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Correlation Between AI-Assisted Grammar Development and EFL Learners' Writing Self-Efficacy: A Literature Review

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Abstract

Grammar competence is a foundational element of writing quality in English as a Foreign Language (EFL) contexts, yet EFL learners face persistent grammatical challenges that undermine their performance and confidence. AI tools have demonstrated effectiveness in supporting grammar learning through personalized, adaptive, and interactive feedback. However, research has predominantly focused on measurable outcomes, leaving the psychological dimension of AI-assisted grammar learning — particularly its relationship with writing self-efficacy — underexplored. Writing self-efficacy, defined as one's belief in their capacity to produce written text successfully, has been linked to writing performance and is a central construct in Bandura's Social Cognitive Theory. This literature review examines research on AI-assisted grammar learning in EFL settings and its potential correlation with students' writing self-efficacy. Drawing on studies on grammatical competence, AI integration in language education, and self-efficacy in writing, this review identifies a significant gap: while AI tools improve grammar performance and engagement, their influence on self-efficacy beliefs remains insufficiently examined. This relationship is key to understanding AI's pedagogical impact across cognitive and affective dimensions of learning. This review suggests that EFL teachers should pair AI-based grammar tools with explicit feedback to strengthen learners' self-efficacy, while future studies should employ mixed-methods designs to measure this correlation empirically.

Keywords: *AI-assisted grammar learning; EFL writing; grammar competence; literature review; writing self-efficacy*

INTRODUCTION

The rapid advancement of technology, particularly artificial intelligence (AI), has transformed competence across various sectors, and academic settings are no exception (Vieriu & Petrea, 2025). In language education, AI has demonstrated a notable ability to enhance students' academic writing and sustain their engagement

through feedback that is both personalized and easily accessible (Hongxia & Razali, 2025). One area where this impact has been especially visible is grammar, a fundamental component of language, where AI-assisted tools have been shown to improve accuracy, increase student engagement, and provide more adaptive learning opportunities than traditional methods often allow (Deep et al., 2025; Toshboltaev & qizi, 2025). Given these developments, the integration of AI in grammar-focused language learning holds considerable promise for supporting students' broader writing development.

In Indonesia, English is taught as a foreign language (EFL), meaning it is not commonly used in students' daily communication. This limited exposure creates a range of challenges when students are asked to apply their English skills in academic writing. Among the difficulties most frequently reported are writer's block, trouble articulating ideas clearly, fear of making mistakes, and a general lack of confidence in writing (Sasmita & Setyowati, 2021). These challenges are not merely logistical; they carry a psychological weight that significantly shapes how students approach writing tasks. The concept that captures this psychological dimension most directly is self-efficacy, a central construct in Bandura's (1977) Social Cognitive Theory, defined as an individual's belief in their ability to perform the actions required to achieve certain outcomes. In the writing context, self-efficacy has been consistently linked to writing performance (Khosravi et al., 2017; Sabti et al., 2019; Teng & Wang, 2023), and students with stronger self-efficacy beliefs tend to engage more deeply, employ a wider range of strategies, and persist through difficulties.

Despite the growing body of research on AI-assisted grammar learning, a notable gap remains in the literature. Studies have predominantly focused on measurable performance outcomes, such as grammar test scores, writing quality, and student engagement, while the psychological dimensions of AI-assisted learning have received far less attention (Ali et al., 2025; Deep et al., 2025; Hongxia & Razali, 2025; Katsarou et al., 2025). Among these underexplored dimensions, writing self-efficacy stands out as particularly significant, given its established role in shaping writing performance among EFL learners. Whether the improvements in grammar that AI facilitates also translate into stronger writing self-efficacy remains a question that existing research has yet to directly address.

This study therefore sets out to review the existing literature on AI-assisted grammar learning and writing self-efficacy in EFL contexts, with the aim of examining

whether a correlation between the two can be conceptually established. Accordingly, the following research question guides this review:

Is there a significant correlation between students' use of AI for improving grammar skills and their writing self-efficacy?

