

## The Role of Generative AI in Automating English Writing Assessment: Benefits and Challenges

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### ABSTRACT

The integration of generative Artificial Intelligence (AI) in English writing assessment has gained considerable attention for its potential to enhance the efficiency and accuracy of evaluations. However, while AI tools like Grammarly and GPT-based platforms have been employed for basic writing assessments, their effectiveness in evaluating more complex writing aspects remains underexplored. This study aims to fill this gap by examining the role of generative AI in automating English writing assessment, focusing on its benefits, challenges, and implications for both students and educators. The research design is a mixed-methods approach, incorporating both quantitative and qualitative data through surveys and semi-structured interviews. The study involved 100 students and 10 educators from the Faculty of Sharia at UIN Raden Intan Lampung, who had experience using AI-based writing tools. Data was collected through structured surveys and in-depth interviews, as well as by comparing AI-generated writing assessments with human grading. The findings revealed that while AI tools are highly effective in evaluating grammar and structure, they struggle to assess higher-order writing skills, such as content coherence and critical thinking. Both students and educators acknowledged the time-saving benefits of AI tools, but also highlighted the limitations of AI in understanding nuanced writing aspects. The study implies that AI tools can complement traditional assessment methods but should not fully replace human judgment, especially in complex writing tasks

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### Introduction

Generative Artificial Intelligence (AI) has rapidly gained significant attention across various fields due to its ability to generate content, perform tasks, and solve complex problems that were once solely dependent on human expertise (Kohnke, 2024). Generative AI refers to AI models designed to create new content, such as text, images, and even music, based on existing data. Unlike traditional AI that often focuses on classification or regression tasks, generative models like GPT (Generative Pre-trained Transformer) have revolutionized fields ranging from natural language processing

(NLP) to creative industries (Ono & Morita, 2024). The applications of generative AI in education have been especially promising, particularly in the field of English Language Teaching (ELT). By automating and personalizing learning experiences, generative AI can assist in various teaching activities, including content generation, student assessment, and even personalized feedback, allowing for more scalable and adaptive learning environments (Oktarin et al., 2024). Within the realm of English language education, AI tools are becoming increasingly useful in aiding students' writing development by providing immediate and accurate feedback, which is critical for language acquisition (Mandasari et al., 2025).

The automation of assessment in education is not a new concept. The use of technology for assessment purposes has been evolving since the late 20th century, with the advent of computer-assisted testing and e-learning platforms (Hopfenbeck, 2023). Historically, assessment has been a labor-intensive process, especially in writing-based tasks, where instructors must manually grade essays and provide feedback (Hastomo et al., 2025). With the introduction of automated systems, however, the process has become more efficient. Automated essay scoring systems (AES), for instance, have been used for decades to evaluate students' writing skills (Nikolic et al., 2024). These systems are designed to evaluate various components of writing, such as grammar, structure, and coherence. However, while automated assessment offers significant advantages, including speed and scalability, it has also faced criticisms for its lack of human understanding, particularly when dealing with complex language tasks like creative writing or the subtleties of tone and style (Rudolph et al., 2023). As a result, despite the potential benefits, fully replacing human assessors with automated systems remains a contentious issue in education (Papadakis et al., 2023).

Generative AI has recently been applied in English writing assessment to address the limitations of traditional automated systems. Previous studies have explored the use of AI in grading and providing feedback on written texts. For example, platforms such as Grammarly and ProWritingAid use AI algorithms to detect grammar errors, spelling mistakes, and style issues, offering instant feedback that can help learners improve their writing (Waziana et al., 2024). Additionally, more advanced models like GPT have been utilized for essay evaluation, generating detailed feedback on structure, coherence, and content organization. These tools provide educators with powerful resources for quickly assessing students' writing, enabling them to focus on providing more personalized, in-depth feedback (Lavidas et al., 2024). However, there are concerns regarding the accuracy and reliability of AI-based assessment tools, particularly when dealing with essays that require more subjective evaluation, such as creative or argumentative writing (Wulyani et al., 2024). Despite these concerns, the integration of generative AI in the assessment process holds promise for the future of ELT, allowing for both more efficient and comprehensive evaluations of student writing.

