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Culturally Responsive Teaching Integrated Skill AI Based Learning Applicator to Elevate Learners Critical Thinking and Writing Proficiency

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Abstract

This research project investigates the efficacy of combining culturally sensitive teaching with AI-based learning tools to enhance student's critical thinking and writing abilities. This project explores the potential benefits of integrating culturally responsive teaching with AI technology to enhance learners' cognitive and linguistic skills. This research employs a mixed-methods approach, utilizing quantitative and qualitative data collection approaches. The sample was collected from 15 EFL students at SMA N 10 Medan. The students were chosen to participate in the research based on their diverse cultural backgrounds. Data gathering included administering pre-and post-tests to assess students' critical thinking and writing abilities. The study shows that combining culturally responsive education with AI-based learning tools dramatically enhances students' critical thinking and writing skills. Students enrolled in AI courses experience a stimulating and culturally diverse learning atmosphere that fosters the development of their critical thinking and writing abilities. This research enhances the field of education by emphasizing the capacity of AI technology to promote culturally relevant teaching methods and enhance learners' cognitive and language abilities. The results suggest combining AI-based learning tools with culturally responsive teaching methods can improve students' critical thinking and writing skills. This study highlights the significance of incorporating cultural diversity into instructional design and offers guidance for educators and policymakers to establish inclusive and efficient learning settings.

Keywords: *Artificial Intelligence, Cultural Diversity, Writing Abilities*

Introduction

One of the most crucial techniques for integrating students' cultures, languages, and life experiences with their education is culturally responsive teaching (CRT) (Naz et al., 2023). Including culturally responsive teaching in teacher preparation and its application in learning activities is essential for effective pedagogy in culturally diverse classrooms. Culturally sensitive teaching is another way to give students from different backgrounds an equal opportunity to grow in their knowledge and proficiency. Innovation in teaching, such as integrating culturally responsive teaching strategies, can enhance the standard of instruction and make it easier for students to adjust to changing circumstances (Lai Lee et al., 2023). Teachers sensitive to cultural differences foster a learning environment that encouraging academic achievement by expressing their confidence in their students' abilities through self-reflection (Miller, 2015). Crucially, culturally responsive teaching is a methodology that calls for a specific attitude toward students and education rather than just a collection of instructional techniques (Comstock et al., 2023).

The acquisition of teacher knowledge and expertise is crucial for the successful integration of technology into instructional practices (Zhang & Fang, 2022). Moreover, in the pursuit of incorporating culturally responsive education, integrating technology plays a crucial role in enhancing the effectiveness of teaching and learning. Technology for culturally responsive teaching has been proven to be one of the finest techniques for teaching in multicultural classrooms due to the substantial variances in ethnically varied student populations. Technology is the utilization of theoretical knowledge to accomplish tangible objectives, particularly in a consistent and replicable manner. Technology refers to creating beings, objects, and intangibles by combining actions and thoughts to achieve value. Similarly, technology can develop applications that assist the cognitive processes of humans, commonly referred to as artificial intelligence. Besides that, The scientific study of Artificial Intelligence (AI) dates back more than seven decades (V et al., 2021). Artificial intelligence (AI) is the technological capability that enables machines to operate in a manner comparable to humans. This machine is highly advantageous for improving a wide range of human tasks. The potential of Artificial Intelligence (AI) to revolutionize society is immense. Thus, Artificial Intelligence (AI) represents a computer's or a robot's capacity to

carry out reasoning tasks generally performed by intelligent organisms. With the help of innovative and competitively cost hardware and software features (Vries et al., 2023).

