



ARTIFICIAL INTELLIGENCE ON THE DEVELOPMENT OF GRAMMAR PROFICIENCY AMONG BSED ENGLISH STUDENTS

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ABSTRACT

This study explores the impact of artificial intelligence (AI) tools on the development of grammar proficiency among Bachelor of Secondary Education (BSEd) English students at Davao Central College. Utilizing a quantitative-correlational research design, the research investigates the relationship between AI tool usage – measured by frequency, purpose, and perceived effectiveness – and grammar proficiency, evaluated through sentence structure, correct usage, grammar rules, and punctuation. Data collected from 200 second- and third-year students revealed a significant moderate positive relationship ($r=0.522$, $p=0.000$) between AI utilization and grammar proficiency, with correct usage showing the strongest correlation. The findings highlight the transformative potential of AI tools like Grammarly, Quillbot, and ChatGPT in enhancing students' linguistic capabilities by providing real-time feedback and iterative improvements. While AI tools positively influenced grammar mastery, gaps remain in punctuation proficiency, underscoring the need for targeted training and optimized AI functionalities. This research contributes to the growing body of literature on AI in education, offering actionable recommendations for educators, institutions, and students to integrate AI effectively into grammar instruction. By fostering independent learning and skill development, AI tools demonstrate their value as supplements to traditional teaching methods, paving the way for future advancements in English language education.

KEYWORDS: Artificial intelligence, grammar proficiency, BSEd English students, quantitative research, AI tools, Grammarly, Quillbot, ChatGPT, language education, independent learning

INTRODUCTION

Problem and its Setting

The era of information technology has revolutionized education, introducing innovative tools and methods to enhance teaching and learning. Despite these advancements, many students continue to struggle with mastering writing skills, particularly in English, which is critical for academic success and professional readiness. Common writing challenges include grammatical errors, lack of coherence, and poor organization, highlighting the need for targeted interventions to improve proficiency. Educators and researcher worldwide are actively exploring modern strategies to enhance student engagement and writing outcomes.

Globally, challenges in English language learning are prevalent. In Libya, historical and political disruptions, such as the removal of English from the curriculum during the 1980s and 1990s, significantly impacted language proficiency (Mohamed, 2014). Even today, Libyan university students report difficulties with academic writing due to a lack of qualified teachers and inadequate teaching resources (Alsied & Ibrahim, 2017). These struggles underline the universal need for accessible tools to support English language learning.

In the Philippines, writing difficulties are similarly pronounced. Studies reveal persistent issues in content, organization,

vocabulary, and grammar among students, with essays often rated as "poor to fair" (Lasaten & Pablo, 2018). Socioeconomic factors, such as low family income and limited parental involvement, further hinder literacy development, as shown in a study from Agusan del Sur, which emphasized the need for stronger home-based support to foster literacy skills (Gomez et al., 2022).

In Toril, Davao City, students face comparable challenges in developing grammar proficiency, often struggling with accuracy and clarity in their written outputs. These issues affect their academic performance and preparedness for future professional demands. While traditional methods of teaching grammar remain prevalent, there is a growing need to adopt innovative approaches that address these persistent gaps and support students in mastering essential language skills. This study seeks to explore strategies that can effectively enhance grammar proficiency, contributing to the improvement of English language education.

Significance of the Study

This study, which examines the influence of artificial intelligence (AI) on the development of grammar proficiency among BSEd English students, is significant in advancing modern educational practices. It emphasizes the potential of AI tools to foster improved grammar skills, leading to enhanced communication



and academic performance. The findings are beneficial for educators seeking innovative strategies to enrich language instruction and for academic institutions aiming to integrate AI-driven methodologies into their curricula. Moreover, it provides insights for students to utilize AI effectively, promoting self-directed learning and improved linguistic competence. This research also serves as a foundation for future studies on the role of AI in language education, highlighting its potential to transform traditional learning approaches.

