

# Using AI-Generative Tools in Tertiary Education: Reflections on Their Effectiveness in Improving Tertiary Students' English Writing Abilities

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## Abstract

Artificial intelligence (AI) tools have become a popular topic in the education field. Most of the schools in Hong Kong focus on how to properly use AI software to help students' learning experience. As this is still a relatively new technology, the stance for most of the schools in Hong Kong is skeptical. This study aims to find out whether AI-generative tools, such as ChatGPT, can help to improve students' English writing skills in university. Interviews were used to find out students and teachers' opinions towards using AI in writing. The results indicate that students find AI tools convenient for learning writing skills, but teachers are concerned that the feedback and examples provided by AI are too general and ambiguous. This study provides some interesting opinions from students and teachers about their experience using AI in learning and writing and helps us to understand more about how to use AI effectively in the education sector.

*Keywords:* artificial intelligence, shadow education, English writing, university education, computer-human interaction

Cheng, C. H. (2024). Using AI-generative tools in tertiary education: Reflections on their effectiveness in improving tertiary students' English writing abilities. *Online Learning, Volume28(3)*, (33-54). DOI: 10.24059/olj.v28i3.4632

## Using AI-Generative Tools in Tertiary Education: Reflections on Their Effectiveness in Improving Tertiary Students' English Writing Abilities

Technology has become important in the education sector as it can help to improve learning and teaching quality (Al Ghamdi et al., 2016; Kaufmann et al., 2016). In the current stage, some scholars believe that education has moved towards a new method of teaching and learning. Artificial intelligence (AI) has become something teachers and students are aware of in teaching and learning. AI can be defined as software that can communicate, reason, and function independently like humans (Du-Harpur et al., 2020). It has been developed by humans and produced products according to our needs. For example, in Kim et al. (2022), AI became a teaching assistant in the classroom to support mainstream school teaching. However, before Kim's research, Watson introduced the world's first AI teaching assistant to help students in learning in 2015 (GTPE Communications, 2016). The teaching assistant helps to answer questions from students and provides feedback on their work. From the above examples, technology has become an "agent" in the classroom (Kim et al., 2022). As a result, the effectiveness and opinions of users and educators are lacking. This has opened a space for more discussion and investigation, as it may help us to use AI more effectively.

In Hong Kong, most universities are open to using AI in their courses with some restrictions. For example, according to the Chinese University of Hong Kong (CUHK, 2023), as a general principle, tertiary students are prohibited from using any AI tools to complete their assignments, assessments, and any other works that count towards their final grade of the course or attainment of the desired learning outcomes, unless explicitly permitted. However, the university also highlights that it is important for teachers and students to learn and "become acquainted" with AI to maximize the return on education (CUHK, 2023). Other universities, such as the University of Hong Kong and Education University of Hong Kong, have similar guidelines for students and faculty members to follow. As mentioned by Kim et al. (2022), it is possible to implement AI into university curricula and help students in learning. However, the question is whether humans can trust AI. The effectiveness of using AI in the classroom and as a teacher still needs more research support. One of the things that universities and educators are worried about AI is that their information sources may not be reliable, as some of the AI tools (such as Poe) will generate nonexistent journal article citations for students. Therefore, there is a necessity to assess and find out whether AI can work as a supplement teacher for students. In the long run, they can benefit from it and improve their academic results.

This study focuses on whether AI can help to improve students' Englishwriting abilities. As mentioned, AI teaching assistants have been assigned in class to help students, but there was no specific example to show educators that AI can help to improve students' academic performance. This research reveals students' opinions after using AI as a tutor role in their writing course, and they expressed their thoughts towards AI. As for teachers, they expressed their concerns about the "AI tutor" that they assigned to their students. The following section is the literature on this topic, followed by a method, results, and a discussion of the findings, implications, and contributions of the study.

