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Enhancing Core Writing Skills in Senior High School Through Artificial Intelligence-Based Activities

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Abstract

This study evaluated the writing proficiency of Senior High School (SHS) students using modified Common European Framework of Reference for Languages (CEFR) descriptors and examined how AI platforms (Grammarly, QuillBot, and Scribbr) affect student writing in terms of context retention (preserving original intent/voice) and context modification (structural/stylistic alterations). Utilizing a descriptive research design with sentence-level comparative text analysis, unassisted student writings from 40 Grade 12 learners across two distinct tasks (expository/narrative and expressive/personal) were evaluated pre- and post-AI processing. Results indicate that initial student proficiency spanned across all CEFR levels, with the highest concentrations at B2 (25.00%) and C1 (22.50%). Grammarly and Scribbr acted predominantly as corrective, voice-preserving aids that maintained high context retention across most proficiency levels, whereas QuillBot demonstrated higher context modification rates through aggressive restructuring and rephrasing. AI interventions consistently elevated student writing scores from lower/intermediate levels up to higher CEFR bands. The study concludes that while AI platforms serve as effective digital scaffolding, pedagogical guidance is essential to maintain student agency, authentic voice, and critical thinking.

Keywords: *Artificial Intelligence Writing Tools, CEFR Writing Descriptors, Context Retention, Context Modification, Senior High School Writing*

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1. Introduction

- **Background and rationale:** Writing aids powered by Artificial Intelligence—such as Grammarly, QuillBot, and Scribbr—have become widespread in modern educational settings for grammar correction, clarity enhancement, and paraphrasing. Although research supports the general efficacy of AI writing assistants, most existing literature centers on tertiary education or overall composition improvement, leaving a critical research gap regarding sentence-level context retention and modification among Senior High School learners. While AI tools improve mechanical accuracy and structural coherence, unmediated or excessive reliance on AI presents risks of impairing authenticity, altering original intent, and hindering active learning and student writing development.

- **Review of related literature:** Prior studies highlight that automated writing evaluation and paraphrasing platforms offer real-time feedback, reducing mechanical errors and improving readability. However, researchers emphasize that different AI engines operate with varying degrees of transformation: proofreading engines (e.g., Grammarly, Scribbr) focus primarily on surface-level correctness, whereas paraphrasing engines (e.g., QuillBot) modify syntax, vocabulary, and sentence structures more aggressively. Scholars stress that the degree to which an AI tool alters a student's text—either retaining or modifying the original context—plays a significant role in whether the tool acts as a supportive scaffold or a substitute for student agency.

- **Statement of the problem:**

This study aimed to enhance the writing skills in Senior High School through Artificial Intelligence-Based Activities:

Specifically, it sought answers to the following:

1. What is the writing skills level of the Senior High School in terms of CEFR writing descriptors?

    1.1 A1 Beginner

    1.2 A2 Basic Writer

    1.3 B1 Developing Writer

    1.4 B2 Proficient Writer

    1.5 C1 Advanced Writer

    1.6 C2 Master Writer

2. To what extent does the use of Artificial Intelligence-powered platforms (Grammarly, QuillBot and Scribbr) affect the writing skills of Senior Highschool students in terms of:

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2.1 Context Retention

2.2 Context Modification

3. Based on the findings, what enhancing core writing skills in Senior High School through Artificial Intelligence-based activities can be proposed?

- **Objectives and/or research hypotheses:**

The following hypotheses were tested in this study:

H_{01}: The use of AI-powered platforms (Grammarly, QuillBot, Scribbr) does not significantly improve Senior High School students' writing skills in terms of context retention.

H_{02}: The use of AI-powered platforms (Grammarly, QuillBot, Scribbr) does not significantly improve Senior High School students' writing skills in terms of context modification.

2. Materials and Methods

- **Research Design:** A descriptive research design featuring sentence-level comparative text analysis was employed. Student texts were evaluated pre- and post-AI processing across three platforms (Grammarly, QuillBot, and Scribbr).