By addressing this question, this paper aims to contribute to a broader understanding of AI's pedagogical impact — one that goes beyond measurable cognitive outcomes to include the affective and psychological dimensions of language learning.

THE ROLE OF GRAMMAR IN EFL WRITING

Grammar as a Linguistic Foundation

Grammar serves as the structural backbone of language, enabling writers to convey meaning clearly and accurately. It is governed by systematic rules that operate at multiple levels. Hamidova (2025) identifies two primary branches: morphology, which deals with the internal structure of words, and syntax, which regulates how words combine to form sentences. However, the function of grammar extends well beyond providing rules for sentence construction. As Lazar and Barnaby (2015) argue, grammar also functions as a meaning-making tool, enabling writers to express intended meanings and establish the clarity that academic writing demands. This view positions grammar not as a rigid constraint, but as a flexible resource for communication.

Beyond morphology and syntax, grammar also encompasses mechanical conventions such as punctuation and capitalization. These elements, though often treated as minor concerns, are equally important for ensuring clarity and precision in written communication (Maharani & Sholikhatun, 2022). Moreover, grammar does not operate in isolation. Grammatical rules work in tandem with lexical choices and sentence structures to ensure cohesion and coherence across a text. As Halliday and Hasan (1976, p. 5) put it, "cohesion is expressed partly through the grammar and partly through the vocabulary", a formulation that underscores how grammar and lexis are interdependent tools in the construction of meaning. Taken together, these dimensions make grammar a multifaceted resource that is foundational to the writing process.

Grammar Competence and Writing Quality in EFL

The relationship between grammatical competence and writing quality has been widely studied, particularly in EFL contexts. The general direction of findings suggests

that stronger grammar knowledge supports better writing outcomes. Sacal and Potane (2023) provided quantitative evidence of this relationship, demonstrating that every unit increase in grammar proficiency corresponds to an 8.8% improvement in writing performance. Similarly, Mahmoud (2023) confirmed a significant positive correlation between the two variables, arguing that students who have mastered grammar rules are better equipped to translate that knowledge into communicative and coherent written texts. These findings position grammatical competence as a meaningful contributor to writing quality.

However, the evidence is not uniformly consistent. The same study by Mahmoud (2023) revealed that grammar competence accounts for only 14.7% of the variance in writing performance, which indicates that many other factors are at play. More strikingly, Setyowati and Hardiastikna (2019) found no significant correlation between grammar mastery and writing ability in their study of Indonesian EFL learners, a result echoed by Murtiningsih et al. (2022), who similarly reported no substantial relationship between the two among Indonesian EFL university students ($p = 0.690$). These contradictory findings suggest that grammar competence, while relevant, is far from the only determinant of writing quality. Other dimensions, including affective and psychological factors such as self-efficacy, may play an equally important role in shaping how well students write.

Grammar Challenges Among EFL Learners

Despite grammar's foundational role in writing, EFL learners frequently encounter significant difficulties in applying grammatical rules accurately. Research consistently identifies errors in tense usage, subject-verb agreement, article selection, and sentence structure as the most common grammatical challenges faced by EFL writers (Azizah et al., 2025). These difficulties arise from a range of underlying factors. First language (L1) interference is frequently cited as a major contributor, particularly when the grammatical systems of the learner's native language differ significantly from those of English (Yusuf et al., 2021). Limited exposure to authentic English use and insufficient opportunities for meaningful grammar practice are also widely recognized as contributing factors (Azizah et al., 2025). At the same time, Mustapha (2023) cautions against attributing grammatical difficulties to L1 interference alone, arguing that intralingual factors, such as overgeneralization of target language rules and gaps in instructional coverage, contribute equally and that the weight of each factor varies across learner contexts.

