

# Grammar Checkers to Boost Students' Academic Writing Proficiency in English

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**Abstract**—This review of literature supports the relevance of the present research in exploring the potential of grammar checkers in developing students' academic writing skills. English major students are expected to have high proficiency in academic writing as they will need to produce written works such as research papers, essays, and theses. Pertaining to the aforementioned legal basis, it is important to develop student's writing skills, specifically their grammar accuracy by integrating traditional and new literacies, particularly through using grammar checkers to produce good quality writing. The research indicated that English major students who engaged in self-monitoring and self-assessment strategies showed significant improvements in their writing performance. The findings demonstrated that when grammar checkers were integrated as a tool for error correction and feedback, students showed significant improvement in their writing accuracy and proficiency. The findings indicated that students had positive attitudes towards grammar checkers, viewing them as helpful tools for improving their grammar skills and academic writing proficiency. Positive attitudes towards grammar checkers were found to be strong predictors of students' intentions to use them in their writing tasks.

**Keywords**— Academic, English Major, Grammar Checkers, Students, Writing Proficiency.

## I. INTRODUCTION

In today's academic world, writing has become a fundamental skill, and it is one of the most critical skills that students must possess to excel academically (Chen & Wang, 2021). Writing is an essential aspect of communication, and it is often used to demonstrate knowledge and convey ideas (Matsuda & Tardy, 2017). English major students, in particular, need to have proficient writing skills because English is the primary language used in academic writing. However, many students struggle with writing, especially with grammar and syntax (Nikolov, 2021).

According to Republic Act No. 7722, the Commission on Higher Education (CHED) has the responsibility to advance quality education, increase access to higher learning, safeguard academic freedom for ongoing intellectual development, and ensure the progression of knowledge and research. Meanwhile, Republic Act 10533, also known as the Enhanced Basic Education Act of 2013, aims to guarantee that each graduate of basic education emerges as an empowered individual.

Various studies have already investigated the effectiveness of technology-enhanced language learning in improving students' writing skills. According to several scholars,

computer-assisted language learning (CALL) can help learners develop their writing abilities by providing immediate feedback, promoting self-correction, and enhancing language accuracy. For instance, Chen and Lee (2017) found that the use of grammar checkers significantly improved students' writing quality in terms of grammatical accuracy and complexity. Similarly, Zhang and Barber (2017) suggested that the integration of online writing tools, such as grammar checkers, can enhance students' language proficiency and writing performance.

## II. DISCUSSION

### Academic Writing.

According to Hewings (2013), academic writing proficiency is important for English major students as it enables them to communicate effectively in academic settings and to demonstrate their knowledge and understanding of the subject matter. English major students need to develop strong academic writing skills to succeed in their studies and future careers. (Hinkel, 2015) said that academic writing proficiency involves more than just grammatical accuracy; it also requires the ability to organize ideas, analyze and synthesize information, and communicate complex concepts effectively. Developing these skills can be challenging, but is essential for English major students to succeed in their academic and professional pursuits.

### Grammar checkers

These are software programs that check for grammar and syntax errors in written text. These tools can highlight spelling, punctuation, and grammatical errors and offer suggestions for correcting them. Grammar checkers can be found in word processors such as Microsoft Word, and there are also online grammar checkers like Grammarly, Ginger, WhiteSmoke and more. Grammar checkers are computer programs that help identify and correct grammatical errors in writing (Beigman-Klebanov et al., 2019). These programs are commonly used by students and professionals alike to improve the quality of their writing (Chapelle, 2016). A study conducted by Lee and Van der Loo (2019) examined the role of grammar checkers in the writing process of undergraduate students. The findings revealed that grammar checkers positively impacted students' writing proficiency by helping them identify and correct grammatical errors during the

revision stage. The use of grammar checkers facilitated a more systematic and focused approach to editing, enabling students to refine their written work and improve overall quality.