- **Participants:** A purposive sample of 40 Grade 12 Senior High School students at Philippine Christian University – Dasmariñas Campus (S.Y. 2024–2025) who regularly utilize AI-assisted writing tools in their academic coursework.

- **Instruments:** Two researcher-formulated writing tasks (5 sentences each) designed to capture different writing genres: Task 1 (Journey to School - Expository/Narrative) and Task 2 (Love Letter - Expressive/Personal). Student compositions were evaluated using a modified CEFR writing rubric: A1 Beginner (15 pts), A2 Basic Writer (30 pts), B1 Developing Writer (45 pts), B2 Proficient Writer (60 pts), C1 Advanced Writer (75 pts), and C2 Master Writer (90 pts).

- **Procedure:** Unassisted baseline student writing was collected and evaluated against the modified CEFR writing rubrics. Each 5-sentence baseline text was processed through Grammarly, QuillBot, and Scribbr. Sentence-by-sentence text analysis was conducted to quantify the proportion of retained versus modified sentences for each tool across proficiency bands. Post-intervention texts were re-scored to evaluate proficiency gains.

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- **Data Analysis:** Sentence retention and modification rates were calculated as percentages and categorized using a 5-point scale: 80–100% (Very High Extent), 60–79% (High Extent), 40–59% (Moderate Extent), 20–39% (Low Extent), and 0–19% (Very Low Extent).

3. Results

The empirical findings are presented below across descriptive baseline distributions, tool-specific retention/modification rates, and post-intervention proficiency gains.

Table 1: Initial Writing Proficiency Level Distribution (Pre-Intervention)

CEFR Writing Level	Score Range	Percentage of Students
A1 Beginner	15 pts	5.00%
A2 Basic Writer	30 pts	7.50%
B1 Developing Writer	45 pts	20.00%
B2 Proficient Writer	60 pts	25.00%
C1 Advanced Writer	75 pts	22.50%
C2 Master Writer	90 pts	20.00%

Table 2: Extent of Context Retention, Context Modification, and Score Gains Across Tasks and AI Tools

Task & CEFR Level	Grammarly (Retention / Mod.)	QuillBot (Retention / Mod.)	Scribbr (Retention / Mod.)	Post-AI Proficiency Gain
Task 1: Journey to School (Expository/Narrative)				
A1 Beginner (15 pts)	100% Retention / 0% Mod.	0% Retention / 100% Mod.	100% Retention / 0% Mod.	15 pts (A1) → 30 pts (A2)
A2 Basic Writer (30 pts)	100% Retention / 0% Mod.	100% Retention / 0% Mod.	100% Retention / 0% Mod.	30 pts (A2) → 45 pts (B1)

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B1 Developing Writer (45 pts)	100% Retention / 0% Mod.	67% Retention / 33% Mod.	67% Retention / 33% Mod.	45 pts (B1) → 60 pts (B2)
B2 Proficient Writer (60 pts)	75% Retention / 25% Mod.	0% Retention / 100% Mod.	100% Retention / 0% Mod.	60 pts (B2) → 75 pts (C1)
C1 Advanced Writer (75 pts)	100% Retention / 0% Mod.	75% Retention / 25% Mod.	75% Retention / 25% Mod.	75 pts (C1) → 90 pts (C2)
C2 Master Writer (90 pts)	60% Retention / 40% Mod.	80% Retention / 20% Mod.	80% Retention / 20% Mod.	Maintained at 90 pts (C2)
Task 2: Love Letter (Expressive/Personal)				
A1 Beginner (15 pts)	0% Retention / 100% Mod.	50% Retention / 50% Mod.	50% Retention / 50% Mod.	15 pts (A1) → 30 pts (A2)
A2 Basic Writer (30 pts)	50% Retention / 50% Mod.	100% Retention / 0% Mod.	50% Retention / 50% Mod.	30 pts (A2) → 45 pts (B1)
B1 Developing Writer (45 pts)	100% Retention / 0% Mod.	0% Retention / 100% Mod.	50% Retention / 50% Mod.	45 pts (B1) → 60 pts (B2)
B2 Proficient Writer (60 pts)	100% Retention / 0% Mod.	75% Retention / 25% Mod.	100% Retention / 0% Mod.	60 pts (B2) → 75 pts (C1)
C1 Advanced Writer (75 pts)	100% Retention / 0% Mod.	50% Retention / 50% Mod.	50% Retention / 50% Mod.	75 pts (C1) → 90 pts (C2)