Accordingly, Artificial Intelligence (AI) plays a significant role in the societal cultural shift. Artificial Intelligence (AI) has a dual impact on human cognitive abilities, posing challenges and opportunities. It has become a prominent topic of discussion in society (Neubauer, 2021). Incorporating Artificial Intelligence (AI) into culture elicits a wide range of societal perspectives. Moreover, although the ethical design of artificial intelligence holds excellent societal significance, further research is required to examine society's comprehension of the ethical principles that govern artificial intelligence. This is especially noteworthy, considering that the moral progress of artificial intelligence is centered around prioritizing human interests and improving the overall welfare of society (Kieslich et al., 2022). While some individuals saw it as a chance to enhance indigenous knowledge, others expressed concerns about the potential dilution of traditional authenticity. Society must prioritize the achievement of a harmonious equilibrium between technical advancement and preserving indigenous knowledge in Indonesia. This is because contemporary Artificial Intelligence (AI) is a product of cultural evolution from a progressively sophisticated era, during which this culture was not extensively disseminated among the general population. In addition, an advanced society marked by the extensive utilization of the internet, big data, and artificial intelligence (AI) will progressively emancipate individuals from physical exertion and mental strain, thereby significantly transforming the structure and functioning of society, including the community itself (Hou, 2021). Furthermore, educational and training programs focused on Artificial Intelligence (AI) technology are intricately linked to the local culture, enabling individuals to embrace this technology while preserving the fundamental aspects of traditional values. By adopting a prudent and all-encompassing strategy, we can guarantee that artificial intelligence does not eradicate but rather enhances the diversity of cultural adaptability, particularly in language. Hence, the advancement of society has been greatly facilitated by the considerable contribution of artificial intelligence (AI) technology (Zhao, 2022). Artificial Intelligence (AI) is currently a prominent and widely-discussed topic (Coghill, 2023). However, Artificial Intelligence (AI) can serve as a tool to uphold and improve indigenous knowledge by bridging AI technology with traditional values firmly ingrained in culturally sensitive education.

In addition, Artificial Intelligence (AI) plays a crucial role in enhancing the variety of cultural adjustments. There has been a growing fascination with artificial

intelligence (AI) and its potential educational applications in recent decades (Darayseh, 2023). This enhancement, particularly in the Implementing Artificial Intelligence (AI) in English language teaching sensitive to different cultures is particularly significant, as it dramatically benefits students' development of critical thinking and writing abilities. Furthermore, English serves as a global language for intercommunication among individuals. Moreover, the efficacy of acquiring English as a worldwide language demonstrates that the job of the English as a Foreign Language (EFL) instructor is also undergoing disruption, indicating a departure from linear progression. As an English instructor, it is advisable to incorporate application technology, namely Artificial Intelligence (AI) skills, to facilitate students' comprehension and proficiency in writing English words and sentences. AI-powered programs can autonomously offer grammatical comments on pupils' writing, eliminating the need for teacher assistance. Hence, it is crucial to comprehend the level of preparedness among instructors to instruct disciplines developing successful applications of artificial intelligence. The effectiveness of education could rely on the readiness of teachers (Celik, 2023). This approach allows students to acquire grammar skills by actively applying them in real-life situations autonomously and within a meaningful context. Conversely, it appears that Artificial Intelligence (AI) is assuming the function of educators. Artificial Intelligence (AI) facilitates autonomous learning, demonstrating that students can gain knowledge without requiring direct guidance from teachers. Hence, to successfully incorporate AI into education, it is crucial to possess both technological expertise and teachers' specialized pedagogical understanding of AI (Ayanwale et al., 2022). This is a significant advancement of Artificial Intelligence (AI) in education. Hence, the emergence of generative artificial intelligence (AI) has caused a significant impact globally, particularly in education, leading to considerable conflicts (Lim et al., 2023).

Method

The present research employs quantitative research methods to investigate the level of proficiency in writing skills. Quantitative research is a beneficial method that allows for the investigation of variables in connection to each other (Creswell, 2014). The focus was on effectively measuring students' writing abilities. The research aimed to explore various methods and techniques that can provide accurate assessments of students' writing skills. By delving into this topic, this

method aimed to contribute to the field of education by enhancing the evaluation process and ensuring a comprehensive understanding of students' writing capabilities. Quantitative methods provide a valuable means to examine and evaluate hypotheses by leveraging established theories. In addition, this particular method focuses on assessing the impact of a specific action and subsequently conducting experiments to test the formulated hypothesis. In order to apply the findings of this research, researchers have employed a quantitative method that enables them to effectively test the outcomes of work carried out using artificial intelligence (AI).