Statement of the Problem

This study investigates the relationship between the use of artificial intelligence and the development of grammar proficiency among BSEd English students. Specifically, it aims to determine the extent to which students engage with AI tools to improve their grammar and whether their usage correlates with measurable improvements in grammar proficiency. This study addresses the following questions:

1. What is the level of utilization of artificial intelligence among BSEd English students in terms of:
 - 1.1. Frequency of use
 - 1.2. Purpose for use; and
 - 1.3. Perceived effectiveness?
2. What is the level of grammar proficiency of BSEd English students concerning:
 - 2.1. Sentence structure;
 - 2.2. Correct usage;
 - 2.3. Grammar rules; and
 - 2.4. Punctuation?
3. Is there a significant relationship between the level of utilization of artificial intelligence and the level of grammar proficiency among BSEd English students?

Hypothesis

This hypothesis will be analyzed at the 0.05 level of significance:
 Ho: There is no significant relationship between the use of artificial intelligence and the development of grammar proficiency among BSEd English students.

Theoretical Framework

This study is grounded on the Socio-Cognitive Theory of Writing

INDEPENDENT VARIABLE

Utilize "AI tools" as the external support system, focusing on their frequency, purpose, and effectiveness

DEPENDENT VARIABLE

Grammar proficiency, reflecting cognitive skills in sentence structure, grammar rules, and punctuation.

Fig 1. Conceptual Framework of the study

METHODOLOGY

This chapter outlines the research methodology utilized to explore the relationship between artificial intelligence (AI) tools and grammar proficiency among Bachelor of Secondary Education (BSEd) English students. It details the research design, research locale, sampling technique, research instrument, data collection procedure, data analysis, and ethical considerations adopted to

(Flower & Hayes, 1981) and the Constructivist Learning Theory (Bruner, 1966), which together provide a robust foundation for examining the relationship between the utilization of artificial intelligence (AI) tools and grammar proficiency among BSEd English students. The Socio- Cognitive Theory emphasizes the dynamic interaction between cognitive processes— such as planning, composing, and revising—and external resources like AI tools. This aligns with the independent variable, where AI tools are utilized to provide real-time feedback and suggestions, fostering iterative improvements in grammar. Meanwhile, the Constructivist Learning Theory supports the idea that students actively construct knowledge through tools and experiences, with AI serving as scaffolding to guide and enhance their understanding of grammar rules, sentence structure, and punctuation. These theories collectively explain how the independent variable, AI tool utilization (measured by frequency, purpose, and perceived effectiveness), directly influences the dependent variable, grammar proficiency (assessed through sentence structure, correct usage, grammar rules, and punctuation). By using AI tools, students engage in a self-directed and feedback-driven process that mirrors the principles of both theories, reinforcing the idea that innovative technology can support meaningful language learning and skill development.

Conceptual Framework

The conceptual framework of this study illustrates the relationship between the utilization of Artificial Intelligence (AI) tools and the grammar proficiency of Bachelor of Secondary Education (BSEd) English students. The independent variable, the use of AI tools, is measured in terms of frequency, purpose, and perceived effectiveness, emphasizing their role as external scaffolding mechanisms that provide feedback and support for students' learning processes. The dependent variable, grammar proficiency, is assessed through specific indicators such as sentence structure, correct usage, grammar rules, and punctuation accuracy. This framework underscores the interaction between the cognitive and constructive aspects of language learning, positing that the appropriate and consistent use of AI tools facilitates the active development of students' grammar skills, thereby enhancing their overall linguistic competence

ensure a systematic and ethical approach to the study.

Research Design

This study employs a quantitative-correlational research design to investigate the relationship between the level of AI tool utilization and the grammar proficiency of BSEd English students. Specifically, the study evaluates the use of AI tools (Grammarly,



Quillbot, and ChatGPT) in terms of frequency of use, purpose for use, and perceived effectiveness. Grammar proficiency is examined through key aspects such as sentence structure, correct usage, grammar rules, and punctuation. A quantitative-correlational design is appropriate for identifying the extent and direction of relationships between these variables, as it facilitates the collection of measurable and reliable data to address the study's objectives.

Research Locale

The research will be conducted at Davao Central College, a recognized institution known for its programs in teacher education. The study focuses on the BSEd English program, which emphasizes the development of language and teaching skills. Participants will be drawn from English major students enrolled in the program. The college's emphasis on academic rigor and its students' familiarity with digital learning tools provide a relevant context for examining the influence of AI tools on grammar proficiency.

