Volume 3 | Issue 1 | Jan - Jun 2024
ISSN: 2984-9969

AI AS A SYSTEM: QUALITY OF QUILLBOT-ASSISTED WRITTEN DISCOURSE OF TEACHER EDUCATION STUDENTS

Mark Joseph V. Tintero
Jessica C. Gaspar
Bryan P. Butial
Marla E. Malazzab
Amie U. Columna
Wendylyn G. Villon
Jovanie G. Bravo
Mark John M. Tamanu, Ph.D
Cagayan State University – Aparri Campus
Maura, Aparri, Cagayan, Philippines

ABTRACT

This study assessed the quality of Instantaneous and QuillBot-assisted written discourse of first-year Teacher Education students and their scores on the criteria dimensions along content, organization, grammar, mechanics, and vocabulary. This study utilized the Descriptive-Comparative research design, which assessed a total of 105 respondents' data. With the analyzed corpora, the findings established that there are significant differences of the essays with the assistance of QuillBot on the overall score. This study proved a significant improvement towards the students' written performance with the assistance of QuillBot. All five dimensions of the rubric show significant improvement from the instantaneous text of the students and after the assistance of QuillBot. Reflecting on the findings, this paper offers two intervention plans for the implementation of the use of QuillBot in writing. With this, it is recommended for students to use QuillBot as a writing intervention tool to improve the written performance of students.

Keywords: *Performance Of Students. Keywords: Instantaneous Text, Quillbot-Assisted Text, Artificial Intelligence, Written Discourse*

INTRODUCTION

The widespread use of technology has had various consequences, including access to a wide range of knowledge. It has also fundamentally changed how people regard technology, specifically AI, and its accessibility is what gives it power in the modern 21st century.

The advancement of Artificial intelligence (AI) technology through the years has eased the path for improved and in many cases holistically new and innovative tools for academic writing. For many, students particularly those who may benefit from human-like sentence completion suggestions and text production, these writing support systems are vital since they help both during and after the writing process. According to Yang (2021), the current trend in Artificial Intelligence is rerouting from technology-based applications, which focus on augmenting human intelligence with machine intelligence. This major artificial intelligence dominates the part of technology that ensures a quality that helps people in their everyday lives. In education, AI is being introduced into the classroom more frequently through a variety of modalities to raise students' achievement. This can maintain student's interest and motivation, which will affect student's scholastic achievement and language literacy.

Moreover, the modern world is steadily advancing toward a complete technological makeover of all facets of life. However, amid the current global technological trends, the evidence of human qualities that AI cannot yet mimic, such as structuring and creativity, the ability to produce fresh insights, or the capability to adopt and constantly evolve. AI has a great potential to speed up the process of realizing and developing the global goals surrounding education by removing difficulties in learning, and upgrading strategies to boost student performance and, as a result, learning objectives as stated by Moreno (2019).

To address the concept of artificial intelligence, as stated above, it must be understood to include any resource or machine that performs human activity. The educational profession is constantly evolving and adapting to new generations and their educational demands. These technologies are produced by humans to automate daily tasks so that more may be done in a shorter amount of time. The capability of a computing system to participate in actions like those carried out by people, such as learning, adapting, summarizing, self-assessment, and utilizing data for complex processing tasks, is what Popenici and Kerr (2017) defined as "machine learning".

Furthermore, the use of AI in education to support tailored and automated feedback and assistance is referred to as Educational Artificial Intelligence (EAI) by Song and Wang (2020). To address the idea of AI as previously described, it must be understood to include any device or computer that does human work. These gadgets were developed by people to automate daily tasks so they could finish more work faster. Artificial intelligence (AI) used in the context of education is known as educational artificial intelligence (EAI).

In education with the aid of AI tools, with just a few words, actions, and points to click, learners can easily find what they're looking for, be it information, data, related studies, sources, and a wide range of citations. The term artificial intelligence was first coined by John McCarthy in 1956 when he held the first academic conference about computer science. However, the studies regarding how machines could work with intelligence through the integration of technology and science began much after that.

According to UNESCO (2022), artificial intelligence (AI) can improve teaching and learning methods, address some of the biggest issues affecting education today, and hasten students' academic development. This study sets itself apart in this way. Even while the main emphasis of this chapter is on how AI technologies are used to assist and improve students academically, this study will look at a few areas and assess how AI can be a tool in students' written discourse and academic compositions. The urge to assess the possible effects of AI tools on students' scholastic performance will be highlighted.

In a study by Zanetti, Iseppi, and Cassese (2015), The usage of "Unnatural Language"—language that has additional meaning resulting from the role the selected notion performs in the context—is another contradiction of AI

programming. When language is utilized incorrectly—that is, simplistically—in databases, it creates false structures that send the wrong message. Human language is really designed with brevity in mind, so the recipient must reorganize ideas and reflect more deeply to make up for the message's briefness. Because of the fundamentally different way that computers operate, not being able to interpret enhanced or subliminal vocabulary can be a severe issue. The Author continues to discuss the dangers of indiscriminately employing human language patterns while offering a cunning viewpoint to lessen those dangers.

In February 2018, a GMA News article reported that English proficiency among college graduates in the Philippines falls below the targeted proficiency level of high school students in Thailand. Furthermore, a study by Hopkins International Partners, the official Philippine representative for the Test of English for International Communication (TOEIC), indicates that Filipinos rank third or fourth among ASEAN countries in English proficiency. The study suggests a declining trend in the Philippines' proficiency while other nations show improvement. This discovery prompts consideration of the potential impact of incorporating and utilizing QuillBot on the trajectory of English proficiency in the Philippines.

Moreover, according to QuillBot Writing Statistics (2022), the Philippines is one of the top users of the tool QuillBot, with a significant portion of users coming from the higher education sector. According to a survey conducted by QuillBot, most of its users are college students. For various reasons, college students are the appropriate target population for our study. First, college students are frequently assigned to write such heavy tasks that need to generate high-quality, plagiarism-free content. As a result, college students are more inclined to employ AI technologies to assist them in writing more efficiently. Moreover, college students are more technologically savvy and are more likely to employ AI tools in their daily lives. This statement suggests that college students are QuillBot's major target audience, and as such, they are the most appropriate target for research of QuillBot as an assisting tool on the written performance of college students. This study aims to analyze the potential effects of QuillBot on the written discourse of students and prove the effectiveness of this AI system in the written performance of student users.

The emergence of AI tools opens the possibility of affecting the field of education – be it the students, educators, and the whole education system. Specifically, this study intends to analyze the possible effects of the AI tool – QuillBot as an assistant on the written

performance of college students.