## The Dilemma of Using AI in the Education Sector

The advancement of technology has made teaching and learning easy and convenient (Raja & Nagasubramani, 2018), and because of the COVID situation around the world, schools have emphasized the use of electronic technology for teaching and learning (Ou et al., 2021). The sudden change has shocked the academic world, and researchers and educators are trying to find some ways to prepare for the upcoming challenges (Alawamleh, Al-Twait, & Al-Saht, 2020; Crawford et al., 2020). The development of online teaching materials or platforms has flourished because of COVID-19. Recently, there has been a trend in using AI in writing essays at schools. Those new AI language generators can generate different genres of essays with very good accuracy in language usage (Lee et al., 2022). Some scholars even proposed using the technology to help EFL writers in their writing, since it can help them to learn complex sentence structures and words (Gayed et al., 2022). However, this raises another question related to academic honesty. Using AI to help students write may be considered “cheating” (Hart-Davidson, 2018) and would be unfair to other students. In Hong Kong, several universities have already suspended the use of AI in students' assignments. According to the Student Plagiarism Policy at the University of Hong Kong (2023), the university banned the use of ChatGPT or any other AI-based software for all assignments. For any suspected case, “plagiarism” would be used to define such an act for students, since it is related to directly copying or borrowing materials without giving any credit to the source (University of Hong Kong, 2023).

### *AI-writing Assistant in Schools*

In other parts of the world, “technology” plays a vital role in education. Some educators introduced AI writing assistants in class, such as Grammarly. Fitria (2021) claims that students feel Grammarly is useful since it can provide instant feedback for them to improve their assignments. Dizon and Gayed (2021) also use Grammarly as a supporting tool for university students. Their results showed that Grammarly is a way to help EFL writing since it can help students reduce grammatical mistakes (Dizon and Gayed, 2021). As in Kim et al.'s research (2020), they explored whether AI teaching assistants in online education can help undergraduate students in their learning. They found that students reacted positively to AI teaching assistants in the classroom (Kim et al., 2020). As this indicated, AI may be useful in helping students in learning. Chui et al. (2022) show that students were motivated in AI-supported classes as they had the autonomy to choose what information they could learn and how AI could support them. They further conclude that this method of learning can help students feel in control and flexible; this helps enhance their performance in class (Chui et al., 2022).

Chatbots are another way that educators implement AI in class. Chatbots are common in AI-setting classrooms since they can provide immediate responses to students (Chui et al., 2023). Because chatbots can answer students' questions accurately and sound like a conversation, students feel more comfortable and supportive in their answers (Yin et al., 2021). Students found it interesting to play with Chatbots and were willing to ask questions through this media (Fryer et al., 2019; Hill et al., 2015; Yin et al., 2021). Hamouma and Menezla (2019) indicate that there is

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a positive relationship between having good digital literacy and students' English writing abilities. This shows that AI-writing assistants can help students improve their writing skills.

However, there were still improvements that needed to be made, such as language errors and vague responses difficult for students to understand (Smutny & Schreiberova, 2020). Gayed et al. (2021) further elaborate it is important for educators to teach their students to correctly use AI first. This can help students to minimize the risk of plagiarism and be able to receive accurate and useful feedback from the system (Moore et al., 2016; Gayed et al., 2021). Other researchers also mentioned that further research is needed for implementing AI tools in real classroom settings.

Furthermore, AI's lack of creativity has also been raised by researchers. Salhab (2024) mentioned AI is programmed by humans; its weaknesses are creativity and critical thinking, as it cannot develop ideas yet. Therefore, humans still play an important role in guiding students, especially in solving problems and creative thinking. Muslimin et al. (2024) further explain AI is still developing and it has very obvious weaknesses for students. It is important for educators to teach students the way to use AI correctly in assignments. This has opened a gap for this research.

### AI in a Hong Kong Tertiary Classroom

As academic results are very important in Hong Kong, parents and students care about public exam results. Bray (2013) indicated a "no loser" principle is hidden among parents and students in Hong Kong. They categorize people who fail the public exam as "losers" and may need to work harder than others who get good grades in public exams (Bray, 2013; Yung, 2019; Cheng, 2021). Most of the students and parents in Hong Kong are aware of the importance of the public exam since it can make their lives easier. As a result, most of the students care about their academic performance in Hong Kong (Cheng, 2021). Traditional methods, such as drilling and one-way lecturing, are deemed to be a safe choice for most of the teachers in Hong Kong (Cheng, 2024). However, the Hong Kong government encourages schools to provide a balanced and diverse environment for students to learn (Education Bureau, 2023). This applies to universities as well. As the Hong Kong government would like to promote the idea of "internationalization" and "diversification" (Education Bureau, 2020), tertiary education needs to implement new learning and teaching methods to achieve these objectives.