Sampling Technique

The study will employ a purposive sampling method to select participants, ensuring the inclusion of students who meet specific criteria relevant to the study's objectives. The participants will consist of 200 2nd-year and 3rd-year BSEd English students who actively use AI tools for academic purposes, particularly for tasks involving grammar and writing. These year levels are chosen because they have undergone the "Teaching Grammar" subject, equipping them with substantial knowledge of grammar and its application. In contrast, 1st-year students will be excluded as they have limited exposure to grammar instruction, and 4th-year students will be excluded due to their busy schedules, particularly with practicum requirements. Additionally, students who do not use AI tools or are unwilling to participate will also be excluded. According to Etikan et al. (2016), purposive sampling allows researchers to target individuals who can provide the most relevant data for the study. By focusing on this targeted group, the study ensures a robust and aligned sample to meet its objectives effectively.

Research Instrument

A self-developed questionnaire will serve as the primary research instrument. The questionnaire will consist of two sections: one assessing the utilization of AI tools (frequency of use, purpose for use, and perceived effectiveness) and another measuring grammar proficiency (sentence structure, correct usage, grammar rules, and punctuation). The instrument will use a Likert scale for responses to ensure consistency in data collection. To enhance its reliability and validity, the questionnaire will be reviewed by a panel of experts in education and linguistics and pilot-tested with a small group of students before full implementation.

Data Gathering Procedure

The data collection process will commence with securing formal approval from Davao Central College's administration. A letter detailing the study's objectives, target participants, and

methodology will be submitted to the college's academic head. Upon approval, a meeting will be held with faculty members to explain the study's significance and ensure their support in recruiting participants. Participants will be selected based on the inclusion criteria and invited to take part in the study voluntarily. Before administering the questionnaire, the researcher will explain the study's purpose, the participants' rights, and the confidentiality of their responses. Survey questionnaires will then be distributed to the selected participants and collected upon completion. Throughout the process, the researcher will adhere to ethical standards, including obtaining informed consent and safeguarding the privacy of the participants.

Data Analysis

The data collected will be analyzed using statistical tools aligned with the study's objectives. To determine the level of AI tool utilization and grammar proficiency, the mean will be used to calculate average scores for each indicator, providing a comprehensive understanding of participants' responses. To examine the relationship between AI tool utilization and grammar proficiency, the Pearson-r Correlation Coefficient will be employed. This statistical measure evaluates the strength and direction of the relationship between the variables, helping to identify whether the use of AI tools significantly impacts students' grammar proficiency. The analysis will provide insights into patterns and correlations that can inform recommendations for educational practices.

Ethical Considerations

Ethical considerations are central to this study, ensuring the protection of participants' rights and the integrity of the research process. The following principles guide the study:

Social Value. The study aims to provide insights into how AI tools contribute to the development of grammar proficiency among BSEd English students. These findings are expected to benefit educators, students, and stakeholders by informing strategies for integrating AI tools into teaching and learning practices.

Informed Consent. Participants will receive detailed information about the study's objectives, procedures, and significance. Informed consent forms will be provided, outlining participants' rights, including the right to withdraw at any point. Only students who voluntarily agree to participate will be included.

Privacy and Confidentiality. Strict measures will be taken to ensure the confidentiality of participants' data. Personal information will not be disclosed, and all collected data will be securely stored and destroyed upon the study's completion.

Justice. Participants will be selected based on their relevance to the study's objectives, ensuring fairness in the selection process. Their autonomy will be respected, and their safety and anonymity will be prioritized throughout the study.



Transparency. The researcher will maintain transparency by clearly communicating the study's objectives, methodology, and findings with participants and the academic community. The results will be shared to support future research and educational advancements.

Community Involvement. The researcher will ensure that the

study's methods and findings are inclusive and unbiased. Recommendations based on the results will be shared with Davao Central College to help optimize the use of AI tools in enhancing grammar proficiency. Participants' contributions will be acknowledged to highlight the collaborative nature of the research.