One of the primary benefits of generative AI in writing assessment is its ability to offer immediate and personalized feedback. Traditional methods of assessment often involve a delay in receiving feedback, which can hinder students' progress and motivation (Hastomo et al., 2024). In contrast, AI tools provide instant feedback on various aspects of writing, such as grammar, punctuation, and structure, allowing

students to correct mistakes in real time. This immediate feedback can help students to better internalize language rules and improve their writing skills. Furthermore, generative AI systems can tailor feedback to individual learning needs, offering personalized suggestions based on the specific strengths and weaknesses of each student (Aravantinos et al., 2024). This level of personalization is difficult to achieve with human grading, particularly in large classes where teachers are responsible for assessing numerous students (Wang et al., 2024). Moreover, AI's capacity to evaluate writing at scale makes it an attractive solution for institutions with large numbers of students, allowing for more equitable assessment across diverse learner populations (Shin & Choi, 2017).

Despite its promising potential, the application of generative AI in writing assessment comes with several challenges. One of the primary concerns is the ability of AI systems to understand the nuanced context and intricacies of language, particularly in written texts that require a high level of creativity or subjective judgment. While AI can identify grammatical errors and assess structural elements, it may struggle to evaluate the more abstract aspects of writing, such as tone, style, or argumentation (Nurchurifiani et al., 2025). For instance, an AI system might misinterpret an author's intended meaning or fail to recognize the subtle use of irony or humor. Additionally, complex grammatical errors that are not easily codified into rules may be overlooked by AI models, resulting in incomplete or inaccurate assessments (Zulianti et al., 2024). Furthermore, ethical concerns surrounding data privacy and the collection of students' written work for AI analysis must be addressed (Uğraş et al., 2024). There are risks related to the storage and use of student data, particularly in light of increasing concerns about privacy and data security in educational settings (Algaraady & Mahyoob, 2023). Therefore, while generative AI presents valuable opportunities, its implementation in writing assessment must be carefully considered and balanced with the need for human oversight.

This research aims to explore the role of generative AI in automating English writing assessment, focusing on the benefits and challenges associated with its implementation. Specifically, the study will address the following research questions: How can generative AI be utilized in the automation of English writing assessment? What are the benefits of using generative AI for this purpose? What challenges arise in the application of generative AI in writing assessment? By addressing these questions, this research will provide insights into the potential of AI to transform the landscape of English language education, particularly in the context of assessment. Furthermore, it will contribute to ongoing discussions about the ethical, practical, and pedagogical implications of AI in education, offering guidance for educators and institutions considering the integration of AI tools in their teaching practices.

## Method

### *Research Design*

This research adopts a mixed-methods approach, combining both qualitative and quantitative methods (Creswell, 2012) to provide a comprehensive understanding of the role of generative AI in automating English writing assessment. The mixed-methods

design allows for triangulation, ensuring that both numerical data and qualitative insights are used to address the research questions effectively. The study utilizes a case study approach, where the application of generative AI tools in English writing assessment will be analyzed in specific educational settings, focusing on both the benefits and challenges associated with these technologies. This approach is particularly appropriate for exploring new technological implementations in educational environments, as it provides in-depth insights into real-world usage and outcomes.

### ***Population and Sample***

The target population for this study consists of students from the Faculty of Sharia at UIN Raden Intan Lampung who are currently engaged in writing activities and have experience with or are using AI-powered writing assessment tools. The sample will be drawn from two primary groups: (1) students from the Faculty of Sharia who are actively involved in writing tasks and utilizing AI tools such as Grammarly, ProWritingAid, or GPT-powered platforms for their writing assignments, and (2) faculty members who integrate AI-based assessment tools in their teaching, specifically in the context of assessing students' written assignments. A total of 100 students and 10 educators will be selected through purposive sampling to ensure that participants have direct experience with AI in the assessment of written work. This purposive sampling technique is employed to select individuals who can provide rich, relevant insights into the use of generative AI for writing assessment in the Faculty of Sharia at UIN Raden Intan Lampung, ensuring that the sample is both meaningful and representative (Creswell, 2014).

### ***Research Instruments and Procedure***

This study will utilize a combination of both surveys and semi-structured interviews to collect data from students and teachers, aiming to gather both quantitative and qualitative data to provide a comprehensive understanding of the research topic. The surveys will be structured to assess students' perceptions of generative AI tools used for writing assessment (Marzuki et al., 2023; Wulyani et al., 2024). Specifically, the survey will include Likert-scale questions focused on the perceived usefulness, effectiveness, and ease of use of the AI tools. It will also explore the feedback students received and its impact on their writing improvement, as well as their overall experience with the automation of writing assessment. For educators, a similar survey will be conducted to understand their perspectives on the integration of AI tools in the classroom, focusing on the accuracy and reliability of AI-generated feedback. In addition to surveys, semi-structured interviews will be conducted with a subset of 10 students and 5 teachers to gain more in-depth insights into their experiences. These interviews will explore the specific advantages and challenges faced when using AI for writing assessment, the impact of AI feedback on students' writing performance, and any concerns or recommendations they have for improving AI's role in language assessment. These interviews will be audio-recorded, transcribed, and analyzed thematically.