Hendrickson, (2020) stated that grammar checkers have been shown to be effective in identifying and correcting errors in writing, and they have been widely used in language education to help students improve their writing skills. Using grammar checkers can help to enhance the overall quality of writing. Lunsford (2008) suggested that grammar checkers can be beneficial in identifying errors that the writer might have missed, thereby improving the clarity and effectiveness of writing. Hence, using grammar checkers has become increasingly popular among students and professionals, as these tools help in identifying and correcting errors in grammar, spelling, and punctuation. Grammar checkers can also help students learn grammar rules and improve their understanding of the language (Chen & Cheng, 2018).

In a local context, a study by Garcia and Hernandez (2021) investigated the influence of grammar checkers on the writing process of Filipino English major students. The research highlighted that grammar checkers provided students with immediate feedback on grammatical errors, enabling them to make real-time revisions and improvements. The integration of grammar checkers in the writing process enhanced students' awareness of language conventions and their ability to self-correct errors, leading to enhanced academic writing proficiency.

#### *Planning Stage*

The planning stage in the Writing Process Theory involves generating ideas, setting goals, and organizing thoughts before beginning the actual writing. In a study by Chen et al. (2018), Chinese English major students using grammar checkers reported improved planning skills. The immediate feedback provided by grammar checkers helped students identify potential errors and weaknesses in their writing plans, leading to better-structured and organized texts.

#### *Drafting Stage*

During the drafting stage, writers translate their ideas into written form. Grammar checkers can serve as valuable tools in this stage by offering real-time error detection and correction. A study by Jones and Smith (2019) investigated the impact of grammar checkers on the drafting process of American English major students. The results indicated that the use of grammar checkers during drafting increased writing fluency, as students could focus on content generation while relying on the tool for grammatical support.

#### *Revising Stage*

The revising stage in the Writing Process Theory involves critically evaluating and refining the content and structure of the text. A study by Lee and Park (2020) explored how grammar checkers influenced the revising practices of Korean English major students. The research found that students who used grammar checkers during revision reported more significant improvements in their texts, as the tool provided

insights into recurring grammatical errors and helped fine-tune sentence structures.

#### *Editing Stage*

The editing stage focuses on refining language usage, grammar, and mechanics. Grammar checkers can be particularly beneficial during this stage, as they offer instant feedback on grammatical errors. A local study by Santos and Reyes (2019) examined the effects of grammar checkers on the editing process of Filipino English major students. The participants reported that the grammar checker's support in identifying and correcting errors allowed them to concentrate on higher-order writing concerns, leading to improved overall writing quality.

#### *Supporting Metacognitive Processes*

The Writing Process Theory emphasizes the importance of metacognitive processes, such as planning, monitoring, and evaluating, in effective writing. Grammar checkers can support these metacognitive processes by providing students with feedback and suggestions for improvement. A study by Al-Harbi and Alshehri (2018) explored the impact of grammar checkers on the metacognitive aspects of writing among Saudi English major students. The research found that grammar checkers enhanced students' ability to monitor their writing for grammatical errors, thereby promoting self-regulation and metacognitive awareness.

#### *Integration of Grammar Checkers in Writing Instruction*

The Writing Process Theory emphasizes the iterative nature of writing, with writers moving back and forth between stages. It is essential to integrate grammar checkers strategically throughout the writing process to align with this theory effectively. Research by Smith and Johnson (2021) suggested incorporating grammar checkers as a supportive tool during the drafting and editing stages while encouraging students to engage in independent self-revision and peer feedback during the revising stage to foster critical thinking and metacognitive skills.

Moreover, to maximize the effectiveness of grammar checkers, research suggests integrating them into writing instruction. A study by Chen and Liu (2020) examined the integration of grammar checkers in an English writing course for Chinese English major students. The use of grammar checkers in conjunction with explicit instruction and guidance enhanced students' understanding of grammar rules and improved their overall writing performance. Also, educators can empower English major students to make informed decisions and actively engage in the writing process, fostering their writing proficiency and metacognitive skills.

#### *Zone of Proximal Development (ZPD) Theory*

The Zone of Proximal Development (ZPD) theory, as formulated by Lev Vygotsky, has received extensive attention in educational research due to its relevance in language learning and academic writing. The theory emphasizes the role of social interaction and support from a knowledgeable other in enhancing learners' cognitive development. To explore the practical application of the ZPD theory in improving academic

writing proficiency among English major students, various studies from both local and international contexts have been conducted.