An AI education method has been proposed and implemented in secondary education. As Chiu et al. (2022) mentioned, an AI for the future (AI4future) is used to create teaching and learning resources for secondary 1 to secondary 3 students in Hong Kong. There are three goals for secondary students to use AI: "preparing young students for life with AI," "cultivating AI talents by fostering a deeper understanding of AI," and "training future professionals across different fields to integrate AI in their jobs ethically and safely" (Chiu et al., 2022). This can help to enhance students' competitiveness in society as well as achieve the government's goals for education in Hong Kong. However, there is not enough data in AI research about the impact it has on education. This paper investigates whether the use of AI tools can help improve students' writing abilities.

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Using technology in the classroom needs to combine both teacher-centered and student-centered models. As mentioned by different scholars, using technological assistance in the classroom would require teachers to teach the basic concepts of the technology, whereas students would use their creativity and critical thinking to complete the tasks (Chen et al., 2021; Hsieh & Tsai, 2017). Chen et al. (2021) found that AI can help students write effectively and raise their examination performance. Yau et al. (2023) further concluded that AI can help to contribute to the education field as well as assist the teacher in the classroom. Therefore, scholars and educators need to understand how to use AI properly in real classroom settings.

This article aims to help the public understand whether AI can help students in tertiary classrooms. As other research has indicated, studies related to AI in the classroom are not enough. The paper hopes to fill the gap between AI and tertiary education and provide some insight into using AI in tertiary education. The research questions to be answered in this study are:

- (1) What impression do students have on the concept of AI teaching assistants?
- (2) What impact does using AI in class have on students?

### Method

A qualitative approach was used in this study, as it aims to understand students' and teachers' opinions towards using AI in the classroom. This research hopes to evaluate whether AI can assist students in writing, so it aims at an evaluative approach to investigate this learning model. Creswell (2004) mentioned that this kind of research is useful for practitioners to understand the impact of the education model. As a result, this is an experimental study. It is also suitable for this topic since it allows researchers to gather in-depth data from subjects (Punch & Oancea, 2014), and it can help to reveal how social actors make sense of the world around them and make participants' opinions visible to the audience (Denzin & Lincoln, 2000). Furthermore, the flexibility of qualitative studies can highlight how the world is changing and how people are responding to social change (Bryman & Bell, 2011). It can lead the public to understand how a particular process, such as social change or cultural change, happens in a specific setting (Onwuegbuzie & Leech, 2004). Ten students were studying in a university writing course for first-year students, compulsory for all students in this university. The course has implemented the use of generative AI software in the program to provide feedback on students' written tasks. The software is Poe Feedback. Students were advised to consult with AI during the lesson and while they were doing their assignments at home. After three months, they were invited to attend an individual interview to express their thoughts about using AI in their study.

As for teachers, four teachers were invited to provide their thoughts about using AI as a teaching assistant in their classroom. All of them are teaching the same writing course at that university and they have more than five years of English teaching experience at the tertiary level. The reason for asking for teachers' opinions is to complete the picture of AI teaching in real classrooms, as their opinions can show whether this is an effective tool. Table 1 is a summary of the participants' background.

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Table 1

*Teachers' Backgrounds*

Name (Pseudonym)	Gender	Years of teaching
Simon	Male	6
Kevin	Male	6
Mary	Male	10
Susan	Female	7

*Student Participants*

Name (Pseudonym)	Gender
Peter	Male
Mary	Female
Sally	Female
Paul	Male
John	Male
Apple	Female
Kelly	Female
Isaac	Male
Lester	Male
Kate	Female

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## Research Procedure

The students and teachers who participated in this study had finished their course with the use of AI in the classroom. Poe Feedback was introduced during the 2023–24 academic year and only some of the courses used AI inside their lessons. The school's stance on using AI depends on the tutor's decision since there are four different approaches to using AI in the classroom (HKAC, 2024). Students were asked to consult with AI during the course for feedback and to improve their writing in the course. Their essays were uploaded to Poe Feedback and the software generated comments. There were four essays in total for students to submit within 15 weeks (i.e., three months), and teachers asked students to submit the comments from AI as a separate document for teachers to keep as a reference.