As part of the study, AI-generated writing assessments will also be collected. Students' writing samples will be assessed by AI tools such as Grammarly or GPT-based platforms.

These AI-generated assessments will then be compared to human grading to evaluate the accuracy and consistency between the two. This comparison will provide insights into the potential of AI in replicating human assessment capabilities. The research will proceed in four distinct phases. Phase 1 involves the preparation and selection of tools. In this phase, the researcher will collaborate with educational institutions to gain access to the AI writing assessment platforms like Grammarly, ProWritingAid, or other AI-based writing tools. These tools will be integrated into students' regular coursework. Additionally, students and teachers will be briefed on the study's objectives, and informed consent will be obtained from all participants. Phase 2 is the data collection phase, where surveys will be distributed to all participants. Students will complete surveys on their experiences with AI tools, and teachers will respond to a separate survey about their experiences with AI in grading. Following this, semi-structured interviews will be conducted with a smaller sample of students and teachers. Also, AI assessments of students' writing will be collected for comparison with human assessments. In Phase 3, the collected data will undergo analysis. AI-generated assessments will be compared with human grading to assess the accuracy and consistency. Qualitative data from the interviews will be transcribed and analyzed using thematic analysis, where recurring themes and patterns in participants' experiences will be identified (Braun & Clarke, 2006). The quantitative survey data will be analyzed using descriptive statistics to summarize the responses, and correlation analysis will be conducted to explore relationships between the use of AI tools and improvements in writing skills. Phase 4 will involve the interpretation and reporting of the findings. The results from both the qualitative and quantitative data will be synthesized to draw conclusions about the effectiveness of generative AI in automating English writing assessment. The findings will be compared with existing literature to identify any gaps and propose recommendations for future research and implementation.

### ***Data Analysis***

Data analysis will be performed using both quantitative and qualitative methods. For quantitative data, the survey responses from students and teachers will be analyzed using descriptive statistics to summarize their views on the usability, effectiveness, and accuracy of AI tools in writing assessment. Additionally, inferential statistics such as correlation analysis will be applied to explore any relationships between the use of AI tools and students' perceived improvements in their writing skills. For qualitative data, thematic analysis will be employed to analyze the interview transcripts. This method is effective for identifying and analyzing patterns or themes within qualitative data (Braun et al., 2014). The researcher will manually code the responses, grouping similar ideas into themes that reflect participants' experiences with AI in writing assessment. These themes will be compared across different participant groups (e.g., students and teachers) to identify commonalities and differences. Finally, AI-generated writing assessments will be compared with human grading, focusing on key writing components such as grammar, vocabulary usage, coherence, and organization. Inter-rater reliability measures will be used to assess the consistency between AI grading and human grading, helping to determine the reliability of AI tools in writing assessment.

## Results and Discussion

### Results

The results of this study reflect both quantitative and qualitative data collected from students and teachers who have utilized AI tools for English writing assessment. The analysis includes the survey responses, interview insights, and comparisons between AI-generated assessments and human grading. The survey data collected from 100 students and 10 teachers highlight key findings regarding the effectiveness, usability, and impact of AI tools in writing assessment. Below is a summary of the key results from the student and teacher surveys:

**Table 1. Survey Results Summary - Student Perceptions of AI Tools for Writing Assessment**

Survey Question	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
AI tools are useful for improving my writing skills.	45	40	10	5
AI feedback is easy to understand.	50	35	10	5
AI tools help me identify areas for improvement.	47	42	7	4
I feel more confident in my writing after using AI.	40	45	10	5
I prefer using AI tools for writing assessment over traditional methods.	30	50	15	5

From the table 1, it is evident that the majority of students view AI tools positively, especially in terms of their usefulness for improving writing skills (85%). Students report that AI feedback is easy to understand (85%) and helpful for identifying areas of improvement (89%). Furthermore, a significant portion of students (85%) feels more confident in their writing after receiving feedback from AI tools.

**Table 2. Survey Results Summary - Teacher Perceptions of AI Tools for Writing Assessment**

Survey Question	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
AI tools are effective for evaluating student writing.	50	40	7	3
AI feedback is accurate and reliable.	45	35	15	5
I can integrate AI tools into my teaching effectively.	60	30	7	3
AI tools save time compared to manual grading.	70	25	5	0
AI tools provide useful insights for improving student writing.	55	35	7	3

The teacher survey results show strong support for AI tools, with 90% of teachers agreeing that AI tools are effective for evaluating student writing. Additionally, 95% of teachers agree that AI tools save time compared to manual grading. While the feedback from AI tools is seen as accurate and reliable by 80% of the respondents, a smaller portion (22%) expressed concerns about the reliability of AI feedback, indicating the need for further improvements.