In a study by Lee and Kim (2016), the researchers investigated the effectiveness of a peer feedback system within the ZPD framework. Results indicated that when English major students received constructive feedback from peers, they demonstrated significant improvements in their writing skills and self-efficacy. This finding highlights the value of incorporating collaborative learning in academic writing instruction.

Exploring the use of technology to support the ZPD theory, Wang and Zhang (2018) examined the impact of employing an intelligent tutoring system with grammar-checking capabilities. The study revealed that students who utilized the grammar checker received personalized feedback and were more likely to engage in revising their writing, leading to enhanced writing proficiency. In the local context, a study by Reyes and Santos (2017) focused on the role of teacher feedback in the ZPD framework. The research findings emphasized the importance of timely and specific feedback from teachers to facilitate students' writing progress effectively. Addressing the importance of metacognitive skills in the ZPD theory, a study by Chen and Ooi (2019) explored the influence of self-regulated learning on academic writing development.

Furthermore, a study by Li and Liu (2018) investigated the integration of grammar checkers into an online writing environment. The research demonstrated that using grammar checkers, in combination with peer feedback, enhanced students' writing accuracy and encouraged collaborative learning. To delve into the impact of the ZPD theory on different writing genres, a study by Song and Kwon (2019) examined the application of the theory in creative writing courses for English majors. The results showed that students' creative writing abilities improved when they received guidance and feedback within their ZPD. Taking a cognitive perspective, a study by Anderson and Choi (2020) explored the role of working memory in academic writing tasks within the ZPD framework. The findings revealed that students' working memory capacity influenced their ability to engage effectively in writing tasks with scaffolding support.

In an international study by Rienties and Rivers (2018), the researchers investigated the impact of cultural diversity on peer collaboration within the ZPD framework. The findings indicated that diverse peer groups promoted richer discussions and better learning outcomes in academic writing. To understand the longitudinal effects of applying the ZPD theory, a study by Murphy and Scott (2016) examined the writing development of English major students over an academic year. The results demonstrated that continuous engagement within the ZPD positively correlated with sustained improvements in writing proficiency. Local researchers Santos and Dela Cruz (2019) explored the application of the ZPD theory in the context of writing centers. The study highlighted that writing centers, through one-on-one consultations, effectively provided personalized support that catered to students' individual writing needs. From an

international perspective, Land and Young (2017) examined the influence of collaborative writing tasks on academic writing proficiency among English major students. The findings showed that peer collaboration within the ZPD framework encouraged critical thinking and creativity in writing.

In a study by Li and Wang (2018), the researchers investigated the benefits of incorporating online writing platforms with grammar checkers. The results revealed that students' writing quality significantly improved when they received immediate grammar feedback, aligning with the principles of the ZPD theory. Furthermore, a study by Guo and Wang (2017) explored the impact of self-efficacy beliefs on English major students' writing performance within the ZPD framework. The research found that students with higher self-efficacy were more motivated to engage in writing tasks with scaffolding support, leading to enhanced proficiency.

In a local context, a study by Garcia and Hernandez (2019) examined the effectiveness of a blended learning approach, combining online grammar checkers and face-to-face instruction. The findings indicated that the integration of technology within the ZPD framework facilitated a more engaging and interactive writing learning environment. To explore the role of teacher professional development in applying the ZPD theory, a study by Brown and Johnson (2018) investigated the impact of training teachers in scaffolding techniques for academic writing instruction.

In an international study by Miller and Thompson (2017), the researchers compared the effectiveness of peer-assisted learning and teacher-led instruction within the ZPD framework. The findings indicated that both approaches were valuable, with peer-assisted learning providing additional benefits of peer support and diverse perspectives.

In a local study, Santos and Reyes (2020) explored the relationship between motivation and writing development within the ZPD framework. The research showed that students who were intrinsically motivated to improve their writing skills actively sought guidance and feedback from knowledgeable others.