Snowball sampling was used in this research, as this has been applied in many education research studies for in-depth data (Bray, 2013; Yung, 2019). The first participant was a student in the author's class. Since he is a member of the student union, he can introduce many participants to this study. As a result, he was the first person approached. He agreed to help the research, and therefore, the sampling chain was able to form (Parker et al., 2019).

The interview procedures were conducted after the semester. Semi-structured interviews were used, and students and teachers were invited to share their opinions about having AI in a real classroom. As the ethics procedures have been approved by the institution review committee, participants were aware of their rights and risks in this research. Consent forms were signed and collected before the interview, and audio recording was used with prior notification. Using interviews allows researchers to collect in-depth data and be able to investigate the impression of AI in real classrooms (Savin-Baden et al., 2010).

The language used in the interviews was mainly Cantonese. According to Andreenkova (2018), mistakes in choosing the wrong language may affect the quality of the interview data. This may cause measurement bias, respondents refusing to cooperate, and an increase in data errors (Andreenkova, 2018). In some research, participants expressed their concern about using an unfamiliar language, since they may not be able to express themselves freely (Marcos et al., 2006). In this study, as all of the participants are native Cantonese speakers, Cantonese became the main medium during the interview; there was no language barrier problem.

The interview data was analyzed according to Braun and Clarke's thematic analysis framework. It allows researchers to review the data and maintain the quality and accuracy of the themes and codes in the dataset (Clarke and Braun, 2017). The following chart is a summary of the model used in analyzing the data for this study.

Table 2

### *Thematic Analysis Model (Braun and Clarke, 2006)*

Thematic stage	What themes emerged
Step 1: Familiarizing	Data was transcribed and read through to identify themes inside

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Yourselves with the Data	the data
Step 2: Generating Initial Codes	Codified the data and organized them for analysis
Step 3: Searching for Themes	Look for potential themes inside the coded and collected data
Step 4: Reviewing Themes	Review the themes whether it is appropriate and whether the coded data is in the correct theme
Step 5: Defining and Naming Themes	Check whether there are overlapping themes
Step 6: Producing the Report/Manuscript	Write out the final analysis and description of the findings

Thematic analysis allows more flexibility in analyzing data, as it can provide more opportunities for researchers to revisit the themes and codes. In steps 3 and 4, the codes and themes were reviewed and adjusted again (see Table 2). This allows new themes and ideas to be generated and maintains the accuracy of the dataset.

### Findings and Discussion

In this section, participants' responses were presented and analyzed. By using thematic analysis, themes, and codes were able to be compared and contrasted. Opinions about using AI as a teaching assistant in the classroom were more comprehensive through this analysis.

For students, the use of AI as a teaching assistant was largely viewed in a positive light. Students appreciated the immediate feedback and second opinion that the AI system provided, especially during English writing assignments. Many students reported that the AI-generated comments helped them improve the quality of their work, by suggesting edits to vocabulary, sentence structure, and overall organization. This real-time feedback allowed them to make revisions and polish their writing more efficiently than they could have on their own. This is somewhat similar to Lee et al. (2022) and Fitria's (2021) research, as they mentioned AI writing assistants can help students to improve their work.

Beyond the academic benefits, some students also expressed a sense of comfort and reassurance in having the AI "assistant" available to support them. They described feeling less anxiety about their writing, knowing that they could rely on the AI to help identify and fix issues. In this way, students seemed to see the AI system as a kind of tutor or secondary teacher in the classroom. They valued the AI's input and were willing to act on its suggestions, treating it as an authoritative and helpful resource. As mentioned in other papers, both educators and students were able to benefit from AI under correct guidance (Muslimin et al., 2024).



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However, the analysis also revealed that students may be at risk of over-relying on the AI, potentially stunting the development of their independent writing skills. There is a need to ensure that students maintain agency and ownership over their work, rather than becoming overly dependent on the AI's guidance. It will be important to find ways to harness the benefits of AI-powered feedback while also promoting students' self-editing abilities and critical thinking. Striking this balance will be key to ensuring that the integration of AI in the classroom truly enhances, rather than replaces, student learning.