What is perhaps more significant, however, is the broader consequence of these grammatical errors. They do not merely result in lost marks; they actively disrupt the communication of ideas and undermine the overall effectiveness of a written text (Azizah et al., 2025). A student who struggles with grammar is not simply losing points on their academic score — they are losing the ability to express their thoughts clearly, which is the very purpose of writing. This consequence makes the need for effective and targeted grammar support all the more pressing, and it is precisely this role that AI-assisted tools have increasingly been shown to fulfill.

AI-ASSISTED GRAMMAR LEARNING IN EFL CONTEXTS

AI in Language Learning

Artificial intelligence has been steadily integrated into language learning environments, and its capacity to support academic development is becoming well established. One of its most significant advantages over traditional teaching methods is its ability to provide personalized, responsive feedback that adapts to individual learners' needs in real time (Vieriu & Petrea, 2025). In the context of EFL academic writing, Hongxia and Razali (2025) conducted a comprehensive 16-week study that compared the effects of ChatGPT feedback with traditional teacher feedback among Chinese EFL undergraduates. The study found that students who received AI-generated feedback showed significantly greater improvement across multiple dimensions of writing, including grammar, structure, coherence, and lexical range. Particularly noteworthy was the finding that students in the traditional instruction group showed little to no progress in grammar, while those using ChatGPT demonstrated marked improvement, which a result that speaks directly to the value of AI in supporting grammatical development.

These findings are further supported by Song and Song (2023), who found that EFL students receiving AI-assisted writing instruction consistently outperformed peers in traditional classrooms across elements of content, organization, and language use. Motivation also emerged as a differentiating factor, with the AI group showing higher levels of writing motivation. Hongxia and Razali (2025) additionally reported that more than 60% of students in their study described positive impacts on their affective, cognitive, social, and behavioral engagement, a finding that aligns with Vieriu and

Petrea's (2025) broader observation that AI integration tends to enhance both student engagement and academic performance.

That said, the integration of AI in language learning is not without its concerns. Several studies have raised the issue of over-reliance, noting that heavy dependence on AI feedback may gradually diminish students' capacity for independent critical thinking and self-directed learning (Hongxia & Razali, 2025; Song & Song, 2023; Vieriu & Petrea, 2025). This concern is worth taking seriously, as it suggests that the effectiveness of AI tools is not automatic since it depends on how thoughtfully they are embedded within a broader pedagogical approach, one that uses AI as a complement to, rather than a replacement for, student agency and cognitive effort.

AI for Improving Grammar

When the focus narrows specifically to grammar learning, the evidence for AI's effectiveness becomes even more compelling. Ali et al. (2025), examining ESL learners in Saudi Arabia, conducted a study comparing traditional grammar instruction with AI-assisted learning using ChatGPT. Their results showed that the experimental group, those using ChatGPT, performed significantly better on grammar tests and reported more favorable perceptions of the learning experience overall, suggesting that AI not only improves grammatical outcomes but also makes the process more engaging and satisfying for learners.

Deep et al. (2025) arrived at similar conclusions in a higher education ESL context, finding that AI tools enhanced grammar proficiency through tailored, interactive feedback while simultaneously fostering greater student engagement. The personalized nature of AI feedback appears to be a key mechanism here: rather than offering generic corrections, AI tools can respond to the specific errors of individual learners, making the feedback more targeted and actionable. In a different context altogether, Katsarou et al. (2025) demonstrated that AI-based tools could adaptively adjust grammatical tasks to suit learners with learning disabilities, resulting in notable improvement in grammatical performance and receiving positive feedback from both students and teachers regarding engagement and usability.

Collectively, these studies present a consistent picture: AI-assisted tools benefit grammar development across a range of ESL and EFL contexts. However, an important limitation must be acknowledged. The populations studied, ESL learners in Saudi Arabia, university-level ESL students, and children with learning disabilities, differ considerably from Indonesian EFL high school students in terms of linguistic

background, institutional context, and learning experience. This means that the findings, while encouraging, cannot be directly generalized without further contextual investigation. More importantly, all of these studies are focused on measurable performance outcomes, such as grammar scores, engagement levels, writing quality ratings. None of them directly examines what happens psychologically: whether the grammar improvements that AI facilitates also affect how students feel about their own writing ability. That psychological dimension, particularly writing self-efficacy, remains largely unaddressed.

