



**ANALYZING THE ACCURACY OF THE SENTENCE STRUCTURE OF GRAMMAR
CHECKER ACROSS AI TOOLS AND STUDENTS' PERCEPTION**

THESIS

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ABSTRACT

Amalia, Diati Nur. 2025. *Analyzing The Accuracy of The Sentence Structure of Grammar Checking Across AI Tools and Students' Perception*. Thesis, English Education Department, Postgraduate Program, Universitas Islam Malang, Advisor: (1) Dr. Dzul Fikri, S.S., M.Pd, (2) Dr. Imam Wahyudi Karimullah, S.S., M.A.

Keywords: Grammar checker, AI tools, sentence structure, QuillBot, Grammarly, ChatGPT, student perception, hortatory exposition, writing accuracy.

This study aims to analyze the accuracy of AI-based grammar checking tools, they are QuillBot, Grammarly, and ChatGPT, in evaluating sentence structures within students' hortatory exposition texts, as well as to explore students' perceptions of using these tools in the writing process. Using a descriptive mixed-methods design, the research involved 36 eleventh-grade students at MA Almaarif Singosari, who were asked to write hortatory exposition texts. These texts were then evaluated by the three grammar checking tools. The resulting grammar scores were statistically analyzed using One Way ANOVA and Post Hoc Tukey tests to determine whether there were significant differences in grammar assessment accuracy among the tools. In addition, qualitative data were collected through semi-structured interviews with three students who obtained the highest scores from each tool group to gain insights into their experiences and perceptions.

The findings revealed significant differences in the grammar scores produced by the three tools. Grammarly generated the lowest average score, indicating a high sensitivity in detecting grammatical errors, while ChatGPT gave the highest scores, suggesting a more lenient error detection process. QuillBot was found to be moderately accurate, detecting grammar issues and offering paraphrasing assistance, but lacking deep contextual understanding. From the interview results, students generally expressed positive perceptions, particularly appreciating the ease of use and flexibility of ChatGPT, the accuracy of Grammarly, and the paraphrasing features of QuillBot. However, some students also noted limitations, such as premium feature restrictions in Grammarly and occasional lack of contextual relevance in QuillBot and ChatGPT feedback.

This study finds that although AI grammar checkers are a useful tool for enhancing writing, there are differences in their accuracy and usability. Teachers and students should use these tools critically and complementarily to enhance writing instruction, especially in argumentative genres like hortatory exposition. The study contributes to the increasing quantity of knowledge on AI-assisted language learning, offering both theoretical and practical implications for writing pedagogy in EFL contexts.

ABSTRACT

Amalia, Diati Nur. 2025. *Analyzing The Accuracy of The Sentence Structure of Grammar Checking Across AI Tools and Students' Perception*. Thesis, English Education Department, Postgraduate Program, Universitas Islam Malang, Advisor: (1) Dr. Dzul Fikri, S.S., M.Pd, (2) Dr. Imam Wahyudi Karimullah, S.S., M.A.

Kata Kunci: Pemeriksa tata bahasa, alat AI, struktur kalimat, QuillBot, Grammarly, ChatGPT, persepsi siswa, eksposisi hortatori, akurasi penulisan.

Studi ini bertujuan untuk menganalisis akurasi alat pemeriksa tata bahasa berbasis AI, yaitu QuillBot, Grammarly, dan ChatGPT, dalam mengevaluasi struktur kalimat dalam teks eksposisi hortatori siswa, serta untuk mengeksplorasi persepsi siswa tentang penggunaan alat-alat ini dalam proses menulis. Menggunakan desain metode campuran deskriptif, penelitian ini melibatkan 36 siswa kelas sebelas di MA Almaarif Singosari, yang diminta untuk menulis teks eksposisi hortatori. Teks-teks ini kemudian dievaluasi oleh tiga alat pemeriksa tata bahasa. Skor tata bahasa yang dihasilkan dianalisis secara statistik menggunakan uji One Way ANOVA dan Post Hoc Tukey untuk menentukan apakah ada perbedaan signifikan dalam akurasi penilaian tata bahasa di antara alat-alat tersebut. Selain itu, data kualitatif dikumpulkan melalui wawancara semi-terstruktur dengan tiga siswa yang memperoleh nilai tertinggi dari setiap kelompok alat untuk mendapatkan wawasan tentang pengalaman dan persepsi mereka.