MATERIALS AND METHODS

Research Design

This research utilized the Descriptive-Comparative Research design in conducting and collecting relevant data for the conduct of findings. Descriptive was used as the study assessed the Instantaneous and QuillBot-assisted discourses along organization, content, grammar, mechanics and vocabulary. A comparative method was used to see the significant difference in the test results between the Instantaneous and QuillBot-assisted discourses.

Locale of the study

The locale of this study is at Cagayan State University - Aparri Campus which is located at Maura, Aparri, Cagayan. The school has a diverse student population, including students from various racial and ethnic backgrounds, students with a range of academic abilities, as well as those who use Al tools and those who do not. The study was focused on the participants in different course Specialization, yet the study was limited to freshmen respondents.

Sampling Technique

One hundred twenty (120) corpora from freshmen students from the College of Teacher Education, who are enrolled at Cagayan State University - Aparri Campus were the target participants and the source of data for this

study. Academic essays of the students from varied specializations served as the corpora used in this study. After assessing the collected articles as data, there were 105 total valid articles for analysis. There were 11(Math), 24 (science), 31 (English), and 39 General Education articles that were utilized in this study for analysis. This study utilized the Stratified Random Sampling method to identify the sampling procedure, which is reflected by the computation of the sample size using the Lynch Formula.

Research Instruments

The researchers transmitted a formal written letter of intent and approval to the Dean of CSU-Aparri College of Teacher Education for data collection. The questionnaire and written discourse guide as research instruments consisted of guidelines, topics, and scoring rubrics in the written discourse guide. These tools incorporate written inquiries.

Data Gathering Procedure

The researchers provided questionnaires with a total of 120 copies, distributed within the College of Teacher Education. Moreover, researchers introduced the study and explained, guided, and assisted respondents in answering questions about the study. After the target respondents answered the questionnaires, the researchers collected and tallied the data for analysis and interpretation. The researchers seek professional assistance in the assessment of the written discourse. Two qualified assessors were engaged in the checking and evaluation of the written discourses instantaneously. On the other hand, the Automatic Writing Evaluation feature of the QuillBot was utilized to check the improved written discourses.

Analysis of the Data/ Statistical treatment

The following statistical tools were utilized to analyze data in this study. Frequency Count, Percentage, means and standard deviations were employed in presenting the results of the two categories of discourse. On the other hand, a comprehensive analytic rubric is used to mark up and get the scores of the respondents on their written discourses.

RESULTS AND DISCUSSION

Quality of the Written Discourse of the Students

Organization

Table 1 shows the distribution of the student's scores on both the Instantaneous and QuillBot-assisted text along organization. From a mean of 11.39 (Satisfactory) of the Instantaneous text to a mean of 12.56 after the QuillBot assistance, the descriptive value is satisfactory. This implies that there is a notable difference in the overall scores of students along organization after the assistance of the QuillBot, proving that there is an improvement of the scores after the assistance of QuillBot in terms of organization. The instantaneous texts assessed with its fair rating proves the consistency of an essay's basic structure: introduction, body, and conclusion. However, for most of the participants, the most difficult part of writing an essay is deciding how to organize information within the body.

Table 1. Quality of the instantaneous and AI-assisted written discourses of the students along organization

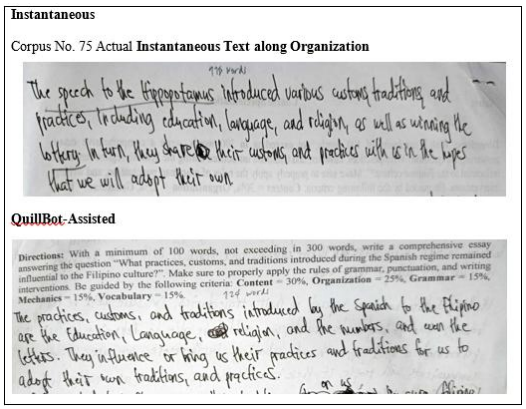
Quality of Organization	Instantaneous		QuillBot-assisted	
	Freq. (n=105)	Percentage	Freq. (n=105)	Percentage
Excellent (21 to 25)	9	8.6	11	10.5
Very satisfactory (16 to 20)	6	5.7	6	5.7
Satisfactory (11 to 15)	37	35.2	52	49.5
Poor (6 to 10)	47	44.8	35	33.3
Needs improvement (0 to 5)	6	5.7	1	1.0
Mean	**11.39 (Satisfactory)**		**12.56 (Satisfactory)**	
S.D.	**4.82**		**4.82**	

Corpus number 75 is the lowest from over 105 corpora with the descriptive mark of poor. For instance, the phrase "The speech to the Hippopotamus introduced various customs, traditions, and practices including

education, language, and religion as well as winning the lottery," lacks coherence and fails to align with the central theme of the essay. In contrast, the QuillBot-assisted text demonstrates a clearer and more organized presentation: "The practices, customs, and traditions introduced by the Spanish to the Filipinos include education, language, religion, numerals, and even alphabetic characters. They have influenced us by bringing their customs and traditions, which we have adopted."

This highlights that effectively composing an essay has consistently presented linguistic challenges, necessitating the ability to organize ideas in a manner that ensures clarity for readers through precise terminology, structured language, and effective paraphrasing (Fitria, 2018). Beyond these technical issues, the limited vocabulary further hampers the text's ability to support and expand the central ideas.

***Plate 1**. Sample of instantaneous written discourse and its corresponding AI-assisted version focusing on its organization*



Content

Table 2 presents the distribution of students' scores on both the Instantaneous text and the QuillBot-assisted text concerning content. The mean score of the Instantaneous text is 11.40, which is categorized as poor. After utilizing QuillBot, the mean score increases to 12.22, although it remains within the poor range. Despite this, the data indicates a discernible improvement in students' overall content scores when assisted by QuillBot. This enhancement in scores corroborates the findings of Y. Liu et al. (2023), which suggest that AI writing tools can significantly improve both the efficiency and quality of writing tasks. These tools, such as QuillBot, provide valuable assistance by suggesting subsequent words or paragraphs, thereby aiding authors in crafting compositions that closely mimic human writing.