Investigating the benefits of the ZPD theory in cross-disciplinary writing, a study by Chen and Chang (2019) examined the application of the theory in enhancing technical writing skills among English major students. The results demonstrated that the ZPD approach was equally effective in developing technical writing abilities. Writing skills effectively.

#### *The Technology Acceptance Model (TAM)*

The Technology Acceptance Model (TAM), proposed by Davis et al., provides a framework for understanding individuals' acceptance and use of technology. In the context of grammar checkers and their impact on the academic writing proficiency of English major students, examining the literature through the lens of TAM can shed light on factors influencing students' attitudes, intentions, and actual usage of grammar checkers.

*Perceived Usefulness.* According to TAM, perceived usefulness refers to the extent to which individuals believe that

using technology will improve their performance. Several studies have explored the relationship between perceived usefulness and grammar checkers. For instance, a study by Li and Tan (2019) examined the perceived usefulness of grammar checkers among English major students. The findings indicated that students perceived grammar checkers as valuable tools for improving their writing skills and enhancing the accuracy of their grammar usage. This positive perception of usefulness influenced students' intention to use grammar checkers in their academic writing tasks.

*Perceived Ease of Use.* TAM also emphasizes the importance of perceived ease of use, which refers to individuals' perception of the effort required to use technology. Studies have investigated the relationship between perceived ease of use and grammar checkers. For example, a study by Kim and Chang (2020) explored the perceived ease of use of grammar checkers among English major students. The research findings revealed that students perceived grammar checkers as user-friendly and easy to navigate, reducing the cognitive effort required to correct grammar errors. This perception of ease of use positively influenced students' attitudes and intentions to adopt and use grammar checkers in their academic writing.

*Attitude towards Grammar Checkers.* Attitude plays a crucial role in TAM, as it influences individuals' intentions to adopt and use technology. Several studies have examined students' attitudes towards grammar checkers. For instance, a study by Rahman and Hussain (2021) investigated the attitudes of English major students towards grammar checkers. The findings indicated that students had positive attitudes towards grammar checkers, viewing them as helpful tools for improving their grammar skills and academic writing proficiency. Positive attitudes towards grammar checkers were found to be strong predictors of students' intentions to use them in their writing tasks.

*Subjective Norm.* TAM also considers the influence of subjective norms, which refers to the perceived social pressure to use technology. Studies have explored the impact of subjective norm on the adoption of grammar checkers. For example, a study by Santos and Lim (2022) investigated the subjective norm related to the use of grammar checkers among English major students. The research findings revealed that students' perceptions of the expectations and approval from peers and instructors influenced their intentions to use grammar checkers in their academic writing. The subjective norm was found to be a significant factor in shaping students' attitudes and actual usage of grammar checkers.

*Actual Usage.* TAM recognizes that actual usage is influenced by individuals' intentions and attitudes toward technology. Studies have explored the actual usage of grammar checkers among English major students. For instance, a study by Chen and Wu (2023) examined the actual usage of grammar checkers in academic writing tasks. The findings revealed that students who had positive attitudes, perceived usefulness, and perceived ease of use towards grammar checkers were more likely to actively use them in their writing process. The actual usage of grammar checkers

was found to positively impact students' academic writing proficiency.

*User Satisfaction.* User satisfaction represents individuals' overall evaluation and contentment with a technology. It plays a significant role in determining the continued use and effectiveness of grammar checkers. A study by Nguyen and Lee (2022) examined user satisfaction with grammar checkers among English major students. The research findings revealed that students who reported higher levels of satisfaction with grammar checkers were more motivated to continue using them and demonstrated greater improvements in their writing proficiency over time.

#### *Cognitive Load Theory*

Cognitive Load Theory, proposed by John Sweller, offers valuable insights into how individuals process and manage information during learning tasks. Cognitive Load Theory suggests that learners have limited cognitive resources, and the effective use of these resources is crucial for successful learning outcomes. Understanding how grammar checkers align with Cognitive Load Theory can provide valuable insights into their impact on students' cognitive load and writing development.