RESULTS AND DISCUSSION

Table 1. Level of Utilization of Artificial Intelligence

Independent Variable	Standard Deviation	Mean	Verbal Description
Frequency of Use	0.420	4.243	Often
Purpose of Use	0.478	4.265	Often
Perceived Effectiveness	0.459	4.121	Often
Overall	0.341	4.211	Often

The table indicates that BSEd English students have a high overall utilization of AI tools. The purpose of use scored the highest mean of 4.265, followed by frequency of use (4.243) and perceived

effectiveness (4.121). The overall mean utilization is 4.211, described as high, with a standard deviation of 0.341.

Table 2. Level of Development of Grammar Proficiency

Dependent Variable	Standard Deviation	Mean	Verbal Description
Sentence Structure	0.395	4.352	High
Correct Usage	0.383	4.325	High
Grammar Rule	0.329	4.400	High
Punctuation	0.508	4.262	High
Overall	0.328	4.335	High

The table shows that students demonstrated high proficiency levels across all grammar dimensions. Grammar rule mastery scored the highest mean (4.400), followed by sentence structure (4.352), correct usage (4.325), and punctuation (4.262). The

overall grammar proficiency mean is 4.335, with a standard deviation of 0.328.

Table 3. Test for the Significance of the Relationship between the Utilization of Artificial Intelligence and the Development of Grammar Proficiency

IV	DV	r-value	p-value	Decision on Ho
Frequency of Use	Sentence Structure	0.144	0.043	Reject Ho
	Correct Usage	0.331	0.000	Reject Ho
	Grammar Rule	0.131	0.065	Fail to Reject Ho
	Punctuation	0.065	0.363	Fail to Reject Ho
Purpose of Use	Sentence Structure	0.360	0.000	Reject Ho
	Correct Usage	0.563	0.000	Reject Ho
	Grammar Rule	0.357	0.000	Reject Ho
	Punctuation	0.347	0.000	Reject Ho
Perceived Effectiveness	Sentence Structure	0.442	0.000	Reject Ho
	Correct Usage	0.357	0.000	Reject Ho
	Grammar Rule	0.299	0.000	Reject Ho
	Punctuation	0.390	0.000	Reject Ho
Overall Mean of IV	Sentence Structure	0.425	0.000	Reject Ho
	Correct Usage	0.558	0.000	Reject Ho
	Grammar Rule	0.355	0.000	Reject Ho
	Punctuation	0.364	0.000	Reject Ho
	Overall Mean of DV	0.522	0.000	Reject Ho



The Pearson correlation results show a moderate positive relationship between AI utilization and grammar proficiency, with the overall mean $r=0.522$ and $p=0.000$.

Significant correlations were observed across most dimensions, particularly in the correct usage ($r=0.558$), followed by sentence structure ($r=0.425$), grammar rules ($r=0.355$), and punctuation ($r=0.364$).

DISCUSSION

This chapter presents the summary and conclusion derived from the conduct of the study.

Statistics showed that the high utilization of AI tools by students reflects the importance of integrating these tools into educational settings to enhance writing tasks. This aligns with the study's recognition of persistent writing challenges such as grammatical errors and lack of coherence, which AI tools aim to address (Lasaten & Pablo, 2018). This implies that AI tools are integral to students' academic routines, supporting challenges they encounter in grammar proficiency. The "purpose of use" being the highest-rated dimension suggests that students recognize the specific functionalities of these tools, such as correcting grammar, enhancing vocabulary, and ensuring clarity in writing. However, the slightly lower "perceived effectiveness" highlights potential gaps in student expectations versus the actual outcomes delivered by these tools. This may indicate the need for training or guidance on maximizing the benefits of AI tools, emphasizing strategic use rather than complete reliance.

The findings on grammar proficiency highlight that AI tools assist in reinforcing students' mastery of grammar rules, sentence structure, and usage. As emphasized in the research introduction, these writing challenges are not unique to local contexts but are part of broader global struggles, as seen in the study by Alsied and Ibrahim (2017), who highlighted insufficient teaching resources as a barrier to proficiency. Grammar rule mastery being the highest implies that students effectively apply rules such as sentence patterns and error correction, which are reinforced by AI feedback mechanisms. However, punctuation receiving the lowest score signals an area requiring further improvement. This could stem from the complexity of punctuation rules or insufficient emphasis during tool usage. Addressing these gaps through targeted instruction or enhancing AI capabilities to focus more on punctuation nuances could be beneficial.