In addition to this, researchers also utilize qualitative research methods to delve into and comprehend the significance attributed to social and humanitarian issues by individuals or groups. In a study conducted by Creswell (2012), researchers examined the process and benefits of implementing artificial intelligence (AI) as well as the obstacles encountered by English as a Foreign Language (EFL) students. In order to shed light on this topic, a group of researchers has undertaken a study that involves conducting interviews with a number of English as a Foreign Language (EFL) students. These interviews aim to explore the various aspects of using Artificial Intelligence (AI) technology in the development of writing skills. The researchers are particularly interested in understanding the process involved, as well as the potential benefits and obstacles associated with incorporating AI technology into the realm of writing. By gathering insights directly from EFL students, this study aims to provide valuable insights into the practical implications of utilizing AI technology in the context of writing instruction.

The research sample comprised of students in the eleventh grade, ranging in age from 14 to 17 years, selected by a simple random sampling method Simple random sampling is a commonly used sampling method in scientific research (Tajik and Golzar, 2022). In order to conduct this sampling, the researcher will choose a group comprised of students in the 11th grade. Simple random sampling is the preferred method since it ensures Simple random sampling is the preferable method because it ensures representativeness, minimizes bias, enables generalization, promotes statistical inference, and is straightforward to use. Grade 11 EFL learners continue to struggle with comprehending effective strategies for improving their English writing skills. Their writing proficiency remains rudimentary as they just concentrate on specific words or language. In addition, English as a Foreign Language (EFL) learners encounter challenges when it comes to word formation in sentence construction, applying grammatical sentence structures, and may also struggle with self-assurance. Thus, it is crucial to recruit skilled writers to improve their expertise and aptitude in English composition.

This study instrument was implemented through an experimental approach known as a one-group pre-test and post-test Design. A pre-test and post-test Design will be administered before and after English writing practice using a recognized artificial intelligence (AI) application. The single-group pretest-posttest Design is a research methodology that assesses the impact of an intervention or treatment on a single group of participants. This approach entails the measurement of the dependent variable both before and after the intervention, enabling researchers to evaluate any alterations that transpire. Conducted this exam to ascertain any alterations in their English writing proficiency.

This study has two distinct phases. During the initial phase, researchers instructed participants to enhance their writing proficiency with precision and efficacy, excluding using artificial intelligence (AI) technology. Members must actively participate in a pre-test and post-test group utilizing artificial intelligence (AI) during the second level. By harnessing the power of artificial intelligence (AI) technology, students will acquire a deep understanding of their aptitudes and potential through scores generated by AI. Nevertheless, participants must adhere to three sequential procedures in a single pre-test and post-test group. Before commencing the instructional procedure, a preliminary assessment is administered to evaluate their proficiency in speaking fluidly, employing an extensive vocabulary, and demonstrating comprehensive writing abilities. Next, the intervention is executed. This encompasses a range of activities, such as engaging in interactive writing exercises, practicing the composition of words or sentences to refine grammar, and participating in feedback sessions. Finally, the researcher will employ a post-test to evaluate individual aptitude in English writing abilities. The identical assessment criteria employed in the initial examination were utilized to gauge any enhancement in their competency in writing skills. The success of the research will be determined by the writing proficiency rating categories outlined by Glass (2005).

Score	Aspects					
	Grammar	**Ideas and Content**	**Structure**	**Vocabulary**	**Sentence**	**Convention**
1	Grammar mistakes are	Scattered, lacking inspiration,	The beginning could be	There is no sense of use of	The text lacks proper	The text is challenging to read,

	common, but a native speaker familiar with non-native speakers can still understand the speaker.	vague elements, lengthy, and lacking depth. The details provided need to be more consistent, clear, and significant.	more precise. Lack of structure and order. Disorganized structure and lack of specifics. Unsuitable conclusion. Lacks the use of transitions.	punctuation marks and sentences. Only simple sentences and fragments. All sentences have the same beginning. Transitions are almost non-existent.	punctuation and sentence structure. Keep it short and sweet with simple sentences and fragments. Every sentence starts the same way. There needs to be more transitions in the text.	comprehend, and interpret due to numerous spelling mistakes. There needs to be more punctuation in the text. I am using capital letters excessively. There are numerous grammar and usage that could be improved. The text is so messy that readers need help deciphering it.
2	Typically able to handle basic constructions accurately but needs more	Several pieces of writing are redundant and consist of disconnected thoughts.	Your introduction needs improvement. The structure of paragraphs may only	There are numerous fragments and run-on sentences in the text. Stick to using primary and more	The writing has many fragments and run-ons. Only use simple and compound	Spelling mistakes occur frequently. There are numerous punctuation errors. Several