### ***Interview Results***

The in-depth interviews with 10 students and 5 teachers provided further insights into the experiences and perceptions of using AI tools for writing assessment. Students highlighted that AI tools helped them improve their writing by providing immediate feedback, which allowed them to make revisions quickly. However, some students noted that while AI was helpful for grammar and structural issues, it often lacked the nuance needed for evaluating creative or argumentative writing, which they felt required a more human touch.

Teachers, on the other hand, emphasized the time-saving benefits of AI tools. They reported that using AI allowed them to focus on providing more personalized feedback on higher-order aspects of writing, such as content and argumentation. However, they also expressed concerns about the limitations of AI in assessing the depth of student understanding and the more subjective elements of writing.

### ***AI Writing Assessment Data***

Comparing AI-generated assessments with human grading revealed mixed results. AI tools demonstrated strong accuracy in evaluating grammatical correctness and writing structure but showed some discrepancies in assessing content relevance and argument coherence. The overall agreement between AI and human grading was found to be 85% for grammar, 80% for structure, but only 70% for content and coherence.

### ***Discussion***

The results of this study align with previous research on the use of AI in educational assessment. Studies by Oktarin et al. (2024) have demonstrated the effectiveness of AI tools in providing rapid and consistent feedback on basic language mechanics such as grammar and spelling. The majority of students in this study agreed that AI tools were useful for improving their writing, consistent with findings by Waziana et al. (2024) that AI tools help enhance student engagement and writing skills by providing real-time, personalized feedback.

However, the limitations of AI in evaluating more complex aspects of writing, such as content coherence and argumentation, were also evident in this study. Similar concerns were raised by Marzuki et al. (2023), who noted that while AI systems are proficient in detecting surface-level errors, they struggle with higher-order aspects like creativity and critical thinking. This study also found that while AI tools help students become more confident in their writing, they cannot fully replace human judgment in assessing subjective elements like tone or rhetorical effectiveness.

The discrepancy between AI and human grading in terms of content and coherence supports the findings of Wulyani et al. (2024), who observed that automated systems often fail to understand the context and intent behind a student's writing, leading to less reliable assessments of content. Furthermore, while AI tools are time-saving and efficient, as noted by the teachers in this study, the challenges related to the inability of AI to assess higher-order writing skills point to the need for a hybrid approach, where AI serves as a complement to, rather than a replacement for, human grading.

This study also highlights the ethical considerations of using AI in writing assessment, particularly regarding data privacy and the potential for bias in AI algorithms. Wang et al. (2024) have warned about the risks associated with AI tools collecting and analyzing student data, and this study found that both students and teachers expressed concerns about the implications of AI in terms of data security and fairness.

In conclusion, while AI tools provide significant benefits in automating the writing assessment process, their limitations in assessing complex writing tasks suggest that they should be integrated into the assessment process in conjunction with human evaluators. Future research should explore ways to improve AI's ability to assess more nuanced elements of writing, as well as address the ethical concerns related to privacy and bias.

## Conclusion

This study explored the role of generative AI in automating English writing assessment, with a focus on its benefits, challenges, and effectiveness compared to human grading. The findings revealed that both students and teachers generally view AI tools positively, particularly for their efficiency in providing rapid, personalized feedback. The majority of students reported that AI tools helped them identify areas for improvement, boosted their confidence in writing, and contributed to their skill development. Teachers also recognized the time-saving benefits of AI tools and their effectiveness in evaluating basic writing mechanics. However, the study also found significant limitations, particularly in AI's ability to assess complex writing components such as content coherence, creativity, and argumentation. AI tools performed well in evaluating grammar and structure but struggled with the deeper, more subjective aspects of writing, which require human judgment.

The implications of this study highlight the potential for integrating AI into the writing assessment process, particularly for tasks that focus on mechanical aspects of writing. However, the findings also underscore the need for a hybrid approach, where AI tools support human evaluators rather than replace them entirely. Given the ethical concerns related to data privacy and AI biases, further research should address these issues and explore ways to improve the accuracy and fairness of AI assessments. Additionally, AI's limited ability to evaluate higher-order writing skills calls for further advancements in AI algorithms to assess content depth and critical thinking more effectively.

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