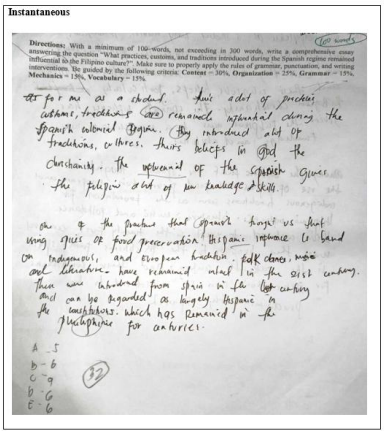
Table 2. Quality of the instantaneous and AI-assisted written discourses of the students along content

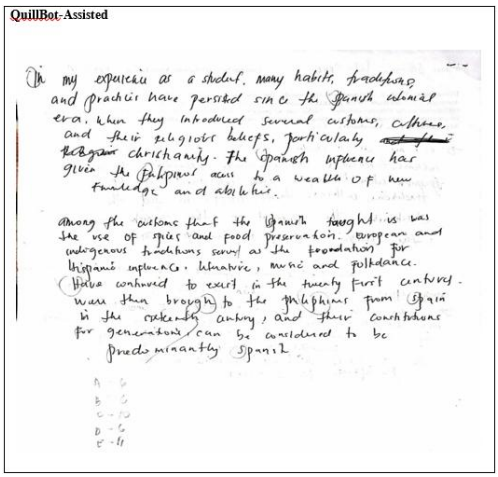
Quality of Content	Instantaneous		QuillBot-assisted	
	Freq. (n=105)	Percentage	Freq. (n=105)	Percentage
Excellent (25 to 30)	-	-	-	-
Very satisfactory (19 to 24)	6	5.7	11	10.5
Satisfactory (13 to 18)	25	23.8	25	23.8
Poor (7 to 12)	62	59.0	64	61.0
Needs improvement (0 to 6)	12	11.4	5	4.8
Mean	**11.40 (Poor)**		**12.22 (Poor)**	
S.D.	**3.91**		**4.14**	

Corpus number 89 is ranked lowest in terms of content quality, as evidenced by its score of 5 out of 30 points. The introductory section fails to engage readers effectively; rather than employing an attention-grabbing quote, question, amusing fact, or hook, it begins with the phrase "As for me." This choice likely diminishes reader interest due to its weak semantic structure. Furthermore, the discourse's topic, overall theme, and subject lack clarity and direction, contributing to a disorganized and incoherent narrative. Although the ideas presented have some relevance, they lack utility and completeness, leaving readers without a clear understanding of the intended message. The content thus suffers from significant deficiencies in both engagement and coherence, underscoring the importance of a structured and compelling introduction, as well as a well-defined thematic focus.

***Plate 2**. Sample of instantaneous written discourse and its corresponding AI-*

assisted version focusing on its content


Instantaneous


QuillBot-Assisted

Grammar

Table 3 illustrates the distribution of students' scores on both the Instantaneous and QuillBot-assisted texts concerning grammar. The mean score for the Instantaneous text is 11.65, which is classified as very satisfactory. After employing QuillBot, this mean score rises to 12.76, achieving an excellent descriptive value. This indicates a significant improvement in the overall grammar scores of students when assisted by QuillBot, demonstrating an enhancement from the Instantaneous to the QuillBot-assisted text in terms of grammatical accuracy.

Hanganu (2015) has highlighted that grammatical errors pose a substantial challenge for students in writing. The findings of this study support QuillBot's (2022) claim that its AI platform offers an efficient grammar-checking feature. By pasting text into QuillBot's editor, users can benefit from the identification and marking of grammatical errors, including punctuation and spelling mistakes, which are highlighted for the user's attention. The "Fix All Errors" option facilitates the swift correction of multiple issues simultaneously, thereby improving writing precision and consistency.

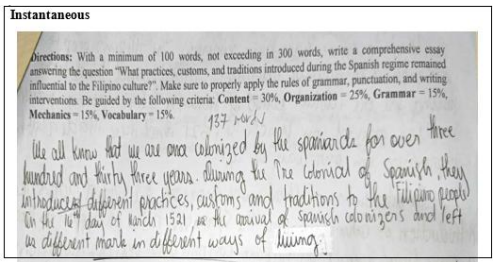
Fahad Hamid (2023) also emphasizes that QuillBot's Grammar Checker effectively detects potential errors, simplifying the editing process with real-time underlining and instant corrections. This functionality not only saves writers significant time but also enhances overall productivity by ensuring greater accuracy and coherence in their writing. The integration of such AI tools in writing processes underscores their potential to significantly elevate the quality of written work through meticulous grammar correction and user-friendly editing features.

Table 3. Quality of the instantaneous andAI-assisted written discourses of the students along grammar

Quality of Grammar	Instantaneous		QuillBot-assisted	
	Freq. (n=105)	Percentage	Freq. (n=105)	Percentage
Excellent (13 to 15)	39	37.1	66	62.9
Very satisfactory (10 to 12)	44	41.9	26	24.8
Satisfactory (7 to 9)	20	19.0	12	11.4
Poor (4 to 6)	1	1.0	1	1.0
Needs improvement (0 to 3)	1	1.0	-	-
Mean	**11.65 (Very satisfactory)**		**12.76 (Excellent)**	
S.D.	**2.68**		**2.51**	

The data collected from the Instantaneous articles of the respondents reveal that there has been a huge markup on the articles' total score in terms of Grammar. A total of 40 out of 105 articles got an excellent mark, with scores ranging from 81-100. This implies that 38.10 percent of the respondents have fluency in the medium (English) that is used in the collection of articles in this study. Corpus number 8 got the highest score in terms of grammar after the assistance of QuillBot. Out of 15 points, this Corpus got a perfect score. After copy-pasting the text into the Grammar Check, it will detect all the potential errors within the content. By putting your cursor on the underlined words, it will show you the errors individually.

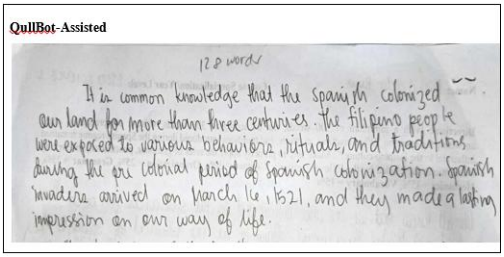
Plate 3. Sample of instantaneous written discourse and its corresponding AI-assisted version focusing on its grammar


Instantaneous

Directions: With a minimum of 100 words, not exceeding in 300 words, write a comprehensive essay answering the question "What practices, customs, and traditions introduced during the Spanish regime remained influential to the Filipino culture?". Make sure to properly apply the rules of grammar, punctuation, and writing interventions. Be guided by the following criteria: **Content** = 30%, **Organization** = 25%, **Grammar** = 15%, **Mechanics** = 15%, **Vocabulary** = 15%.

137 words

We all know that we are once colonized by the spaniards for over three hundred and thirty three years. During the Pre colonial of Spanish, they introduced different practices, customs and traditions to the Filipino people On the 16th day of March 1521, is the arrival of Spanish colonizers and left us different mark in different ways of living.