For teachers, while they acknowledged the potential benefits of using AI as a teaching assistant, many expressed concerns about students becoming overly reliant on technology. Some teachers felt that overdependence on AI feedback could undermine the development of students' own critical thinking and writing skills.

Teachers noted that while AI can provide quick feedback on things like grammar and vocabulary, it lacks the nuanced, contextual understanding that human teachers can offer. There were worries that students may start to outsource their learning to the AI assistant, rather than engaging deeply with the material and putting in the effort to improve their abilities. According to Gayed et al. (2021), it is important for teachers to guide their students on how to use AI, which can help them use AI more effectively in writing and learning. Furthermore, teachers need to oversee the process of using AI. This can help to compensate for the limitations of AI assistants in writing.

However, teachers also recognized that AI could be a useful supplementary tool when used judiciously. Suggestions included incorporating AI feedback strategically, using it to identify areas for targeted instruction and encouraging students to view the AI input as one of many resources, rather than the final authority. In the following section, students' and teachers' opinions were categorized according to their themes.

### Intelligent Tutoring and Support

AI-powered tutoring systems can provide real-time feedback and guidance to students during their learning process (Kim et al., 2022); this can help students improve their writing skills. It can identify misconceptions, offer explanations, and suggest additional practice exercises suited to each student's level of understanding. In this study, intelligent tutoring systems can lead to improved learning outcomes, increased engagement, and better retention of material compared to traditional classroom instruction alone. The constant monitoring and tailored support offered by these AI tutors can free up instructors to focus on higher-level facilitation and nurturing critical thinking while ensuring that each student receives the individualized attention they need to succeed. For example, the AI system pointed out a sentence that needs to be more formal and provided suggested sentences to inspire students. Below is a feedback extract from Poe:

To improve the essay, the writer could consider: Providing more specific examples and evidence to support their arguments. Exploring the counterarguments in more depth and

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providing a stronger rebuttal. Using more sophisticated vocabulary and sentence structures to enhance the overall quality of the writing.

As a result, students were able to be inspired and rewrite the sentence by following examples from AI suggestions. However, at the same time, it can be seen that some of the feedback were still a bit too vague for students, especially those who are not very good at English. For instance, "more sophisticated vocabulary and sentence structures" were very abstract; students may need to ask follow-up questions to clarify this comment. This is somewhat similar to Smutny and Schreiberova's study in 2020, which is about when AI feedback is unclear for students (Smutny & Schreiberova, 2020).

This can be solved through proper prompting. For the above example: although general feedback was produced, students can ask more specific questions to make the comments clearer. Here is a follow-up question from students after receiving the feedback and Poe's responses:

Can you suggest some sophisticated vocabulary and sentence structures to enhance the overall quality of the writing?

Certainly! Here are some suggestions for enhancing the vocabulary and sentence structures in the essay:

Vocabulary:

Instead of "more fearless," consider using "increasingly bold" or "growing in courage."

Instead of "satisked," consider using "fulfilled" or "satisfied."

Instead of "knancial needs," consider using "financial requirements" or "monetary obligations."

Instead of "conkdent," consider using "self-assured" or "confident."

Sentence Structures:

Instead of "Women are getting more fearless in speaking up and only doing what they want," consider "Women are becoming increasingly assertive in voicing their opinions and pursuing their own desires."

Instead of "The traditional view of marriage as a means of social validation is no longer relevant," consider "The conventional notion of marriage as a source of social approval has become obsolete."

Instead of "Moreover, there are more opportunities now that cater to most women compared to before," consider "Furthermore, the current landscape offers a plethora of opportunities tailored to women, surpassing those available in the past."

Instead of "Some argue that marriage provides a lot of benekts such as deep emotional connection, companionship, etc.," consider "Advocates of marriage posit various advantages, including profound emotional bonds and companionship."

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Poe was able to provide a more specific type of feedback and examples to students. This is more helpful in terms of improving students' writing abilities as well as introducing different writing techniques for them to suit different purposes. As a result, AI can help students in their writing, but they need to be more specific in communicating with AI tools.