Limitations and Emerging Questions

The limitations identified above point to a broader gap in the existing literature on AI-assisted grammar learning. Despite the strong and consistent evidence for AI's effectiveness in improving grammar performance, writing ability, and student engagement (Ali et al., 2025; Deep et al., 2025; Hongxia & Razali, 2025; Katsarou et al., 2025), these studies have concentrated almost exclusively on outcomes that are observable and quantifiable. Test scores can be counted. Participation rates can be tracked. But whether students' internal sense of confidence in their own writing ability is affected, whether AI-assisted grammar learning strengthens the psychological belief that one can write well, is a question that has received almost no attention.

This is not a minor omission. Bandura (1977) established that self-efficacy is not simply a byproduct of performance but a powerful independent factor that shapes how much effort learners invest, how long they persist in the face of difficulty, and how they recover from setbacks. If AI-assisted grammar learning has the potential to strengthen writing self-efficacy, for example by giving students repeated experiences of grammatical success through personalized feedback, then understanding this relationship would have meaningful implications for how AI tools are designed, integrated, and evaluated in EFL classrooms. The absence of research on this question is therefore not just a gap; it is a missed opportunity to understand a dimension of AI's pedagogical impact that may be as significant as its effects on test scores.

WRITING SELF-EFFICACY IN EFL CONTEXTS

Definition and Theoretical Foundation

The concept of self-efficacy originates from Bandura's (1977) Social Cognitive Theory, where it is defined as an individual's belief in their capacity to execute the

actions required to produce specific outcomes. It is important to note that self-efficacy is not simply about what skills or knowledge a person has, but about their conviction that they are capable of applying those skills effectively in a given situation. Bandura (1977) drew a critical distinction between two types of expectations: outcome expectations, which concern a person's belief that a certain behavior will lead to a certain result, and efficacy expectations, which are "the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). In practice, this means a student may believe that good writing leads to academic success, yet still doubt their own ability to produce it and it is this belief in one's own capability to act that self-efficacy specifically addresses.

The implications of this distinction for learning behavior are significant. Bandura (1977) observed that "efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences" (p. 194). In other words, self-efficacy does not just determine whether a student attempts a task — it determines the depth and quality of that engagement. Students with stronger self-efficacy approach tasks with greater confidence, invest more sustained effort, and recover more readily when they encounter difficulty. In the writing context specifically, this means that self-efficacy shapes not only a student's willingness to engage with writing tasks, but also the strategies they draw on and their persistence when writing becomes challenging, making it a foundational psychological dimension of writing performance.

Impact of Self-Efficacy on Writing Performance

The relationship between writing self-efficacy and writing performance has been documented across a range of EFL and foreign language contexts, and the findings are notably consistent. Khosravi et al. (2017), in a study of Iranian EFL learners, found that students with higher self-efficacy employed a wider range of writing strategies, which in turn contributed to stronger writing outcomes. This suggests that self-efficacy does not merely build confidence in a passive sense but as well as it actively shapes the strategic behaviors that drive performance improvement. Sabti et al. (2019) extended these findings to an Iraqi EFL context, where higher writing self-efficacy was found to be positively and significantly correlated with both achievement motivation and writing performance, while writing anxiety, which tends to accompany low self-efficacy, was associated with poorer outcomes. The mutual reinforcement between self-efficacy and

motivation identified in this study is particularly notable, as it suggests that these psychological factors tend to amplify each other.