Temuan tersebut mengungkapkan perbedaan signifikan dalam skor tata bahasa yang dihasilkan oleh ketiga alat tersebut. Grammarly menghasilkan skor rata-rata terendah, menunjukkan kepekaan tinggi dalam mendeteksi kesalahan tata bahasa, sementara ChatGPT memberikan skor tertinggi, yang menunjukkan proses deteksi kesalahan yang lebih longgar. QuillBot ditemukan cukup akurat, mendeteksi masalah tata bahasa dan menawarkan bantuan parafrase, tetapi kurang memiliki pemahaman kontekstual yang mendalam. Dari hasil wawancara, siswa umumnya menyatakan persepsi positif, terutama menghargai kemudahan penggunaan dan fleksibilitas ChatGPT, keakuratan Grammarly, dan fitur parafrase QuillBot. Namun, beberapa siswa juga mencatat keterbatasan, seperti pembatasan fitur premium di Grammarly dan sesekali kurangnya relevansi kontekstual dalam umpan balik QuillBot dan ChatGPT.

Studi ini menemukan bahwa meskipun pemeriksa tata bahasa AI adalah alat yang berguna untuk meningkatkan penulisan, terdapat perbedaan dalam akurasi dan kegunaannya. Guru dan siswa harus menggunakan alat-alat ini secara kritis dan saling melengkapi untuk meningkatkan pengajaran menulis, terutama dalam genre argumentatif seperti eksposisi hortatori. Studi ini berkontribusi pada peningkatan jumlah pengetahuan tentang pembelajaran bahasa berbantuan AI, menawarkan implikasi teoretis dan praktis bagi pedagogi menulis dalam konteks EFL.

CHAPTER 1

INTRODUCTION

This chapter discusses the background of the study, research questions, research objectives, the significance of the study, scope and limitations, and definition of the key terms.

1.1. Background of the Study

In the context of the growth of technology and education, writing has become an essential skill for students at all levels. Good writing needs more than just creative ideas; it also has to be grammatically correct, well-structured, and use the right words. But a lot of students still have trouble writing correctly and accurately, particularly when it comes to schoolwork. As digital technologies have grown quickly, Artificial Intelligence (AI) has become a new way to help students improve their writing. Increasingly, AI-based apps are used to help with grammatical checks, organizing ideas, and improving vocabulary. These apps provide new ways to help people learn that are easier and more effective.

AI is transforming many industries by transforming intelligent processes into robotic machinery (Malik et al., 2024). The field of education has been greatly impacted by the rise of technology, which has resulted in the creation of numerous easily accessible websites and programs that enhance learning (Munawwarah, 2024; Carstens et al., 2021; Mhlongo et al., 2023). People can access and follow foreign languages

more easily because of AI-powered solutions like machine translation services like Quillbot, Google Translate, DeepL, or other language-learning applications. The use of electronic technology in education has greatly improved learning and teaching processes (Munawwarah, 2024). The development of AI translation technology has important educational implications, especially for language proficiency and acquisition. The development of high school students' writing abilities is one area where this influence is most important.

Writing is a vital ability for learning English. Writing becomes even more necessary in academic fields because it is one of the English language skills. (Amin et al., 2023). Good writing abilities help students prepare for their academic and professional futures, in addition to improving their grades (Elfiyanto & Fukazawa, 2022). AI-powered writing help is more popular in today's digitally transformed educational landscape. (Yazid & Dzulfikri, 2024). Proficiency in writing is essential for academic achievement because it demonstrates that a student can organize their thoughts, explain ideas logically, and systematically use language. In an academic environment, good writing skills enhance effective idea sharing, high analytical ability, and knowledge creation, all of which improve critical thinking (Etaat, 2024; Fitria, 2024; Johana Ari Widayanti et al., 2019). However, learning to write is difficult for many high school students, particularly when writing in a second language. As AI translation tools become increasingly available and sophisticated, students may

depend on them to help them with writing assignments. These tasks may include generating vocabulary, recommending sentence patterns, or translating concepts from their mother tongue into the target language. Writing is one of the language skills that technology can help with improving the writing product (Amyatun & Kholis, 2023).