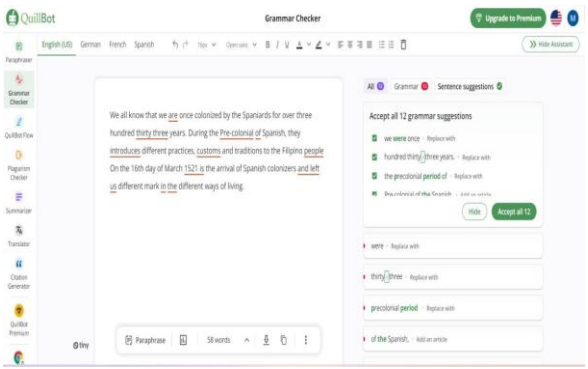

QuillBot-Assisted

128 words

It is common knowledge that the Spanish colonized our land for more than three centuries. The filipino people were exposed to various behaviors, rituals, and traditions during the pre colonial period of Spanish colonization. Spanish invaders arrived on March 16, 1521, and they made a lasting impression on our way of life.

The findings have been supported after the verification of the researchers, validating the instantaneous text by running it on the QuillBot system, which shows relevantly the same results of improvement.

Grammar Checker feature of QuillBot



In conclusion, based on Corpus number 8 and the overall data, QuillBot enhances the grammar of the text. Quillbot makes the grammar more precise and accurate. It makes minimal changes, primarily correcting grammar and providing the text sounds natural.

Mechanics

Table 4 presents the distribution of students' scores on the Instantaneous and QuillBot-assisted texts in terms of mechanics. The mean score for the Instantaneous text is 10.40, classified as very satisfactory. After employing QuillBot, the mean score increases to 11.17, maintaining the very satisfactory classification. This indicates a significant improvement in students' overall mechanics scores when assisted by QuillBot, demonstrating enhanced performance from the Instantaneous text to the QuillBot-assisted text.

This finding supports Marzuki's (2023) assertion that AI-powered writing aids, such as QuillBot, significantly enhance students' writing abilities. These tools utilize advanced algorithms to identify and correct common errors in grammar, punctuation, and syntax, while also providing suggestions to improve the clarity and style of writing. Furthermore, they offer specialized features such as sentence paraphrasing and refinement, which increase the effectiveness of written communication.

A study conducted by Tambunan et al. (2022) revealed that the use of AI in writing led to marked improvements in students' grammar and punctuation skills. AI tools analyze text input by users and provide immediate feedback to enhance grammar, spelling, punctuation, clarity, engagement, and delivery, effectively transforming writing into a comprehensive educational experience. QuillBot excels in paraphrasing, allowing students to avoid plagiarism while maintaining the original intent of their text. Research by Kurniati and Fithriani (2021) demonstrated that QuillBot assists students in developing their paraphrasing

skills, which is an essential competency for academic writing.

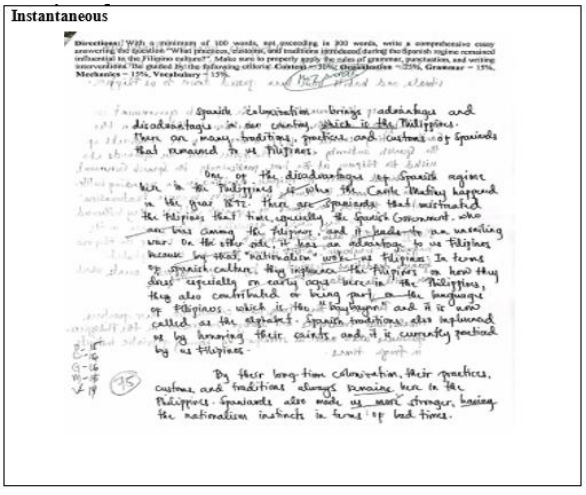
Overall, the data in Table 4 and supporting studies underscore the efficacy of AI- based tools like QuillBot in improving the mechanical aspects of writing. These tools not only correct errors but also facilitate the development of essential writing skills, thereby contributing to better academic performance and more effective communication.

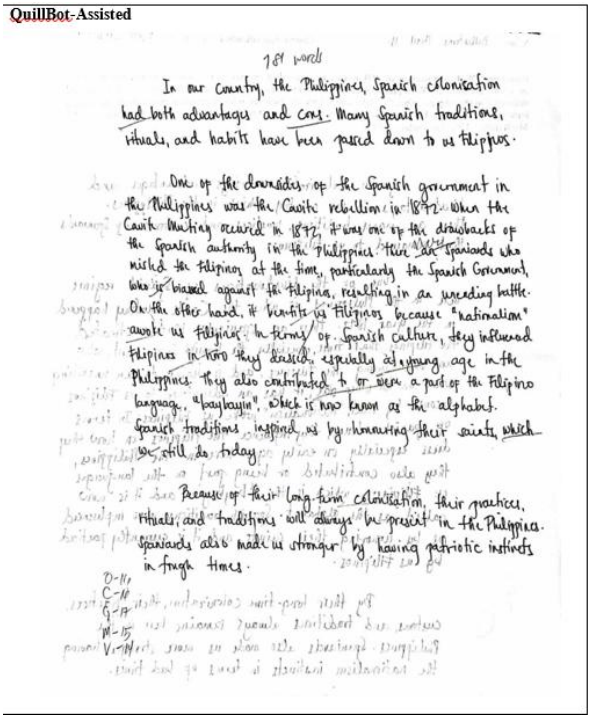
Table 4. Quality of the instantaneous and AI-assisted written discourses of the students along mechanics

Quality of Mechanics	Instantaneous		QuillBot-assisted	
	Freq. (n=105)	Percentage	Freq. (n=105)	Percentage
Excellent (13 to 15)	29	27.6	33	31.4
Very satisfactory (10 to 12)	40	38.1	53	50.5
Satisfactory (7 to 9)	25	23.8	12	11.4
Poor (4 to 6)	10	9.5	6	5.7
Needs improvement (0 to 3)	1	1.0	1	1.0
Mean	**10.40 (Very satisfactory)**		**11.17 (Very satisfactory)**	
S.D.	**2.77**		**2.44**	

Corpus 11, attaining the highest score in terms of mechanics is used to show the quality of the two corpora. It is evident that after the assistance of QuillBot, the text improved the usage of commas, periods, as well as proper capitalization on nouns.

Plate 4. Sample of instantaneous written discourse and its corresponding AI-assisted version focusing on its mechanics





Vocabulary

Table 4 provides an overview of the distribution of students' scores across both the Instantaneous and QuillBot-assisted texts concerning vocabulary proficiency. The mean score for the Instantaneous text stands at 10.44, categorized as very satisfactory. Following the utilization of QuillBot, the mean score increases to 11.80, maintaining the very satisfactory rating. This observed increase suggests a noteworthy enhancement in students' overall vocabulary scores when aided by QuillBot, underscoring an improvement from the Instantaneous text to the QuillBot-assisted text in terms of lexical richness and diversity.