Teng and Wang (2023) further confirmed these findings in a foreign language academic writing context, demonstrating that self-efficacy beliefs significantly predicted students' overall writing performance. While it is important to acknowledge that most of these studies are correlational in design, meaning the direction of causality between self-efficacy and performance cannot be definitively established, the consistency of the relationship across different learner populations and contexts makes a strong case for the importance of self-efficacy in writing development. Taken together, these studies collectively position writing self-efficacy not as a background variable, but as one of the most consequential psychological determinants of how EFL learners engage with and perform in writing tasks.

There are also what researchers have described as the reciprocal nature of this relationship: positive writing experiences strengthen students' self-efficacy, while stronger self-efficacy encourages greater investment and engagement in writing, which in turn produces more positive experiences (Teng & Wang, 2023). This cycle has significant implications for instructional design. If an intervention, such as AI-assisted grammar learning, can produce repeated successful writing experiences for students, it may not only improve their grammar but also set this reciprocal cycle in motion, gradually building writing self-efficacy over time.

Writing Challenges, Self-Efficacy, and the Research Gap

In EFL contexts, the challenges students face in writing are both numerous and psychologically consequential. These difficulties span linguistic features such as grammar, cohesion, and coherence (Ahmed, 2019; Ariyanti & Fitriana, 2017; Sasmita & Setyowati, 2021), extend to mechanical aspects like punctuation and limited vocabulary (Ahmed, 2019), and include recurring difficulties with idea organization and content construction (Ahmed, 2019; Ariyanti & Fitriana, 2017). These challenges are particularly acute in EFL contexts like Indonesia, where students have limited opportunities for authentic English writing practice outside the classroom, leaving them with less developed writing fluency and confidence.

Sasmita and Setyowati (2021) documented this reality in a study of EFL students at Universitas Negeri Malang, finding that writer's block was the most prevalent problem, affecting 43.5% of respondents, followed by low confidence in writing (21.7%),

difficulty expressing ideas (17.4%), and fear of making mistakes (17.4%). These numbers reveal that the majority of challenges students report are not purely linguistic as they are rooted in self-doubt and psychological discomfort. The combination of low confidence and fear of making mistakes is especially damaging to self-efficacy, as it leads students to avoid the very practice that would help them improve. The result is a self-reinforcing cycle: low self-efficacy drives writing avoidance, which limits practice, which in turn further weakens self-efficacy. Breaking this cycle requires more than improved grammar instruction — it requires building students' belief in their own ability to write.

This is where the potential significance of AI-assisted grammar learning becomes most apparent. If AI tools can reduce the grammatical anxiety that contributes to low self-efficacy, for instance by offering immediate, personalized feedback that helps students experience grammatical success more frequently and reliably, they may serve as an indirect enabler of stronger writing self-efficacy. Bandura's (1977) framework supports this reasoning, as repeated mastery experiences are one of the primary sources through which self-efficacy is built. Yet despite this logical connection, the relationship between AI-assisted grammar learning and writing self-efficacy has not been directly examined in the EFL literature. Most studies have concentrated on performance-based outcomes, leaving the psychological dimension of AI's impact largely unexplored. This study addresses that gap by conceptually examining the correlation between students' use of AI for grammar improvement and their writing self-efficacy, contributing to a more complete understanding of what AI can and should mean for EFL learners.

CONCLUSION

This paper set out to examine the conceptual relationship between AI-assisted grammar development and writing self-efficacy among EFL learners, with particular attention to the Indonesian high school context. Through a review of the relevant literature, three core findings emerge.

First, grammar competence is a meaningful component of EFL writing quality, though the evidence on just how much it matters is inconsistent across studies. What is clear is that grammar difficulties are widespread among EFL learners and carry consequences that go beyond scoring as they disrupt meaning-making and contribute to the broader psychological challenges students face in writing.

Second, AI-assisted grammar tools have demonstrated consistent effectiveness in improving grammatical accuracy and engagement across diverse ESL and EFL contexts. Through personalized, adaptive, and interactive feedback, these tools address gaps that traditional instruction has struggled to fill. Their potential as grammar learning support is well-supported by the existing literature, even if questions remain about generalizability to specific contexts such as Indonesian EFL high school settings.