	confidence in grammar control.	Provide fewer specific details and more general informatio n. Anticipatin g and vague informatio n.	sometimes be suitable, like using indents. It is a more illogical association. The conclusion needs more impact. Transitions need to be used correctly.	complex sentences. There are minor differences in the opening of the sentence. More appropriate transitions need to be used.	sentences. There are slight variations at the beginning of the sentence. Little use of appropriat e transitions .	things could be improved in capitalizatio n. There are frequent errors in grammar and usage. Unlawful writing can leave readers feeling disoriented and overwhelme d.
3	Grammar control is excellent. Capable of communica ting fluently in the language to engage in a wide range of formal and informal discussions on various	It is essential to stay focused and establish a coherent theme or message. Some specifics are straightfor ward, while others remain	It is a compelling introductio n that needs a powerful impact. Most of the paragraph is accurate, but there may be one or two parts that need to be more suitable. Make sure	There may be two fragments and a run-on sentence. It can be beneficial to incorporate a mix of sentence structures. There are a few different ways to start a sentence. Some	There may be two sentence fragments and a run- on sentence. It can be beneficial to incorporat e a mix of sentence structures. Starting sentences	Some spelling words need to be corrected in the text. Typically, the punctuation is accurate. Proper capitalizatio n is typically maintained. The grammar

	practical, social, and professional subjects.	vague. Some details provide predictions, while others are more broad. There may being that do not align well.	to incorporate logical connections. End your piece with a firm conclusion. Some transitions still need to be appropriate.	individuals utilize appropriate transitions in their writing.	with different words can add variety. Some individuals utilize appropriate transitions in their writing.	and usage are typically accurate. The text is quite readable, and the document appears neat.
4	Capable of utilizing language accurately across all levels typically required for professional purposes. Grammar mistakes are uncommon.	An idea that is concise, well-defined, and relevant. Provide precise and detailed information. They are engaging information to reinforce the concept. All components work seamlessly together.	The introduction captivates the reader's attention. Every paragraph follows a consistent structure. Many concepts are connected logically. I am concluding effectively. Ensure you use the proper transitions.	There might be a fragment and a run-on sentence. Typically, there are differences in the types of sentences used. Sentences often start in different ways. Ensure you incorporate suitable transitions in your writing.	There might be a fragment and a run-on sentence. Typically, there are differences in sentence structures. Many sentences start in different ways. Ensure you use the proper transitions in your writing.	The craftsmanship is often accurate. Punctuation is typically correct. Capitalization is typically exact. The grammar and usage are proper. Overall, it is clear and neat.

| 5 | Equivalent to that of a proficient native speaker. | A coherent, well-defined, and relevant concept. Provide precise and detailed examples to bolster the concept. Abundant, intriguing, and unique features to bolster the concept. All components are interconnected and work well together. | The introduction is lucid and engaging. Organize paragraphs with a clear topic sentence, consistent supporting details, and a meaningful ending sentence. Coherent and efficient order. Utilize transitions that are regular and suitable. | Compose every text using complete sentences without any run-on sentences. I consistently utilize different language structures (complicated, compound, and simple). Employ a diverse range of introductory sentences that are coherent, intentional, and imaginative. Employ regular, appropriate, and sophisticated transitions between phrases. | Compose every text using complete sentences without any run-on sentences. I consistently utilize sentence structures such as complicated, compound, and straightforward. Employ a diverse range of introductory sentences that are coherent, intentional, and imaginative. Utilise consistent, suitable, | Ensure accurate spelling, even for challenging words. The punctuation is precise, innovative, and directs the reader. Thorough comprehension and consistent implementation of grammar rules, capitalization, and use are accurate and enhance clarity and style. Everything is clear and neat. |

					and sophisticated transitions between phrases.	

This research is centered around the analysis of two research issues. Quantitative analysis was used to acquire the data. This study employs descriptive statistics to examine data from English as a Foreign Language (EFL) learners to enhance or comprehend students' writing abilities. Descriptive statistics refer to statistical methods that utilize data from a particular group to elucidate or make inferences about that specific group. Descriptive statistics provides a concise and precise summary of the fundamental characteristics of a dataset. Data visualization entails the systematic arrangement and effective data communication to facilitate comprehension and analysis. The primary objective of descriptive statistics is to condense and outline intricate data by summarizing key attributes, such as central tendency (mean, median, mode), variability (range, standard deviation), and distribution.