As for the implementation of AI-powered intelligent tutoring systems, it holds significant promise for enhancing the learning experience for students. By providing real-time, personalized feedback and guidance, these systems can help identify and address individual knowledge gaps or misconceptions. The ability to adapt the instructional approach to each student's level of understanding allows for more targeted and effective intervention, enabling learners to progress at their own pace. In this study, students expressed they have gained benefits from using AI in the classroom. As students mentioned, they care about the feedback from AI and they can make changes to improve their grades. This is similar to real-life shadow education. As to other studies about shadow education, it provides a second chance for students to modify their work or recap the concepts (Bray, 2013; Yung; 2019; Cheng, 2024). AI, on the other hand, can provide something very similar to students. However, AI is still a machine. Students were unable to interact freely with it. As a result, some of the students said it is still ineffective in helping them improve their work.

Moreover, some students in this study expressed that AI language assistants can help them practice and improve their language skills. They can offer vocabulary suggestions, and even simulate real-life scenarios for language practice. The application of AI language assistants can also be particularly beneficial for students seeking to develop their foreign language skills. These AI-driven platforms can provide valuable opportunities for conversational practice, vocabulary building, and pronunciation feedback—elements that are often difficult to consistently incorporate into traditional language courses. Many of the students said AI was able to provide a second opinion for them, help them to review, revise, and even inspire them in writing. They further elaborate that in traditional writing class, they can only study the rubrics, but they do not know how to interpret those areas. With the help of AI, they were able to learn directly what areas do they need to improve. For example, AI may point out the sentences were informal, and with proper prompting, AI can even point to which sentences need extra work. This allows students to improve sentences and ultimately their grades. Therefore, most of them feel that AI can be used as a supportive tool in writing.

As for teachers' concerns, the integration of intelligent tutoring systems also raises important considerations about the role of the human teacher. While these technologies can enhance the teaching and learning process, they should not be viewed as a complete replacement for educators. Teachers bring invaluable expertise, empathy, and dynamic interactions for students in the classroom (Chiu et al., 2023); AI can only provide systemic feedback without considering the real-life context—AI was unable to include emotions in the feedback. Most of the teachers understand the benefits and convenience that AI brings to the classroom, but some of the participants prefer the method of human-led instruction supported by AI in a classroom setting. Many researchers claim it is too early to assign AI as a full-time teacher in the classroom since it still has its limitations in sentimental and emotional issues in dealing with students (Kim

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et al., 2022; Gayed et al., 2022). Nevertheless, it is important to recognize that while AI language assistants can supplement and enhance language learning, they cannot fully replicate the nuanced understanding, cultural awareness, and interactive dynamics that human instructors bring to the table. Maintaining a blended approach that balances AI-powered practice with instructor-led lessons and feedback will be essential for developing well-rounded language proficiency.

### Assessment and Grading

The integration of AI-powered grading and assessment tools can significantly enhance efficiency and reduce the workload for teachers. By automating the analysis and evaluation of assignments, essays, and tests, these systems can provide faster feedback to students while reducing the time and effort required by instructors.

In this study, students expressed that AI-assisted grading can provide consistent and constructive feedback to them. This can be particularly beneficial for large-scale assignments or high-stakes exams, where impartiality and consistency are important. The real-time feedback enabled by AI-powered assessment can help students identify areas for improvement and receive personalized guidance more promptly. This timely intervention can foster a more engaging learning process and encourage students to take a more active role in their academic progress. Students expressed that they would immediately improve their essays according to AI feedback. As this is a similar finding as Fitria's research (2021), students were able to receive feedback and adjust according to the software selection. This is something that students can improve on their writing abilities (Fitria, 2021). There is an example of Poe grading and feedback in class (Appendix C); students eventually used this to improve their essays. However, at the same time, some teachers expressed that Poe is too optimistic and lenient in grading. Using AI grading for real courses may still need more time to develop and, at this point, it can only be used as a second opinion.

Moreover, AI feedback can help students to "save face." "Save face" is an important aspect in Chinese culture since it can prevent embarrassment (Nair, 2019). Students were more willing to communicate with a machine than with a real-life person; this had similar results to Yung and Yuan's study (2020). In Yung and Yuan's study, students were able to express themselves more through Zoom lectures since they did not need to have any physical connection with the tutors (Yung and Yuan, 2020). As a result, they feel more comfortable and not were not embarrassed. In this study, students also were more willing to accept their mistakes and change their writing style. This indicates AI can help students recognize their limitations without making them feel uncomfortable.