On the other hand, QuillBot, an AI-powered paraphrasing and translation platform, is a newer and more popular product in this field (Syahnaz & Fithriani, 2023; Amyatun & Kholis, 2023). QuillBot is a useful tool for young learners, particularly high school students learning other languages or trying to get better at writing, because of its capacity to rephrase phrases, offer synonyms, and translate material between languages. When it comes to writing instruction, especially for high school students, it is expected that students will understand correct writing techniques (Amyatun & Kholis, 2023).

Although Quillbot, as an AI translation tool, can be convenient, there are significant concerns over how it may affect students' writing skills (Amanda et al., 2023; GÜRBÜZ, 2024). Another application like Grammarly has become important for evaluating and improving written content, along with the development of AI translation tools. Grammarly provides recommendations to improve sentence structure, style, and explanation, as well as immediate grammar and spelling checks. It is a free online grammar checker that has won numerous awards, and it is the most popular tool worldwide and among the best English grammar checkers

(Fitria, 2021a). However, it's crucial to comprehend how these tools work together and affect the growth of writing ability.

Even though artificial intelligence (AI) tools in education are growing quickly, not much is known about the precise effects of AI tools like QuillBot, Grammarly, and ChatGPT simultaneously on high school students' writing skills. Considering the fact that students are increasingly using AI-based translation and grammar checkers, particularly while learning a second language, there is currently little data on how these tools work together and how they affect high school students' writing growth. The majority of current research tends to concentrate on translation tools and grammar checkers independently, rather than comparing the score accuracy and examining the combined effects of those prompts on writing outputs, particularly in high school students.

According to Amyatun's research (2023), the study's goal is to support elementary school students' learning while they create hortatory text using QuillBot AI. The study used Classroom Action Research (CAR), which uses a paradigm that is carried out in two phases, each of which is composed of three parts. Every stage involves preparation, action, observation, and reflection. The results showed that students' writing abilities were significantly enhanced when QuillBot AI was used in the writing class. It was proved by the outcomes of the students' composing test results.

Furthermore, it referred to Amanda's study (2023), which aimed to find out how students felt about using QuillBot as a substitute for writing in English. To find out how QuillBot assists English as a Foreign Language (EFL) learners in writing in English, this study employs a quantitative methodology. The findings demonstrate that students view QuillBot favorably as a tool for enhancing writing and identify several benefits that are highly beneficial to them. Additionally, the study conducted by Syahnaz and Fithriani (2023) It also focuses on investigating students' perceptions of the use of QuillBot in EFL academic writing courses. The results of the data analysis reveal that students show a positive response to the use of QuillBot in academic writing. This study suggests that the use of AI-based technology in language classes will be beneficial in various ways; however, further research is needed to determine the relative importance of each related element.

Moreover, a senior high school is investigated to look at how ChatGPT affects students' writing abilities. This study investigates how ChatGPT helps with concept generation and offers writing objections in context with artificial intelligence's (AI) growing prominence in education. Sixty eleventh graders were split into control and experimental groups using a quantitative experimental design. Both the pre-test and post-test evaluate how well ChatGPT integration works. With a significance value, data analysis using the SPSS t-test showed that students using ChatGPT had significantly improved their writing abilities. According to the results,

ChatGPT improves students' writing abilities, indicating that it has the potential to be a useful tool for language acquisition (Roisah et al., 2024).

The previous research conducted by Younis et al., (2023) Comparing ChatGPT with popular writing assistance such as Grammarly and Quillbot shows that ChatGPT has competitive capabilities in improving writing quality. This study evaluates ChatGPT's performance in various aspects, such as grammar and style correction, plagiarism detection, and overall writing quality enhancement. The results indicate that ChatGPT is effective in supporting writing, particularly in grammar, rephrasing, and writing style, although it still has limitations in detecting plagiarism and managing citations.

Most previous research only on AI-based grammar checker has focused more on general types of texts other than hortatory exposition, or even if they have studied this text, it has not been integrated with AI tools. Moreover, many studies only assess the technical performance of the tools, without relating it to the user perception or the experience of students as EFL writers. This research fills that gap by specifically analyzing the accuracy of grammar checker tools in the context of hortatory exposition texts, while also comparing it with students' perceptions of the accuracy and usefulness of each tool, thereby resulting in a more comprehensive and contextual understanding.