On the other hand, Data Exploration aids researchers and analysts in investigating characteristics. Data collection refers to gathering information, while data organization involves purposefully arranging and organizing the collected data. Typical techniques include employing tables, charts, graphs, and summaries to present facts lucidly. Central Tendency consists of the computation of metrics representing a dataset's center, such as the mean, median, and mode. Variability is a measure of the dispersion or spread of data, indicating the extent to which individual observations differ from the central Tendency. Frequency Distribution involves generating a statistical representation that illustrates the frequency at which each value or range of values occurs within the dataset. Next, data presentation is crucial for efficiently conveying information. Comparison enables the assessment of similarities and differences among distinct groups or sets of data. Descriptive statistics is the initial stage in analyzing data, offering a brief and significant dataset summary. These statistics serve as the basis for additional analysis and assist in understanding data patterns and trends. In addition, researchers require a data collection tool known as SPSS. IBM SPSS is utilized for quantitative analysis to ascertain statistical measures such as mean, median, standard deviation, etc. This study employs the Campbell and Stanley (1963) model to analyze the data. According to Campbell and Stanley, quasi-experiments aim to

attain a similar degree of accuracy as actual experiments while acknowledging the limitations imposed by real-world circumstances.

Results

The Improvement of Writing Skills Using AI (Artificial Intelligence)

Enhancing Skills in Writing English with the help of AI (Artificial Intelligence), a total of 15 participants have agreed to participate in both the pre-test and post-test to enhance their English writing abilities. The participants were eleventh-grad the eleventh-grade students of SMA N 10 Medan were part of the study. After conducting a sample t-test, it was found that the pre-test and post-test average scores indicated an improvement in the participants' application of various writing skills.

Table 1. Paired Samples Test

	Paired Differences				t	Sig. (2-tailed)
	Mean	Std. Deviation	95% Confidence Interval of the Difference			
			Lower	Upper		
Pair 1 Pretest Grammar Posttest Grammar	-1.26	.593	-1.595	-.937	-8.264	.000
Pair 2 Pretest Idea and Content Posttest Idea and Content	-1.13	.351	-1.328	-.938	-12.475	.000
Pair 3 Pretest Structure Posttest Structure	-1.06	.258	-1.209	-.923	-16.000	.000
Pair 4 Pretest Vocabulary Posttest Vocabulary	-1.13	.351	-1.328	-.938	-12.475	.000
Pair 5 Pretest Sentence Posttest Sentence	.133	1.45	-673	.940	.354	.728
Pair 6 Pretest Convention Posttest Convention	-1.13	.351	-1.328	-.938	-12.475	.000

As shown in Table 1, the mean of grammar score in writing is increased. From the pre-test to the post-test (M= -1.26667, SD= .59362). The increase was significant (p <.000) with a 95% Confidence Interval (CI) ranging from -1.59540 to -.93793. Similarly, the mean vocabulary score is increased. From the pre-test to the post-test (M= -1.13333, SD= .35187). The increase was significant (p <.000) with a 95% Confidence Interval (CI) ranging from -1.32819 to-.93848. In terms of comprehension score, it was increased significantly from pre-test to the post-test (M= -1.06667, SD= .25820). The increased was significant (p <.000) with a 95% Confidence Interval (CI) ranging from -1.20965 to -.92368. Moreover, there was a significant difference in fluency between the pre-test to the post-test (M= -1.13333, SD= .35187). The increase was significant (p <.000) with a 95% Confidence Interval (CI) ranging from -1.32819 to -.93848. In terms of pronunciation score, it was significantly increased from the pre-test to the post-test (M= .13333, SD= 1.45733). The increased was significant (p <.728) with a 95% Confidence Interval (CI) ranging from -67371 to .94038. Finally, the mean of task score is increased. From pre-test to the post-test (M= -1.13333, SD= .35187). The score is significantly increased p <.000 with a 95% Confidence Interval (CI) ranging from -1.32819 to -.93848. Ultimately, the average scores for the various writing skills significantly increased from the original scores. The most significant improvements were observed in the grammar, structure, vocabulary, and sentence scores. The findings indicate that AI can significantly enhance students' writing abilities.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Grammar	15	1.00	4.00	2.9333	.96115
Posttest Grammar	15	3.00	5.00	4.2000	.77460
Pretest Idea and Content	15	2.00	4.00	3.3333	.72375
Posttest Idea and Content	15	3.00	5.00	4.4667	.63994
Pretest Structure	15	2.00	4.00	3.0000	.53452
Posttest Structure	15	3.00	5.00	4.0667	.59362
Pretest Vocabulary	15	1.00	4.00	3.2667	.88372
Posttest Vocabulary	15	2.00	5.00	4.4000	.91026
Pretest Sentence	15	1.00	4.00	2.8667	1.12546
Posttest Sentence	15	2.00	5.00	2.7333	1.03280
Pretest Convention	15	1.00	4.00	2.9333	1.16292
Posttest Convention	15	2.00	5.00	4.0667	1.09978
Valid N (listwise)	15				

