Examples - Exercise: Write body paragraphs (e.g., "Is homework beneficial?")
7	Writing the Conclusion	- Crafting strong conclusions - Exercise: Write conclusions (e.g., "Are video games harmful to children?")
8	Revising and Editing	- Techniques for improvement - Practice with sample essays/worksheets
9	Final Argumentative Essay	- Write a complete essay (e.g., "Should schools require foreign language classes?")
10	Practicing Argumentative Writing	- Prompts and examples for learners to practice