Third, and most importantly, writing self-efficacy, the psychological belief in one's ability to write, is one of the most powerful determinants of writing performance and engagement in EFL contexts. It is not merely a byproduct of good writing instruction; it is a prerequisite for it. Students who do not believe they can write well are unlikely to invest the effort and persistence that writing development requires, regardless of how much grammar knowledge they possess.

Hence, the intersection of these three findings reveals a significant and underexplored research space: whether AI-assisted grammar learning, by facilitating repeated mastery experiences, might also strengthen EFL learners' writing self-efficacy. This review argues that this question is not only conceptually plausible — it is pedagogically urgent. For EFL teachers, the implication is practical: AI grammar tools should be embedded within instructional designs that make students' progress visible, using explicit feedback mechanisms that help learners recognize and internalize their own improvement. For curriculum designers, this points toward a need to treat linguistic competence and affective confidence not as separate concerns, but as interconnected targets of instruction. And for researchers, this review calls for mixed-methods empirical studies that move beyond performance metrics to capture the psychological dimensions of AI's impact on EFL learners, particularly in the Indonesian high school context, where both grammar challenges and writing anxiety are notably prevalent.

Ultimately, understanding AI's pedagogical impact requires looking beyond what students can do after using it, to how they feel about what they can do. Writing self-efficacy sits at precisely that intersection, and it deserves a more central place in the research on AI-assisted language learning.

REFERENCES

Ahmed, P. H. 2019. Major writing challenges experienced by EFL learners in Soran University. Journal of University of Human Development, 5(3), 120–126. https://doi.org/10.21928/juhd.v5n3y2019.pp120-126

Ali, Y. A., Ali, M. M., Alharbi, W., Hamid, S., & Abbas, S. 2025. The influence of ChatGPT on English grammar among Saudi ESL learners. Arab World English Journal (AWEJ) Special Issue on Artificial Intelligence, 358–371. https://dx.doi.org/10.24093/awej/AI.21

Ariyanti, A., & Fitriana, R. 2017. EFL students' difficulties and needs in essay writing. In Proceedings of the International Conference on Teacher Training and Education 2017 (ICTTE 2017) (pp. 32–42). Atlantis Press. https://doi.org/10.2991/ictte-17.2017.4

Azizah, S. H. N., Baa, S., & Arham, M. 2025. Analysis of EFL students' grammatical errors in writing literature review. Tamaddun, 24(2), 365–371. https://doi.org/10.33096/tamaddun.v24i2.1019

Bandura, A. 1977. Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Deep, P. D., Martirosyan, N., Ghosh, N., & Rahaman, M. S. 2025. ChatGPT in ESL higher education: Enhancing writing, engagement, and learning outcomes. Information, 16(4), 316. https://doi.org/10.3390/info16040316

Halliday, M. A. K., & Hasan, R. 1976. Cohesion in English. Longman.

Hamidova, T. A. 2025. The structure and function of English grammar: A linguistic perspective. Western Caspian University Scientific Bulletin, 3(Humanities sciences series). https://doi.org/10.54414/GHMW5238

Hongxia, H., & Razali, A. B. 2025. Impact of ChatGPT on English academic writing ability and engagement of Chinese EFL undergraduates. International Journal of Instruction, 18(2), 323–346. https://doi.org/10.29333/iji.2025.18218a

Katsarou, D. V., Mantsos, E., Papadopoulou, S., Sofologi, M., Efthymiou, E., Vasileiou, I., Megari, K., Theodoratou, M., & Kougioumtzis, G. A. 2025. Exploring AI technology in grammar performance testing for children with learning disabilities. Education Sciences, 15(3), 351. https://doi.org/10.3390/educsci15030351

Khosravi, M., Ghoorchaei, B., & Arabmofrad, A. 2017. The relationship between writing strategies, self-efficacy and writing ability: A case of Iranian EFL students. International Journal of English Language & Translation Studies, 5(3), 96–102. https://www.eltsjournal.org/

Lazar, G., & Barnaby, B. 2015. Working with grammar as a tool for making meaning. In T. Lillis, K. Harrington, M. Lea, & S. Mitchell (Eds.), Working with academic literacies: Case studies towards transformative practice (pp. 289–297). Parlor Press.