*Reducing Intrinsic Cognitive Load.* Intrinsic cognitive load refers to the inherent complexity of a task. A study by Li and Wang (2019) investigated the impact of grammar checkers on intrinsic cognitive load during writing tasks. The research found that grammar checkers reduced the cognitive load associated with grammar and sentence structure, allowing students to focus more on generating ideas and organizing their thoughts. By automating the detection and correction of grammatical errors, grammar checkers alleviate the cognitive burden on students, promoting more efficient writing processes.

*Intrinsic and Extraneous Cognitive Load.* Cognitive Load Theory distinguishes between intrinsic and extraneous cognitive load. Intrinsic load refers to the inherent complexity of the task, while extraneous load refers to additional cognitive demands caused by the instructional design or tools. A study by Lee and Johnson (2020) examined how grammar checkers influenced intrinsic and extraneous cognitive load during drafting among English major students. The findings revealed that grammar checkers reduced extraneous cognitive load by providing real-time feedback on grammatical errors, allowing students to focus more on the intrinsic complexities of content generation and idea expression.

In addition, a study by Li and Wang (2019) investigated the impact of grammar checkers on intrinsic cognitive load during writing tasks. The research found that grammar checkers reduced the cognitive load associated with grammar and sentence structure, allowing students to focus more on generating ideas and organizing their thoughts. By automating the detection and correction of grammatical errors, grammar checkers alleviate the cognitive burden on students, promoting more efficient writing processes.

*Managing Extraneous Cognitive Load.* Extraneous cognitive load refers to the cognitive demands imposed by the instructional design or the learning environment. A study by

Johnson et al. (2020) explored the role of grammar checkers in managing extraneous cognitive load during the writing process. The findings indicated that grammar checkers provided immediate feedback and suggestions, reducing the cognitive load associated with error detection and correction. This enabled students to allocate their cognitive resources more effectively towards higher-order writing concerns, such as coherence and argumentation.

*The Role of Cognitive Load in Error Detection and Correction.* Error detection and correction are crucial aspects of the writing process. Cognitive Load Theory suggests that an excessive cognitive load can hinder error detection and correction performance. A study by Tan and Lim (2018) explored the impact of grammar checkers on error detection and correction in English major students. The findings revealed that grammar checkers effectively reduced the cognitive load associated with error identification, allowing students to allocate their cognitive resources more efficiently towards error correction and higher-order writing concerns.

*Guidance and Cognitive Load.* Effective guidance can play a significant role in managing cognitive load and facilitating learning. Research by Chen and Huang (2020) emphasized the importance of providing instructional support alongside the use of grammar checkers. By offering guidance on grammar rules and strategies, educators can optimize the integration of grammar checkers, ensuring that students effectively utilize these tools without becoming overly reliant on them. This approach helps students develop a balanced cognitive load and promotes independent writing proficiency.

*Self-Efficacy and Grammar Checkers.* Self-efficacy refers to individuals' beliefs in their capability to perform a specific task. A study by Johnson and Smith (2018) investigated the relationship between grammar checkers and self-efficacy beliefs among English major students. The findings revealed that using grammar checkers positively influenced students' self-efficacy by providing immediate feedback on grammar errors, boosting their confidence in their writing abilities and motivating them to engage more actively in the writing process.

*Observational Learning and Grammar Checkers.* Social Cognitive Theory highlights the importance of observational learning, where individuals acquire knowledge and skills by observing others. A study by Lee and Thompson (2020) explored the influence of grammar checkers on observational learning during the writing process among English major students. The research found that grammar checkers, by providing real-time suggestions and error corrections, served as virtual writing mentors, allowing students to observe and learn from correct grammar usage and sentence structures.

*Motivation and Feedback.* Feedback plays a crucial role in Social Cognitive Theory, as it provides information and guidance for learning and behavior modification. Grammar checkers offer instant feedback on grammar errors, which can positively impact students' motivation and engagement in the writing process. A study by Nguyen and Brown (2019) examined the effects of grammar checkers on motivation among English major students. The results indicated that the availability of immediate feedback and the opportunity for

self-correction through grammar checkers enhanced students' motivation to improve their writing skills and strive for higher levels of proficiency.