Based on the descriptive statistics as shown in Table 2, the minimum and maximum of Grammar score in writing is increased. From pre-test (Min= 1.00, Max= 4.00) to post-test (Min= 3.00, Max= 5.00). The minimum and maximum Ideas and Content score was significantly increased. From pre –test (Min= 2.00, Max= 4.00) to post-test (Min= 3.00, Max= 5.00). Similarly, the minimum and maximum Structure score is increased. From pre-test (Min= 2.00, Max= 4.00) to post-test (Min= 3.00, Max= 5,00). The minimum and maximum score of the Vocabulary test is increased. From the pre-test (Min= 1.00, Max= 4.00) to the post-test (Min= 2.00, Max= 5.00). Furthermore, the minimum and maximum score of the Sentence test is increased significantly. From the pre-test (Min= 1.00, Max= 4.00) to the post-test (Min= 2.00, Max= 5.00). Lastly, the minimum and maximum task score is increased of the Convention. From the pre-test (Min= 1.00, Max= 4.00) to the post-test (Min= 2.00, Max= 5.00). The findings indicate significant advancements resulting from integrating AI as a learning tool for enhancing English writing abilities. Students can utilize English writing skills by incorporating AI (Artificial Intelligence).

Discussion

Before delving into the substance of writing skills, writing is one of the abilities that must be learned in language acquisition. From these fundamental talents, this study is in line with (Bui et al., 2023) revealed that writing is conceptualized as utilizing the writer's knowledge and skills to create written text. Writing skills encompass the aptitude to convey ideas through written communication in diverse formats effectively. Proficiency in writing rules, style guides, and formatting for different contexts is a crucial aspect of writing proficiency. Moreover, writing skills that can discern which situations necessitate distinct writing styles and effectively establish the appropriate tone of a document are valuable writing proficiencies. Furthermore, writing skills are crucial since they enable individuals to communicate without physical interaction. Additionally, writing is a complex undertaking that involves multiple elements and is a crucial proficiency for students learning English as a Foreign Language (EFL) (Alharthi, 2021). Not only that, critical thinking is essential for developing writing skills. Engaging in critical thinking while writing entails meticulously evaluating a topic or paragraph to ascertain its alignment with the overarching objective of the writing. Most of the EFL Students perceived that writing skills has the role to give insights, specifically in descriptive text. It is evident from the data that 13 out of 15 student participants showed notable improvements in grammar, Ideas and Content, structure, vocabulary, sentences, and conventions scores. In addition, 2 out of 15 students received lower grades in the grammar and structure components. It is clear from the evaluation findings shared by Glass (2005) that each of these elements is rated from 1 (Lowest) to 5 (Highest). The score achieved by students typically ranges from 3 to 5.