1.2. Research Questions

Regarding the background of the above research, the research questions of this study are stated as follows:

1. How are the level of accuracy of AI tools for assessing students' hortatory exposition texts?
2. What are students' opinions on the use of QuillBot, Grammarly, and ChatGPT for writing hortatory exposition texts?

1.3. Research Objectives

Based on the research questions above, the research objectives are stated as follows:

1. To compare the grammatical assessment findings from QuillBot, Grammarly, and ChatGPT when analyzing students' hortatory exposition writings, and to identify which tool gives the highest and lowest grammar scores.
2. To investigate students' opinions on the use of QuillBot, Grammarly, and ChatGPT as grammar-checking tools when writing hortatory exposition texts.

1.4. Significance of the Study

1.4.1 Theoretical Significance

This research aims to determine how accurate AI-based grammar checkers are in assessing students' sentence structure and how students perceive the use of these tools. Theoretically, this research is important because it can increase our understanding of how technologies like AI work

in assessing language, particularly in terms of sentence structure. Additionally, by incorporating student opinions, this research also helps determine whether these tools truly assist the writing learning process or if they instead cause confusion. The results of this research can be used to enrich the theory about the use of technology in language learning and help develop better learning aids in the future.

1.4.2 Practical Significance

This study is really useful for both teachers and students, especially in the context of learning to write in high school. This study provides useful information about how AI tools such as Quillbot, Grammarly, and ChatGPT for grammar checking can be effectively integrated into teaching methods to support and improve writing skills.

Teacher could modify their classes by integrating AI tools and resolving any possible problems if they were aware of how students use these prompts, such as Quillbot, Grammarly, and ChatGPT, to improve their vocabulary, solve language difficulties, and correct grammatical errors. This information can also help teachers create creative lesson plans and teaching strategies.

This study also suggests how AI tools can assist students in improving their writing skills. For instance, these tools assist in expressing ideas more effectively and clearly, while also making sure that the language, structure, and style are suitable. These tools can help to improve the writing process

and build confidence in writing skills, especially for those writing in English as a second language. Additionally, the findings of this research can inspire the students to participate actively learning and creative problem solving by discussing the challenges of AI tools, asking them to think critically and motivating them to share their views on which AI tools are best for enhancing their writing abilities.

1.5 Scope and Limitations

This study investigates how much the use of AI tools changes and improves the score on students' hortatory exposition texts through an analysis of their grammar findings. This study also examines how students feel about using these tools during the writing process, along with a quantitative analysis of grammar scores. Moreover, this study takes a combination of qualitative and quantitative methods, combining feedback from students and score analysis using SPSS to provide a thorough understanding of how assessments work and how effective these tools are, based on what has been reported. Thirty-six students participated in the study, writing hortatory exposition texts and using the three grammar-checking tools to check their grammar.

The scope of this study is limited to hortatory exposition texts as the genre for analysis; narrative, descriptive, and analytical exposition are not included. Furthermore, QuillBot, Grammarly, and ChatGPT's regular or free access versions become the foundation for the grammar evaluation; they lack any sophisticated or premium capabilities that may improve the

assessment's correctness. Student perceptions were gathered using interview tools, which may contain personal opinions and do not necessarily evaluate long-term writing improvement. Additionally, while this study focuses on comparing the tools themselves with the students' subjective responses to them, it removes linguistic validation of the grammar checker ratings by experts. Lastly, this study might not properly represent a larger or more diverse student population because it is limited to particular classroom settings.

1.6 Definition of Key Terms

1. Accuracy

Accuracy in this study refers to the level of precision of the grammar checker tool in detecting and correcting sentence structure errors in the hortatory exposition texts written by students.

2. Sentence Structure

Sentence structure refers to the arrangement of words and clauses in a sentence to form a grammatically correct meaning, including the proper use of subjects, predicates, objects, and modifiers.