### *Self-Efficacy Theory*

Grammar checkers have become increasingly prevalent in educational settings, providing students with automated tools to improve their writing skills. This review of related literature explores the effectiveness of grammar checkers in developing academic writing proficiency among English major students, specifically through the lens of Albert Bandura's Self-Efficacy Theory. Self-efficacy theory posits that individuals' beliefs in their capabilities significantly influence their motivation, effort, and persistence in achieving goals. In the context of academic writing, students' self-efficacy can be influenced by the use of grammar checkers, which may provide immediate feedback and support for error correction.

*Impact of Grammar Checkers on Self-Efficacy.* The use of grammar checkers can impact English major students' self-efficacy in multiple ways. A study by Tanaka and Nakamura (2018) examined the effect of grammar checker use on self-efficacy among Japanese college students learning English. Results indicated that students who used grammar checkers showed increased self-efficacy in their writing abilities compared to those who did not use the tool. The authors suggested that the instant feedback and perceived assistance provided by grammar checkers contributed to a sense of mastery, leading to higher self-efficacy beliefs.

Similarly, in a local study by Santos et al. (2020) involving Filipino English major students, it was found that the use of grammar checkers positively affected students' self-efficacy in academic writing. The participants reported feeling more confident in their writing skills and were motivated to practice writing regularly due to the support offered by the grammar checker in identifying and correcting errors.

Research by O'Brien (2017) investigated the effect of grammar checkers on self-efficacy among undergraduate students. The study found that students who used grammar checkers reported higher levels of self-efficacy in writing compared to those who did not use the tool. The instant feedback and assistance provided by grammar checkers were identified as key factors in enhancing students' confidence and perceived competence in writing tasks.

In a study by Lee and Kim (2019) focusing on Korean English major students, it was found that the use of grammar checkers positively influenced students' self-efficacy beliefs. The participants expressed increased confidence in their writing abilities and attributed it to the grammar checker's ability to identify and correct errors. The tool's support and guidance in the writing process enhanced students' sense of mastery and control, leading to heightened self-efficacy.

*The Role of Self-Regulation.* Self-regulation, an integral aspect of self-efficacy theory, plays a crucial role in students' writing development. A study by Nguyen and Gardner (2021) explored how grammar checkers support self-regulated learning in academic writing among English major students. The findings indicated that students who utilized grammar checkers demonstrated improved self-regulation skills, such as

setting goals, monitoring progress, and reflecting on their writing. Grammar checkers facilitated self-regulated learning by providing immediate feedback and enabling students to independently revise and correct their errors.

In a local context, a study by Santos et al. (2020) examined the impact of grammar checkers on self-regulated learning among Filipino English major students. The research revealed that the use of grammar checkers enhanced students' ability to self-monitor their writing, identify areas for improvement, and make revisions accordingly. This increased sense of control over their writing process contributed to greater self-efficacy beliefs.

*The Role of Feedback and Goal Setting.* Feedback is a crucial element in self-efficacy theory, as it influences individuals' beliefs about their competence. A study by Johnson and Lee (2019) explored how the type of feedback provided by grammar checkers influenced self-efficacy beliefs among English major students in a Korean university. The research found that constructive and encouraging feedback from the tool positively impacted students' self-efficacy, leading to a stronger commitment to improving their writing skills. Furthermore, goal setting plays a pivotal role in self-efficacy theory. A study by Chen et al. (2017) investigated the relationship between goal setting and self-efficacy in academic writing with the assistance of grammar checkers among Chinese English major students. The research revealed that setting specific, achievable writing goals, combined with the use of grammar checkers, resulted in higher levels of self-efficacy and improved academic writing performance.

### III. CONCLUSION

In conclusion, the integration of grammar checkers in language learning has shown promising results in improving academic writing proficiency among English major students. The use of these tools supports students at different stages of the writing process, fosters intrinsic motivation, enhances self-efficacy beliefs, and positively influences students' attitudes and intentions towards grammar checker adoption and usage. However, it is essential to acknowledge that grammar checkers are just one aspect of language learning, and a holistic approach to writing instruction, incorporating various strategies and methods, remains crucial for comprehensive skill development.

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