This finding aligns with the assertion put forth by AIContentfy (2023) regarding the efficacy of AI writing tools in facilitating rapid content translation into multiple languages. By broadening the accessibility and reach of written materials, such tools not only enhance linguistic inclusivity but also enrich the vocabulary repertoire available to writers. Furthermore, AI writing aids like QuillBot contribute to text enrichment by providing

appropriate words that bolster the coherence and depth of the presented content.

Overall, the data presented in Table 4 and the endorsement from AIContentfy (2023) affirm the capacity of AI-driven writing tools to elevate vocabulary proficiency in written compositions. By expanding linguistic accessibility and furnishing relevant vocabulary suggestions, these tools play a pivotal role in enhancing the quality and impact of written communication across diverse contexts and audiences.

Table 5. Quality of the instantaneous and AI-assisted written discourses of the students along vocabulary

Quality of Vocabulary	Instantaneous		QuillBot-assisted	
	Freq. (n=105)	Percentage	Freq. (n=105)	Percentage
Excellent (13 to 15)	17	16.2	40	38.1
Very satisfactory (10 to 12)	58	55.2	51	48.6
Satisfactory (7 to 9)	25	23.8	14	13.3
Poor (4 to 6)	5	4.8	-	-
Needs improvement (0 to 3)	-	-	-	-
Mean	**10.44 (Very satisfactory)**		**11.80 (Very satisfactory)**	
S.D.	**2.33**		**2.13**	

Upon scrutinizing the QuillBot-assisted corpora, it becomes evident that there is a marked enhancement across all the produced articles. Among these, Corpus number 74 emerges with the highest overall score, totaling 82 points. This score is distributed across various dimensions of criteria, encompassing content (21 points), organization (22 points), grammar (14 points), mechanics (12 points), and vocabulary (13 points).

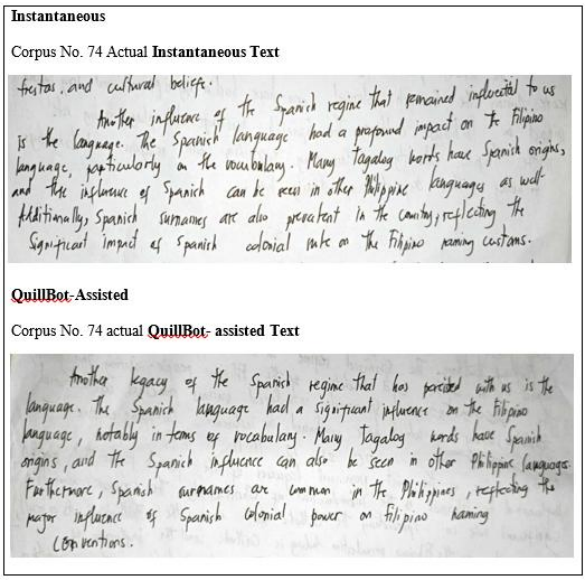
Ranked as excellent, Corpus number 74 distinguishes itself as the highest-performing corpus among a pool of over 105 corpora. Notably, it stands out as the foremost among five excellent corpora, primarily due to its original structure. Despite maintaining the same total word count of 228 words as its original instantaneous text, the QuillBot-assisted corpus undergoes significant reorganization and restructuring under QuillBot's guidance. While retaining the essence of the original content, the revised corpus exhibits notable differences in its structural arrangement.

Furthermore, the QuillBot-assisted corpus demonstrates enhanced clarity, enriched content, and improved precision in organization. It adheres meticulously to accepted conventions of sentence construction, ensuring accuracy and facilitating comprehension. This adherence to linguistic rules enhances the text's accessibility and readability, fostering ease of understanding for readers.

Moreover, the QuillBot-assisted corpus displays a heightened utilization of complex terminology, thereby expanding the lexicon employed within the text. This enriches idea expression and adds nuance to the conveyed message. For instance, the original sentence "Another influence of the Spanish regime that remained influential to us is the language" undergoes refinement in the QuillBot-assisted text to become "Another legacy of the Spanish regime that has persisted with us is the language." Here, the choice of the term "legacy" emphasizes the concept of inheritance or retention from a historical source, offering a more precise and nuanced expression of the idea.

In summary, the analysis of the QuillBot-assisted corpora underscores a significant improvement in content quality, organization, linguistic accuracy, and vocabulary richness. These enhancements not only elevate the overall effectiveness of the written communication but also reflect the potential of AI-driven tools like QuillBot in refining and perfecting textual compositions.

Plate 5. Sample of instantaneous written discourse and its corresponding AI-assisted version focusing on its vocabulary



Overall

Table 6 provides an overview of the distribution of students' scores across both the Instantaneous and QuillBot-assisted texts concerning their overall performance. Initially averaging at 55.28, categorized as satisfactory, for the Instantaneous text, the mean score sees a notable increase to 60.51 following the assistance of QuillBot, reaching a descriptive value of very satisfactory. This observed improvement underscores a significant enhancement in students' overall scores after the intervention of QuillBot, indicating a tangible advancement from the Instantaneous to the QuillBot-assisted text.

This finding aligns with the assertion made by Nurmayanti and Suryadi (2023), highlighting the substantial value of integrating QuillBot into students' English language learning endeavors. By simplifying the process of crafting scientific documents, particularly for those grappling with English proficiency challenges, QuillBot emerges as an accessible and comprehensible tool. Given the often-daunting nature of academic tasks, students can harness these resources to bolster their confidence levels. Rather than commencing from scratch or resorting to direct replication of others' work, students can leverage such aids to proficiently rephrase the content, structure their scientific endeavors with greater coherence, and mitigate the risks of plagiarism. This active involvement in all aspects of the educational journey invariably contributes to their enhanced academic performance.

As a result, students find themselves better equipped to engage in the practice of paraphrasing in English, a skill critical for effective scientific communication. Therefore, it is reasonable to assert that the utilization of QuillBot to augment English scientific writing represents a prudent investment in both temporal and intellectual resources. By facilitating language mastery and fostering academic integrity, QuillBot serves as an asset in empowering students to navigate the intricacies of scientific discourse with confidence and proficiency.