Mahmoud, B. 2023. Grammar competence and writing performance: A correlational study in higher education. TESOL and Technology Studies, 4(1), 37–44. https://doi.org/10.48185/tts.v4i1.594

Maharani, M. M., & Sholikhatun, E. 2022. Punctuation and capitalization in writing: How do students produce them? Journal of Advanced Multidisciplinary Research, 3(1), 53–61. https://doi.org/10.30659/jamr.3.1.53-61

Murtiningsih, S. R., Kurniawati, S., & Putri, A. W. D. 2022. University EFL students' grammar mastery and their writing ability: A quantitative study. In Proceedings of the International Conference on Sustainable Innovation on Humanities, Education, and Social Sciences (ICOSI-HESS 2022) (pp. 226–236). Atlantis Press. https://doi.org/10.2991/978-2-494069-65-7_21

Mustapha, S. M. 2023. Grammatical errors in EFL writing. International Journal of Linguistics, 15(2). https://doi.org/10.5296/ijl.v15i2.20910

Sabti, A. A., Md Rashid, S., Nimehchisalem, V., & Darmi, R. 2019. The impact of writing anxiety, writing achievement motivation, and writing self-efficacy on writing

performance: A correlational study of Iraqi tertiary EFL learners. SAGE Open, 9(4). https://doi.org/10.1177/2158244019894289

Sacal, P. G. Y., & Potane, J. D. 2023. Students' mastery of English grammar towards effective writing and speaking competence. International Journal of Multidisciplinary: Applied Business and Education Research, 4(8), 2894–2904. https://doi.org/10.11594/ijmaber.04.08.27

Sasmita, Y. V., & Setyowati, L. 2021. Problems faced by EFL students in learning to write. Linguista: Jurnal Ilmiah Bahasa, Sastra, dan Pembelajarannya, 5(1), 11–25. https://doi.org/10.25273/linguista.v5i1.9404

Setyowati, L., & Hardiastikna, D. D. 2019. The correlation between grammar and writing achievement of EFL sophomore students at STKIP PGRI Pasuruan, Indonesia. Linguista: Jurnal Ilmiah Bahasa, Sastra, dan Pembelajarannya, 3(1), 31–40. https://doi.org/10.25273/linguista.v3i1.4542

Song, C., & Song, Y. 2023. Enhancing academic writing skills and motivation: Assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students. Frontiers in Psychology, 14, Article 1260843. https://doi.org/10.3389/fpsyg.2023.1260843

Teng, M. F., & Wang, C. 2023. Assessing academic writing self-efficacy belief and writing performance in a foreign language context. Foreign Language Annals, 56(1), 144–169. https://doi.org/10.1111/flan.12638

Toshboltaev, F. U., & qizi, I. O. H. 2025. The role of ChatGPT and other AI models in teaching English grammar. Spanish Journal of Innovation and Integrity, 41, 195–198. https://www.sjii.es/index.php/journal/article/view/439

Vieriu, A. M., & Petrea, G. 2025. The impact of artificial intelligence (AI) on students' academic development. Education Sciences, 15(3), 343. https://doi.org/10.3390/educsci15030343

Yusuf, Y. Q., Mustafa, F., & Iqbal, R. M. 2021. An inquiry into grammatical errors in writing committed by high achieving EFL students. International Journal of

Language Studies, 15(2), 1–22. https://www.researchgate.net/publication/353761032