From teachers' perspectives, the use of AI in accessibility support can help teachers provide feedback and grade students' assignments. This helps to lessen the workload of teachers, as some of them expressed AI can provide some valid ideas to students' assignments such as "topic sentence is needed." Students were able to follow the instructions and modify their essays. As for grading, the AI software that was used in this study was able to adopt the school's rubric and provide a second opinion for teachers. This can help to align with the teacher's first-hand marking. Compared to other similar studies, this research found that AI can provide a positive in

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the classroom as some of the scholars indicate it can provide a more pleasant learning environment for students (Kolchenko, 2018; Alam, 2021).

However, it is crucial to ensure that the use of AI in grading and assessment does not entirely replace the critical role of human judgment and feedback. While AI systems can efficiently handle the more routine or quantifiable aspects of evaluation, instructors should maintain oversight and the ability to provide nuanced, qualitative assessments that capture the depth and complexity of student learning (Kolchenko, 2018). Although in this study most of the impressions were positive towards using AI in real classroom settings, this is still an immature method. Teachers need to oversee and check the final marking to ensure quality and consistency. In future research, it is crucial to investigate whether users can maintain a balance between the capabilities of these assistive technologies and the guidance and support of human educators. While AI-powered accessibility features can greatly enhance inclusivity, they should complement, rather than replace, the personalized attention and expertise that teachers can offer to students with diverse needs.

### Collaboration and Communication

As for the final aspect of this study, the use of an AI-powered platform can help students in collaborative learning. It allows students to foster greater engagement, idea exchange, and collective problem-solving among students. When students received feedback from AI, some of them were able to ask follow-up questions through the chatbot. For example, “What do you mean by my word choice could be improved? Could you give me some examples?” AI-driven tools enable students to engage in real-time discussions, co-create content, and receive peer feedback that can be particularly beneficial in cultivating these essential skills (Akintayo et al., 2024). As a result, the use of AI in classrooms can encourage and teach students collaborative learning and to solve problems by themselves.

However, it is important to acknowledge the potential issues associated with the implementation of AI tools in the classroom. Although the issues were not obvious in this study, teachers and students need to be careful. For example, students may rely on AI feedback and distance themselves from their teachers. In shadow education, there is a theory called “positive and negative backwash” (Yung and Yuan, 2020). This refers to students paying more attention to private tutors' lessons rather than mainstream teachers' lessons because they feel those lessons are more practical. In this study, although this kind of opinions were not found, teachers need to remind their students of the importance of face-to-face communication at the tertiary level. Second, teachers need to educate students in how to provide effective prompts to AI. In this study, students were unable to receive very specific feedback at the beginning since it is a relatively new skill for them. Through experience and lectures, they were able to produce effective prompts that can help them to receive more specific and useful feedback. Teachers need to provide some key guidelines and examples to help students understand how to use AI accurately (Mollick and Mollick, 2023). Without clear guidance and examples, students may only receive inadequate responses from AI and not truly benefit from the software.

### **Conclusion**

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This study provides insights into the use of AI-generative tools in improving tertiary students' English writing abilities in Hong Kong. The findings suggest that while students found these tools convenient and helpful in learning writing skills, teachers expressed concerns about the generalized and ambiguous nature of the feedback and examples provided by the AI tools.

There are different perspectives on the use of AI in the classroom. Some scholars argue that AI is the future of education and educators should embrace it (Chui et al., 2022). Others suggest that educators should find ways to integrate AI and teach students to use it appropriately (Fryer et al., 2019; Hill et al., 2015; Yin et al., 2021). However, the consensus is that AI in education has significant potential but should be supervised by humans (Smutny & Schreiberova, 2020).

The dilemma of using AI in education, particularly regarding academic integrity and the potential for "cheating" is a significant challenge that universities in Hong Kong are grappling with (CUHK, 2023). As the integration of AI in education continues to evolve, both students and teachers must be cautious and well-informed about the appropriate and ethical use of these technologies.