Table 6. The overall quality of the instantaneous and AI-assisted written discourses of the students

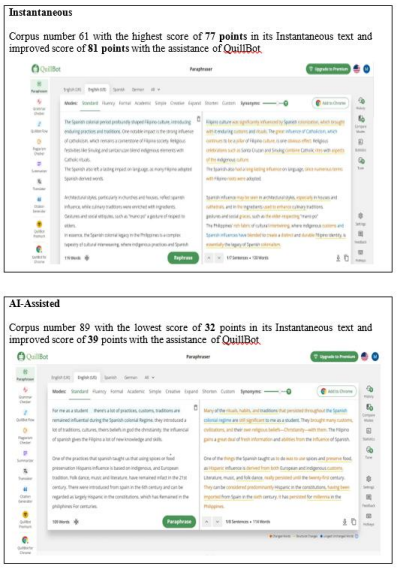
Overall Quality	Instantaneous		QuillBot-assisted	
	Freq. (n=105)	Percentage	Freq. (n=105)	Percentage
Excellent (81 to 100)	-	-	5	4.8
Very satisfactory (61 to 80)	37	35.2	53	50.5
Satisfactory (41 to 60)	51	48.6	39	37.1
Poor (21 to 40)	17	16.2	8	7.6
Needs improvement (0 to 20)	-	-	-	-
Mean	**55.28 (Satisfactory)**		**60.51 (Very satisfactory)**	
S.D.	**12.44**		**11.78**	

To highlight the notable differences between the two categories of texts produced by the respondents. Corpus number 61 having the highest and Corpus number 89 having the lowest score on its Instantaneous produced text will be used in comparison to assess and generalize the difference taken by QuillBot to see the improvements of the texts after the assistance of the AI system.

To simplify, both the highest and the lowest-scored essays improved with the assistance of QuillBot. This proves the effectiveness of this tool in improving the written performance of students. Both corpora have a notable increase in all of the dimensions of the criteria such as organization, content, grammar, mechanics, and vocabulary. To further illustrate the comparative analysis of the two categories of

the written discourse, here are graphs presenting the percentage of the highest and lowest possible descriptive value that the two categories marked.

Plate 6. Sample of instantaneous written discourse and its corresponding AI-assisted version focusing on its overall quality



Differences in the Quality of the Written Discourses of the Students

Table 7 presents the comparison of ratings of the quality of instantaneous and AI- assisted written discourses of the students. Based on the findings, all the five dimensions of the criteria (Organization, Content, Grammar, Mechanics, and Vocabulary), as well as the overall scores of the Instantaneous and QuillBot-assisted were all tested significant as suggested by the computed t-values of 5.938 (p=0.000), 3.876 (p=0.000), 5.760 (p=0.000), 4.143 (p=0.000), 6.692 (p=0.000), and 7.122 (p=0.000) respectively. This implies that there is a significant difference of the test scores of the two corpora studied, proving that there is an improvement on the written discourse of the students after the assistance of QuillBot. These findings also verify the indications of the presented tables along all the criteria. The findings support the claim of Majid (2023) about the common knowledge in utilizing artificial intelligence tools and the expectation of an outstanding outcome with its capacity to identify and rectify, grammar and spelling errors, and organize structure in the use of words.

Table 7. Comparison test results of the quality of instantaneous and AI-assisted written discourses of the students

	Mean	S.D.	t-value	Prob.	Statistical Inference
Organization					
Instantaneous	11.39	4.82	5.938	0.000	**Significant**
QuillBot-assisted	12.56	4.82			
Content					
Instantaneous	11.40	3.91	3.876	0.000	**Significant**
QuillBot-assisted	12.22	4.14			
Grammar					
Instantaneous	11.65	2.68	5.760	0.000	**Significant**
QuillBot-assisted	12.76	2.51			
Mechanics					
Instantaneous	10.40	2.77	4.143	0.000	**Significant**
QuillBot-assisted	11.17	2.44			
Vocabulary					
Instantaneous	10.44	2.33	6.692	0.000	**Significant**
QuillBot-assisted	11.80	2.13			
Overall					
Instantaneous	55.28	12.44	7.122	0.000	**Significant**
QuillBot-assisted	60.51	11.78			

**Tested at 0.05 level of significance*

CONCLUSIONS AND RECOMMENDATIONS

Based on the outcomes gleaned from this paper, it is discerned that the incorporation of QuillBot as a writing assistance tool significantly enhances the overall written proficiency exhibited by students. The assessment of various facets of written discourse, including Organization, Content, Grammar, Mechanics, and Vocabulary, illustrates notable enhancements attributable to the utilization of QuillBot. Particularly noteworthy is the observed substantial improvement in Mechanics, which emerges as the dimension exhibiting the highest rate of enhancement.

These findings underscore a marked disparity between the quality of written texts produced instantaneously and those assisted by QuillBot, affirming a conspicuous augmentation in students' written discourse performance facilitated by the integration of this AI tool.

Tested at a significance level of five percent, evidence emerges supporting the contention

that a substantial distinction exists between the quality of Instantaneous and QuillBot-assisted written discourses among participants, thereby necessitating the rejection of the study's hypothesis.

Considering these discernments, several recommendations are put forth for consideration and implementation:

1. Administrators may consider incorporating Artificial Intelligence as part of the recommended materials to be utilized in their respective offered programs.

2. Teachers may incorporate QuillBot as a writing intervention tool for students with established restrictions, proper guidance and netiquette.

3. Learners may use QuillBot to improve their overall written performance through its various free tools upon the guidance and approval of the teacher.

4. Future Researchers may study other Artificial Intelligence systems to contribute to new knowledge about the possible impacts of these platforms on the written performance of learners and other users.

REFERENCES

B. Berendt, - (2020); Williamson & Eynon, 2020) - Historical threads, missing links, and future directions in AI in education. Retrieved from https://www.researchgate.net/publication/343341735_Historical_threads_missing_links_and_future_directions_in_AI_in_education

CC Ho Chui Chui, - (2022) The QuillBot Grammar Checker: Friend or Foe of ESL Student Writers? Pp. 27. Retrieved from https://ir.uitm.edu.my/id/eprint/66534/1/66534.pdf

EY Kurniati and R. Fithriani, - (2023) - Post-graduate students' perceptions of Quillbot utilization in English academic writing class. Retrieved from https://www.researchgate.net/profile/Rahmah-Fithriani-3/publication/366307939_Post-Graduate_Students'_Perceptions_of_Quillbot_Utilization_in_English_Academic_Writing_Class/links/63b389d2c3c99660ebc43710/Post-Graduate-Students-Perceptions-of-Quillbot- Utilization-in-English-Academic-Writing-Class.pdf.