Moreover, students' writing abilities improve significantly due to their critical thinking skills. This was demonstrated when researchers carried out a study. During the pre-test session, EFL students showed the ability to think critically. Where, Critical thinking, as stated by Aristotle in his Nicomachean Ethics, involves the use of "WH questions" such as "what, when, where, how, who, and why" (Zandvakili et al., 2019). Moreover, critical thinking is acknowledged as an essential skill in the 21st century that empowers individuals to analyze and develop judgments using the information at their disposal (Reilly et al., 2022). Furthermore, imparting critical thinking skills aims to cultivate persons with the autonomy to engage in critical analysis (Wang & Seepho, 2017). Hence, it is imperative to develop the capacity for critical thinking in young brains from their primary education years (Khalid et al., 2021). Moreover, students have successfully utilized the teaching provided by the instructor to enhance their understanding and

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application of cultural learning and tools in artificial intelligence, as evidenced by their assessment results. According to one study, Acquiring knowledge of these attributes can assist educators in refining their teaching methods by allowing them to amplify their positive qualities or those highly esteemed by their students while also devising strategies to address attributes that are undervalued or considered unsuitable for a specific teaching environment (Al-Mahrooqi et al., 2015). Moreover, individual teachers need more cross-cultural awareness and exhibit low confidence in accommodating cultural variety when they enter the classroom. Furthermore, the teacher as an individual. The education subsystem should adapt to cultural and local knowledge, technological advancements, and artistic influences in the surrounding environment to foster curiosity, which is essential for effective learning (Derlina et al., 2020). Consequently, instructing a diverse group of students necessitates educators to possess cultural responsiveness in their instructional abilities, known as Culturally Responsive Teaching Self-Efficacy (CRTSE) (Mahali & Sevigny, 2021). Furthermore, teacher behavior should encompass cultural education and character development. Teacher competence includes skilled educators' cognitive and behavioral attributes, such as their pedagogical reasoning, knowledge structure, beliefs, and teaching performance (Li & Zou, 2021).

When learning in Artificial Intelligence, the instructor begins by providing an overview of the subject, only to find that some students are already familiar with a basic understanding of the topic. So, based on that, Artificial intelligence (AI) is an expansive field of computer science focused on developing intelligent machines that can carry out activities typically requiring human intelligence. Intelligent machines refer to Artificial Intelligence (AI), a tool that facilitates human learning. Hence, the primary challenge in Artificial Intelligence (AI) lies in constructing a machine capable of emulating human cognition and behavior to successfully do one or more designated tasks, thereby attaining a certain degree of intelligence (Hajipour et al., 2023). Due to recent advancements, Artificial Intelligence (AI) has become a significant factor in transforming educational approaches, especially in language instruction. The rapid rise of AI in education indicates a move towards more adaptable and personalized learning environments, enhancing language learning and teaching methods to cater to the unique requirements of each learner and educator (Malik et al., 2023). In addition to its capacity for mimicking natural human languages and assisting with many activities, Artificial Intelligence (AI) has

emerged as a crucial component in contemporary society, profoundly transforming numerous domains, including education (Alqahtani et al., 2023). Furthermore, following the students' comprehension of AI, the researchers evaluated the session known as the post-test to compare the enhancement in students' English writing skills with the results from the pre-test in previous research. Following the post-test assessment, it was discovered that artificial intelligence significantly enhanced the students' writing, making it more polished and structured. In addition, students' perspectives on artificial intelligence are seen as highly beneficial in enhancing critical thinking in writing abilities. Research indicates that, This involves emulating human thought processes, thinking like humans, and potentially exceeding human powers (Angin, 2020).

Conclusion

This study intends to evaluate the efficacy of utilizing AI-based educational tools with a culturally sensitive approach to enhance students' critical thinking and writing abilities. The author employed quantitative and qualitative approaches focused on students, explicitly utilizing pre-test and post-test assessments with an AI-based learning application incorporating a culturally responsive approach. Data was gathered through assessments of critical thinking and writing skills before and after the intervention. The study findings indicate that employing AI-based educational tools with a culturally sensitive method can greatly enhance students' critical thinking and writing abilities. This study significantly advances creative learning methods tailored to meet students' cultural requirements. There are constraints in this research. In this research, the researcher faced a challenge with time constraints. This is due to the research being completed in just two weeks.

This study demonstrates that AI is perceived as a convenient and efficient tool for enhancing English writing abilities. Future study endeavours could be improved by utilizing a more extensive sample size for these trials. This work may provide significant insights and viewpoints for EFL students interested in using AI for educational objectives. Students from many disciplines are advised to utilize AI as an auxiliary tool in their academic endeavours.

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