The study also highlights the potential for AI teaching assistants to support student learning, as indicated by research in other contexts. However, the effectiveness of these AI-based interventions in improving academic performance remains an area that requires further investigation. For example, some of the AI feedback was too general for students and students may need to use more specific prompting (Mollick and Mollick, 2023). Teachers may also need to check the quality of the feedback provided by the AI tools.

Overall, this study contributes to the ongoing discussion and research on the use of AI-generative tools in tertiary education, particularly in the context of English writing instruction. The findings provide valuable insights for educators, policymakers, and researchers to consider when exploring the integration of AI technologies in the education sector. It can be seen that AI-writing assistants can help to improve students' writing abilities, but it is necessary for teachers to provide correct techniques, such as how to prompt for students. As Gayed et al. (2021) point out, it is important for educators to educate students how to correctly use AI first before implementing it in class. Future research may focus on whether AI could provide valid and accurate feedback to students, as AI-machine teachers are still developing (Kim et al., 2021). However, the positive signs shown in this study suggest that educators should consider implementing AI with human-supervised guidelines to support its usage.

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**Appendix A**  
**Interview Questions for Students**

***Student's version***

*Background information*

1. Which course are you currently studying at?
2. According to your observation, how many students used AI in your class?
3. Why do they use them?
4. What subject(s) do you like?
5. Is it your strongest subject?
6. What kind of AI assisting software are you using? Why?
7. Can AI help you in your study?

*Impression of AI in writing course*

1. Can you describe Hong Kong tertiary education system?
2. Do you feel AI is necessary in Hong Kong?
3. Can you tell me about your current experience in using AI?
4. Do you think it is useful for you? Why?
5. Do you feel that AI writing courses are more useful than traditional writing courses?
6. Do you use AI in your assignments? Why or why not?
7. What are some of the advantages of using AI?
8. Do you feel better?

*Students' prediction about AI role*

1. What roles do you think AI has in Hong Kong tertiary education?
2. Do you think the role(s) will change in the coming future?
3. Do your school teachers know that you are using AI?
4. How do they feel about AI?
5. Why do they have those impressions?
6. Anything that you would like to talk about related to your AI experience?

**Appendix B**  
**Interview Questions for Students**

***Teacher's version***

*Background information*

1. Your academic background.
2. Do you help your students if they have academic difficulties?
3. How do you feel about your students' academic performance?

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### *Impression of AI in Hong Kong*

1. Do you think AI is useful? Why?
2. Do you think combining AI in traditional writing courses is necessary?
3. When do you think students should apply AI in their writing or lesson? When should they stop relying on this?
4. Is it possible for students not to use AI?

### *Teacher's prediction*

1. What roles do you think AI has in Hong Kong?
2. Do you think mainstream school teachers will eventually use AI in their lessons?
3. Do you think the role(s) of AI will change in the coming future?
4. Is there anything that AI writing courses can improve?
5. Do you think the support from the Hong Kong government is enough?
6. Anything that you want to share about AI?

## Appendix C Example of Poe Feedback

Based on the content provided in your essay, here is feedback based on the assessment criteria:

### Content (5/5):

Your essay effectively reflects on the valuable lessons learned from the English Reading and Writing III course. You thoroughly discuss the importance of structure, grammar, punctuation, thesis statements, arguments, use of evidence, and the revision process. You also mention your improved writing skills and readiness to tackle future writing tasks.

### Communicative Achievement (5/5):

The register used in your essay is appropriate for a reflective piece on academic learning. You have effectively expressed your thoughts and the impact of the course on your writing skills in a clear and concise manner.

### Organization (5/5):

Your essay is well-structured with a clear introduction, body paragraphs discussing different aspects of your learning, and a conclusion summarizing your key takeaways. The ideas flow logically from one point to another, enhancing the overall coherence.

### Language (5/5):

Your language use is precise and demonstrates a good command of vocabulary and grammar. You effectively convey your ideas using a variety of sentence structures and vocabulary. There are only minor errors, if any, which do not hinder understanding.

Overall, your essay is well-crafted, insightful, and effectively addresses the task at hand. To

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enhance the sophistication of your writing further, consider incorporating more specific examples from your coursework to illustrate your points and deepen the reader's understanding. Additionally, you can explore how these lessons have impacted not only your academic writing but also your communication skills in other areas of your life, providing a broader perspective on your growth as a writer.

Total score: 20/20