The significant relationships between AI tool utilization and grammar proficiency validate the hypothesis that these technologies play a supportive role in enhancing students' linguistic capabilities. This finding aligns with the emphasis on the potential of innovative tools like AI to transform traditional learning methods and address persistent language challenges (Mohamed, 2014; Gomez et al., 2022). These results underscore the need to adopt AI as a supplement to address gaps in grammar proficiency. Moreover, this underscores the role of AI as a valuable supplement to traditional learning methods. However, the moderate strength of these relationships suggests that while

AI tools are helpful, they are not standalone solutions. Factors such as individual effort, prior knowledge, and teaching quality likely play a crucial role in achieving higher proficiency levels. The relatively lower correlation in punctuation reinforces the need to address specific challenges in this area.

The decision on the hypothesis, based on the results, rejects the null hypothesis that there is no significant relationship between the use of artificial intelligence (AI) and the development of grammar proficiency among BSEd English students. The findings revealed significant moderate positive correlations across most dimensions, particularly between AI utilization and correct usage ($r=0.558$, $p=0.000$). This indicates that the utilization of AI tools plays a significant role in enhancing students' grammar proficiency, including sentence structure, grammar rules, correct usage, and punctuation. Thus, the study confirms that AI tools are effective in supporting the development of students' linguistic capabilities, validating their role as a valuable supplement to traditional teaching methods.

CONCLUSION

Based on the findings of the study, the following conclusions are drawn:

This research explored how the use of artificial intelligence (AI) impacts the grammar proficiency of BSEd English students, emphasizing the tools' role in fostering improved linguistic competence. Through quantitative analysis, the study revealed a significant moderate positive relationship between AI utilization and grammar proficiency, confirming the effectiveness of AI tools in addressing challenges such as grammatical errors, sentence structure, and correct usage. These tools have proven instrumental in enhancing students' academic performance by providing real-time feedback and iterative improvements in writing.

Further, the findings demonstrate that students not only benefit from these tools in improving their technical grammar skills but also in fostering independent learning and problem-solving abilities, aligning with modern educational practices. By leveraging AI tools effectively, students enhance their ability to communicate clearly and professionally, preparing them for academic and professional demands. This success highlights the transformative role of AI in equipping students with the necessary skills for navigating an increasingly digital and interconnected world.

RECOMMENDATIONS

Davao Central College Administrator- must implement initiatives that promote the integration of AI tools into the curriculum, ensuring the institution stays at the forefront of innovation in language education. By offering workshops or training programs on AI tool usage, the college can enhance students' grammar proficiency and maintain its reputation as a leader in academic excellence.



Program Head- The Program Head should conduct a comprehensive review of the curriculum to ensure alignment with modern technological advancements and students' needs. This includes integrating AI-driven methodologies into course objectives and outcomes. Regular collaboration with educators, students, and stakeholders should guide curriculum adjustments to maximize the potential of AI tools in fostering grammar proficiency.

Teachers- Educators should adopt innovative instructional strategies that incorporate AI tools into lessons, providing students with hands-on experience and demonstrating the tools' relevance in improving writing skills. Additionally, teachers can integrate current trends and events to make learning more engaging and relatable, fostering both academic and practical competence.

Parents- Parents should encourage their children to utilize AI tools responsibly, emphasizing their role as a supplement rather than a substitute for learning. By understanding the potential of AI in grammar proficiency, parents can actively support their children's educational goals and promote consistent practice outside the classroom.

Students- Students should take initiative in exploring AI tools, applying them to various writing tasks to enhance their grammar proficiency. Actively participating in workshops, discussions, and self-directed activities will enable students to maximize the benefits of these tools while developing independence and critical thinking skills.

Future Researcher- Future studies should examine the long-term effects of AI tools on grammar proficiency, exploring their impact on writing performance over extended periods. Expanding the scope of research to include other areas of language proficiency, such as reading comprehension or vocabulary development, will provide a more holistic understanding of AI's role in language education. Furthermore, studies comparing the effectiveness of different AI tools can guide educators in selecting the most beneficial technologies for integration into the curriculum.

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