3. Grammar Checking Tools

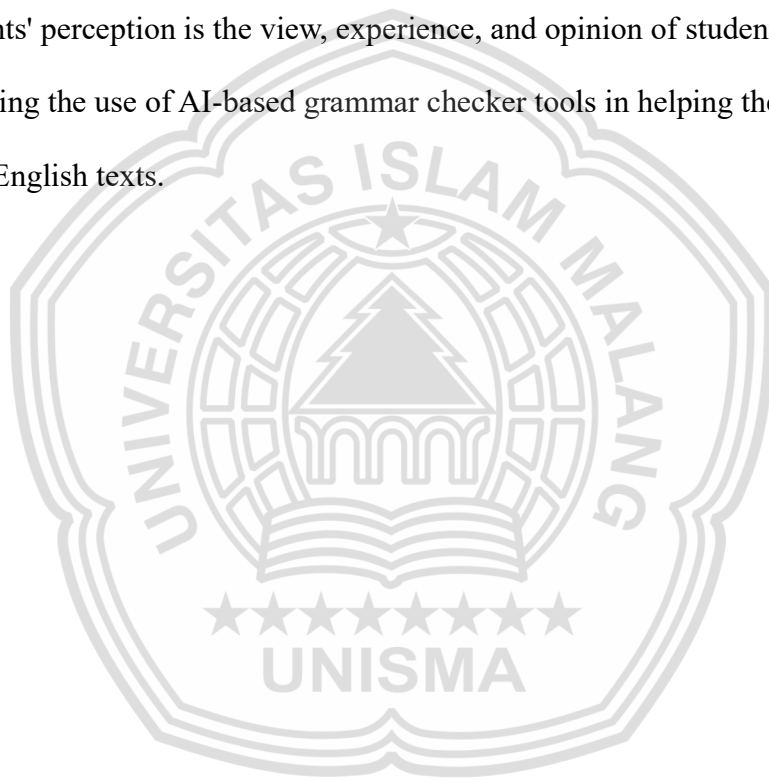
Grammar checking tools are artificial intelligence (AI)-based devices designed to identify and correct errors in writing, particularly in terms of grammar, spelling, and sentence structure. In this study, the tools used were QuillBot, Grammarly, and ChatGPT.

4. Artificial Intelligence (AI)

In the context of this research, AI refers to technology that enables computers to process human language (natural language processing) and provide automated feedback on grammatical errors in student writing.

5. Students' Perception

Students' perception is the view, experience, and opinion of students regarding the use of AI-based grammar checker tools in helping them write English texts.



CHAPTER VI

CONCLUSION

In this part, the researcher discusses the conclusion of their study and the suggestions for others.

6.1 Conclusion

This study concludes that each AI grammar checker tool has its own advantages and disadvantages. Grammarly has proven to be the most accurate in detecting technical errors, Quillbot is quite effective for basic corrections, and ChatGPT is excellent in improving the overall structure of the writing. However, a higher score does not always reflect accuracy in grammar correction. Therefore, the use of AI tools should still be accompanied by teacher guidance so that writing learning is more effective and does not rely entirely on technology.

Meanwhile, the interview results show that the students have a positive perception of three tools. They feel helped because these tools are easy to use, provide quick feedback, and can be used anytime without relying on the teacher. Although one student mentioned the limitations of Grammarly in its free version, in general, Quillbot and ChatGPT were still considered very beneficial. All students stated that they were willing to recommend these tools to their friends because they were considered effective in supporting the learning process, especially in English writing skills.

Overall, the use of AI tools such as ChatGPT, Grammarly, and Quillbot can be the right solution to help students learn to write independently, confidently, and

more accurately, especially in the context of learning of learning English as a foreign language (EFL).

6.2 Suggestion

6.2.1 Suggestion for Teachers

Teachers are advised to start integrating the use of tools like ChatGPT, Quillbot, and Grammarly into writing lessons. These tools can help students understand and correct grammar mistakes, develop writing structure, and enrich vocabulary. However, teachers still need to provide guidance so that students do not become completely dependent on AI and continue to think critically about the suggestions given by the tools.

6.2.2 Suggestion for Students

Students are expected to utilize these AI tools as study companions, not as shortcuts. ChatGPT can be used to explore ideas and structure, Grammarly to check grammar, and Quillbot to paraphrase sentences. Even with the help of technology, students must remain actively engaged in learning and maintain the originality of their writing.

6.2.3 Suggestion for the Next Researcher

Further research is recommended to involve a larger and more diverse sample, as well as to examine the long-term impact of using AI tools on the quality of students' writing. Researchers can also explore other aspects of writing, such as cohesion, argumentation and creativity, not only grammar.

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