F Pedro, M Subosa, A Rivas, P Valverde, - (2019) – Artificial intelligence in education: challenges and opportunities for sustainable development. Retrieved from http://repositorio.minedu.gob.pe/handle/20.500.12799/6533

F Pedro, M Subosa, A Rivas, P Valverde (2019) - Artificial intelligence in education: Challenges and opportunities for sustainable development. Retrieved from https://repositorio.minedu.gob.pe/handle/20.500.12799/6533

G Dizon, D Tang, Y Yamamoto (2019) - A case study of using Alexa for out-of-class, self-directed Japanese language learning. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X22000431.

G Dizon, D Tang, Y Yamamoto (2022) - A case study of using Alexa for out-of-class, self-directed Japanese language learning. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X22000431

GJ Hwang, H Xie, BW Wah, D Gašević ,- (2020) - Vision, challenges, roles and research issues of Artificial Intelligence in Education. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X20300011

H Crompton, D Burke, - (2020). Artificial intelligence in higher education: the state of the field. Retrieved from https://www.google.com/search?q=AI+in+education+(AIEd)

H. Nguyen, W. Xiong, & D. Litman, - (2017) - Iterative design and classroom evaluation of automated formative feedback for improving peer feedback localization. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=nguyen%2C+xiong+and+litman+2017+artificial+intelligence&btnG=

HS Rad,- (2023) - Using artificial intelligence to foster students' writing feedback literacy, engagement, and outcome: a case of Wordtune application. Retrieved from https://www.researchgate.net/publication/370471550_Using_artificial_intelligence_to_foster_students'_writing_feedback_literacy_engagement_and_outcome_a_case_of_Wordtune_app lication

I Suryani, R Fithriani, (2024) - ARTIFICIAL INTELLIGENCE TOOLS IN WRITING CLASS: STUDENTS'PREFERENCES AND LECTURERS'PERCEPTIONS. Retrieved from https://www.e-journal.stkipsiliwangi.ac.id/index.php/eltin/article/view/4701

J Kim, H Lee, YH Cho, - (2019) - Learning design to support student-AI collaboration: perspectives of leading teachers for AI in education. Retrieved from https://link.springer.com/article/10.1007/s10639-021-10831-6

J Qiu, K Hua, W Su, J Wu, H Xu, Y Han, C Fu, Z Yin- (2019) - Artificial intelligence: A powerful paradigm for scientific research. Retrieved from https://www.cell.com/article/S2666-6758(21)00104-1/fulltext.

J Qiu, K Hua, W Su, J Wu, H Xu, Y Han, C Fu, Z Yin (2021) - Artificial intelligence: A powerful paradigm for scientific research. Retrieved from https://www.cell.com/article/S2666-6758(21)00104-1/fulltext

J Rudolph (2023) - Book review. Popenici, Stefan (2023). Artificial intelligence and learning futures. Critical narratives of technology and imagination in higher education, retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=and+Rudolph+2023+artificial+intelligence&btnG=

J. Bairagi & M. Munot, - (2019) - What are Automated Paraphrasing Tools and how do we address them? A review of a growing threat to academic integrity. Retrieved from https://edintegrity.biomedcentral.com/articles/10.1007/s40979-022-00109-w

J. Dale, (2020) - QuillBot AI - Best AI Writing Assistant for 2022. Retrieved from https://quillbot.com/guides/ai-writing-assistant

Joiner, - (2018) – Artificial Intelligence. Retrieved from https://www.sciencedirect.com/topics/social-sciences/artificial-intelligence

K Seo, J Tang, I Roll, S Fels, D Yoon, - (2021) - The impact of artificial intelligence on learner– instructor interaction in online learning. Retrieved from https://educationaltechnologyjournal.springeropen.com/articles/10.1186/s41239-021-00292- 9

K Seo, J Tang, I Roll, S Fels, D Yoon, - (2017) - The impact of artificial intelligence on learner– instructor interaction in online learning. Retrieved from https://educationaltechnologyjournal.sp

ringeropen.com/articles/10.1186/s41239-021-00292- 9

KS Chan, N Zary (2019) - Applications and challenges of implementing artificial intelligence in medical education: integrative review. Retrieved from https://mededu.jmir.org/2019/1/e13930

KS Chan, N Zary- (2020) - Applications and challenges of implementing artificial intelligence in medical education: integrative review. Retrieved from https://mededu.jmir.org/2019/1/e13930.

L Chen, Z Chen, Y Zhang, Y Liu, AI Osman (2022) - Artificial intelligence-based solutions for climate change: a review. Retrieved from https://link.springer.com/article/10.1007/s10311- 023-01617-y.

L. Castaneda, - & N. Selwyn, - (2018). Artificial intelligence in education: The three paradigms. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X2100014X

LK Fryer, - (2019) Chatbot learning partners: Connecting learning experiences, interest and competence.Retrieved from https://www.researchgate.net/publication/329749402_Chatbot_learning_partners_Connectin g_learning_experiences_interest_and_competence

M Haenlein, A Kaplan, - (2019) - A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence. Retrieved from https://www.researchgate.net/publication/334539401_A_Brief_History_of_Artificial_Intelli gence_On_the_Past_Present_and_Future_of_Artificial_Intelligence

M Zanetti, G Iseppi, FP Cassese, - (2015) - A “psychopathic” Artificial Intelligence: the possible risks of a deviating AI in Education. Retrieved from

M. Bower, - (2019) Technology-mediated learning theory. Retrieved from https://bera-journals.onlinelibrary.wiley.com/doi/abs/10.1111/bjet.12771

M. Chassignol, A. Khoroshavin, A. Klimova & A. Bilyatdinova, - (2018) - Artificial Intelligence trends in education: a narrative overview, pp. 22. Retrieved from https://www.sciencedirect.com/science/article/pii/S1877050918315382

M. Trivette, - (2020) - What are modes and how do I use them? Retrieved from https://help.quillbot.com/hc/en-us/articles/360058058853-What-are-modes-and-how-do-I- use-them-

Marzuki, U Widiati, D Rusdin (2023) - The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. Retrieved from https://www.tandfonline.com/doi/full/10.1080/2331186X.2023.2236469

N Nazari, MS Shabbir, R Setiawan Zhou (2021) - Application of Artificial Intelligence powered digital writing assistant in higher education: randomized controlled trial. Retrieved from https://www.cell.com/heliyon/pdf/S2405-8440(21)01117-8.pdf

N Nazari, MS Shabbir, R Setiawan, - (2020) - Application of Artificial Intelligence powered digital writing assistant in higher education: randomized controlled trial

N. Nurmayanti, - S. Suryadi, -(2023).The Effectiveness Of Using Quillbot In Improving Writing For Students Of English Education Study Program. Retrieved from https://www.researchgate.net/publication/367365613_The_Effectiveness_Of_Using_Quillbot_In_Improving_Writing_For_Students_Of_English_Education_Study_Program

NMS Kumar, - (2019) - Implementation of Artificial Intelligence in Imparting Education and Evaluating Student Performance – pp. 7. Retrieved from https://www.researchgate.net/profile/Nm-Saravana-Kumar/publication/336462795

O. Engwall, - & J. Lopes, - (2022) Interaction and Collaboration in Robot-Assisted Language Learning for Adults. Retrieved from https://eric.ed.gov/?id=EJ1361573

P. Iftikhar, MV Kujipers, A. Khayyat, A. Iftikhar, - (2020) - [PDF] Artificial intelligence: a new paradigm in obstetrics and gynecology research and clinical practice. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=hasan%2C+noor%2C+rahman%2C+%26+rahman+2020+artificial+intelligence&btnG=.