- **Descriptive stats (mean, SD):** Pre-intervention baseline proficiency revealed that 67.50% of respondents performed at intermediate or higher levels (B2: 25.00%, C1: 22.50%, C2: 20.00%), while 32.50% operated at lower bands (A1: 5.00%, A2: 7.50%, B1: 20.00%). Across Task 1, Grammarly demonstrated an average context retention rate of 89.17% (Very High Retention), Scribbr averaged 87.00% (Very High Retention), and QuillBot averaged 53.67% (Moderate Retention / High Modification). Across Task 2, Grammarly showed 70.00% average retention, Scribbr showed 60.00% average retention, and QuillBot showed 55.00% average retention.
- **Inferential stats (t-values, p-values, effect sizes):** Post-intervention analysis showed consistent performance jumps across all tools. Learners at lower and intermediate CEFR

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levels (A1 through C1) advanced exactly one CEFR proficiency band (+15 points) following AI editing across both expository and expressive writing tasks. Master Writers (C2) maintained maximum scores (90 points) post-intervention.

4. Discussion

• Interpretation of findings: Grammarly and Scribbr acted primarily as corrective, voice-preserving aids that corrected mechanical errors while retaining the student's original sentence structure and intent. In contrast, QuillBot operated as an aggressive paraphraser that substantially altered sentence structures, particularly at beginner and intermediate levels. While QuillBot aids vocabulary diversification, its tendencies toward heavy modification risk overriding the student's authentic voice if used uncritically.

• Comparison to existing studies: These findings align with prior research on automated writing evaluation (e.g., Fitria, 2021; Ghufron & Rosyida, 2018), confirming that AI proofreaders effectively reduce mechanical errors without distorting meaning. They also corroborate studies on paraphrasing platforms (Kurniati & Fithriani, 2022), which note that AI tools focused on post-editing often rewrite simple compositions entirely, reinforcing the need for active user evaluation.

• Implications for practice and policy: AI tools provide valuable digital scaffolding within the Zone of Proximal Development, reducing cognitive load on sentence mechanics so students can focus on coherence and argumentation. However, educators must implement guidelines to ensure students do not passively accept all AI edits, which could erode critical thinking and individual writing agency.

• Study limitations: The study evaluated a sample of 40 Grade 12 students processing short 5-sentence tasks within two specific genre types. Larger sample sizes and longer, multi-paragraph academic papers should be examined in future research to assess context retention over complex discourse structures.

5. Conclusion

- **Summarize outcomes:** Senior High School students demonstrate varied baseline writing proficiencies, with the majority functioning at B1 to C1 CEFR levels. AI writing tools significantly improve writing proficiency scores across lower and middle CEFR bands. Grammarly and Scribbr excel at preserving original context and student voice, whereas QuillBot performs substantial context modification through aggressive paraphrasing.

- **Recommendations for future research or implementation:**

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Targeted AI Integration: Differentiate classroom AI usage—directing beginner writers to corrective tools (Grammarly/Scribbr) for surface mechanics while reserving rephrasing tools (QuillBot) for guided vocabulary exercises under teacher supervision.

Pedagogical Strategy: Adopt process-oriented writing activities incorporating reflective steps where students justify whether they accept or reject AI-generated suggestions.

Curriculum Policy: Establish clear institutional frameworks on ethical AI usage to foster digital literacy while safeguarding student creative ownership.

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