Q Xia, TKF Chiu, M Lee, IT Sanusi, Y Dai (2019) - A self-determination theory (SDT) design approach for inclusive and diverse artificial intelligence (AI) education

QuillBot Writing Statistics (2022) - QuillBot in 2022: a Summary. Retrieved from https://quillbot.com/blog/quillbot-yearly-summary/

R Van den Berghe, J Verhagen, O Oudgenoeg-Paz, S Van der Ven, P Leseman, - (2019). Social Robots for Language Learning: A Review. Retrieved from https://journals.sagepub.com/doi/10.3102/0034654318821286

RL Amyatun, A Kholis (2020) - Can Artificial Intelligence (AI) like QuillBot AI Assist Students' Writing Skills? Assisting Learning to Write Texts using AI. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=oshima+%26+hogue+2006+a rtificial+intelligence&btnG=.

RR Divekar*, J Drozdal*, S Chabot , -(2022) - Foreign language acquisition via artificial intelligence and extended reality: design and evaluation. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/09588221.2021.1879162

S Mithas, T Kude, J Whitaker (2020) - Artificial intelligence and IT professionals. Retrieved from https://ieeexplore.ieee.org/abstract/document/8509563/.

S Moussalli, W Cardoso, -.(2020), Intelligent personal assistants: can they understand and be understood by accented L2 learners? Retrieved from https://www.researchgate.net/publication/332428915_Intelligent_personal_assistants_can_they_understand_and_be_understood_by_accented_L2_learners

S Sagre, RP Ahlawat (2023) - Artificial intelligence: A game-changer in writing. Retrieved from https://www.theyogicjournal.com/pdf/2023/vol8issue2/PartD/8-2-58-194.pdf.

S Akgun, C Greenhow (2022) - Artificial intelligence in education: Addressing ethical challenges in K-12 settings. Retrieved from https://link.springer.com/article/10.1007/s43681-021- 00096-7

S Ariyanti & Anam – (2021) - Technology-Enhanced Paraphrasing Tool to Improve EFL Students' Writing Achievement and Enjoyment. JELTL: Journal of English Language Teaching. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=ariyanti+and+anam+2021+& btnG=

S Khabib (2021) - Introducing artificial intelligence (AI)-based digital writing assistants for teachers in writing scientific articles. Retrieved from http://journal1.uad.ac.id/index.php/tefl/article/view/249.

S Melián-González, D Gutiérrez-Taño, - (2021). Theoretical model for explaining chatbots usage intentio. Retrieved from https://www.researchgate.net/figure/Theoretical-model-for- explaining-chatbots-usage-intention_fig1_338126211

S Sauro, K Zourou (2019) - What are the digital wilds?. Retrieved from https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/9665994d-0c4f-4bbe- 98a8-be1c16e2bd02/content

S. Bibauw, - (2019) - Discussing with a computer to practice a foreign language: research synthesis and conceptual framework of dialogue-basedCALL. Retrieved from https://www.researchgate.net/publication/331099096_Discussing_with_a_computer_to_practice_a_foreign_language_research_synthesis_and_conceptual_framework_of_dialogue- based_CALL

S. Huang, - & L.Wang, -(2022) - Social robots in a translanguaging pedagogy: A review to identify opportunities for robot-assisted (language) learning. Retrieved from https://www.frontiersin.org/articles/10.3389/frobt.2022.958624/full

SJH Yang, - (2021). Human-centered artificial intelligence in education: Seeing the invisible through the visible. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X21000023

SJH Yang, H Ogata, T Matsui, NS Chen (2021) - Human-centered artificial intelligence in education: Seeing the invisible through the visible. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X21000023

TN Fitria, - (2021) - QuillBot as an online tool: Students' alternative in paraphrasing and rewriting of English writing. Retrieved from https://www.researchgate.net/publication/355995652_QuillBot_as_an_online_tool_Students'_alternative_in_paraphrasing_and_rewriting_of_English_writing

UNESCO, - (2022) – artificial intelligence in education. Retrieved from. https://www.unesco.org/en/digital-education/artificial-intelligence

V González-Calatayud, P Prendes-Espinosa, R Roig-Vila, - (2019). Artificial Intelligence for Student Assessment: A Systematic Review. Retrieved from https://www.mdpi.com/2076-3417/11/12/5467

W Xu, F Ouyang, - (2020) - The application of AI technologies in STEM education: a systematic review from 2011 to 2021. Retrieved from https://stemeducationjournal.springeropen.com/articles/10.1186/s40594-022-00377-5

W. Holmes, - (2019) Artificial intelligence in higher education: the state of the field. Retrieved from.

https://www.google.com/search?q=AI+in+education+(AIEd)

X Wang, Q Liu, H Pang, SC Tan, J Lei, MP Wallace, L Li , - (2020) - What matters in AI-supported learning: A study of human-AI interactions in language learning using cluster analysis and epistemic network analysis. Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S0360131522002743

X Weng, TKF Chiu, - (2013) - Instructional design and learning outcomes of intelligent computer assisted language learning: Systematic review in the field. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X22000728

X Chen, H Xie, D Zou, GJ Hwang (2019) - Application and theory gaps during the rise of artificial intelligence in education. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X20300023.

X. Chen, - (2020) Application and theory gaps during the rise of Artificial Intelligence in Education. Retrieved from https://www.sciencedirect.com/science/article/pii/S2666920X20300023

Y Lu – (2019) - Taylor & Francis- Artificial intelligence: a survey on evolution, models, applications and future trends. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/23270012.2019.1570365.

Y Zou, C Zheng, AM Alzahrani, W Ahmad, A Ahmad (2022) - Evaluation of artificial intelligence methods to estimate the compressive strength of geopolymers. Retrieved from https://www.mdpi.com/2310-2861/8/5/271

Y. Wang, - (2019) - SHIFTing artificial intelligence to be responsible in healthcare: A systematic review. Retrieved from https://www.sciencedirect.com/science/article/pii/S0277953622000855