

EXAMINING BING AI AS A SOLUTION TO EFL WRITING FEEDBACK CHALLENGES

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Abstract

This study aims to examine Bing AI (also known as Bing Chat or Copilot) as a feedback agent, focusing on responses to predetermined prompts related to the content score of a research abstract. Two prompts were systematically input, resulting in extended non-corrective feedback from Bing AI which was sensitive to the prompt wording. This study was motivated by challenges in EFL writing feedback provision. Difficulties that teachers face, limitations of peer feedback, and potential drawbacks of Automated Writing Evaluation (AWE) tools were briefly discussed. The results indicate that Bing AI is a promising feedback agent, offering insights into overcoming challenges in feedback provision, specifically in EFL writing instruction. The limitations of the study are also briefly discussed, as well as recommendations for future studies.

Keywords: Feedback in EFL Writing; Automated Writing Evaluation; Automated Feedback; AI-Generated Feedback; Bing AI

INTRODUCTION

Feedback provision, specifically in EFL contexts, has been part of the teaching and learning process. In EFL writing instruction, for example, providing students with feedback on their written works has become a teacher's duty. However, due to some challenging factors, feedback provision has triggered debates among experts and researchers. Truscott (1996), for example, had suggested abandoning such practice while others (e.g., Ferris, 2004; Bitchener, 2008) suggested just the contrary, providing the benefits of feedback provision such as grammar correction. Recently, Truscott was visited by a researcher for an in-depth interview regarding his 2006 statement. Among his responses to the interviewers, he advised EFL teachers to do something else that they think necessary, as long as it is not about providing feedback (see Mohebbi, 2021). The challenges in feedback provision, specifically in EFL writing instruction, perhaps, can be anticipated by using available artificial intelligence. However, to come to this point, a particular study is required while such kind of study is scant. Therefore, this study was conducted to fill this particular gap.

Feedback has been commonly understood as information provided by an agent regarding aspects of one's performance or understanding (Hattie & Timperley, 2007, p. 81). Meanwhile, feedback provision (or feedback intervention), is defined as actions taken by (an) external agent(s) to provide information regarding some aspect(s) of one's task performance (Kluger & DeNisi, 1996, p. 255). There are two primary terms in those definitions, *agent* and *information about performance*. The term agent refers to feedback provider while another term refers to the state of performance designating the discrepancy between *current performance* and *desired performance* or *learning goals*. The function of feedback is to decrease the discrepancy. Therefore, it is accepted as a pivotal part of the teaching and learning process.

Feedback can be provided by different agents like teachers, peers, or computers. Thus, we have teacher feedback, peer feedback, and automated feedback. In general, a teacher is a dominant



feedback provider. However, providing students with feedback is usually time-consuming, especially with a large class or multiple drafts (John & Woll, 2020). Consequently, teacher's workload increases (Kerman et al., 2022). Due to this challenge, providing feedback, according to some teachers, was not enjoyable. Some teachers would say, "When I am about to finish marking and assessing, I would feel so relieved. It's like seeing the light at the end of the tunnel." (Yu et al., 2021). Another teacher even went far saying, "Students' writing is poisonous! Giving feedback is dangerous! Their language is not good! If I read their texts every day, my own language proficiency would be at risk of declining due to such bad input." (Yu, 2021). This may not happen to all EFL writing teachers, especially those who are working with a limited number of students but it does not deny the fact that providing students with feedback is a challenging activity.

Due to the challenges with teacher feedback, peer feedback was then considered complementary to teacher feedback. In peer feedback, students are typically required to read their peer's writing and provide comments for correction or revision. However, peer feedback did not go without criticism. During peer feedback, expert peers provided more feedback than novice peers. The limited contribution of the novice peers could have minimized the possible opportunities for writing development (Tajabadi et al., 2023). It is also a concern that students tend to give advice that does not help revision, notably affective feedback (Kerman et al., 2022) and even give invalid feedback (Bolourchi & Soleimani, 2021) due to their limited language proficiency. That is not the worst part, by the way. Most students devalued peer feedback because they did not believe that their peers had valuable input for their writing development (Aben et al., 2022; Banister, 2023). Perhaps it is still relevant to this issue that instead of receiving feedback, either from teachers or peers, proficient students tend to rely upon their own capacity to revise and refine their writing (Weigle, 2002).

The advancement of technology then brought computer programs developed to provide feedback on writing designated as the automated writing evaluation tool (AWE) such as Grammarly, Pigai, and so forth. Many text editors such as Microsoft Word and Google Docs are also equipped with AWE features (e.g., grammar checking and correction). Since the use of AWE tools is relatively new, especially during the COVID-19 pandemic, many studies were conducted to investigate its effectiveness and issues. AWE has been considered the best alternative to peer feedback and a complementary to teacher feedback. Teachers even benefitted from AWE. They could manage their time better (O'Neill & Russell, 2019) and use information from AWE for course development (Palermo & Wilson, 2020; Zinkevich & Ledeneva, 2021). Unfortunately, the best we can expect from AWE tools is surface-level feedback (Palermo & Wilson, 2020; Tian & Zhou, 2020; Gao, 2021; Koltovskaia, 2023). Even when AWE tools are good at detecting surface-level errors and providing surface-level feedback, AWE tools also occasionally miss a lot of errors (O'Neill & Russell, 2019; Palermo & Wilson, 2020). Additionally, occasionally, AWE tools generated false alarms and provided incorrect feedback (Dodigovic & Tovmasyan, 2021; Shi, 2021; Koltovskaia, 2023).

Challenges with feedback provision do not necessarily negate that it is part of the teaching and learning process. Teachers are still required to provide students with valuable feedback where peer and automated feedback can also be incorporated. Peer feedback can be optimized by preparing students before the activity, including giving them opportunities to practice giving, receiving, and acting on feedback (Camarata & Slieman, 2020). While we do not have any power over AWE tools, the best we can expect is that AWE tools are getting updated and developed from time to time. In the meantime, we can take a look at what another computer technology is offering that, perhaps, can be a solution to the mentioned feedback challenges.

The (Bing) AI as Feedback Provider

Artificial Intelligence (hence AI) is an umbrella term for a technology that mimics human cognitive processes including learning and reasoning that aims to create a program that can



understand and perform a task in the same way as humans do (Abdul Rahman et al., 2022). The term AI itself is not new. It was coined by John McCarthy in 1955 when he and his colleagues proposed a project in which they defined AI as a machine that uses language, form abstractions, and concepts, solve kinds of problems now reserved for humans, and is even capable of improving themselves (Sumakul et al., 2022). An AI typically uses a concept designated as *machine learning* to learn from large datasets. In other words, datasets provided by humans become "learning sources" for the computer so it can do several works that humans usually do, and one of them is feedback provision.

ChatGPT is one of the popular AIs today. It is a "text-in text-out" AI language model that receives text input from a user (called *prompt*) and returns text output as a response to the input. Recently, some studies were carried out to explore the potential of ChatGPT as an AWE tool. They found that ChatGPT could assist in editing tasks such as spell and grammar checking, summarization and translation, and so forth (Mizumoto & Eguchi, 2023; Schmidt-Fajlik, 2023; Tai et al., 2023). The rise of AI has emerged as a critical aspect of literacy skills called AI literacy, which is necessary for L2 students/writers to effectively navigate and integrate AI technologies into their writing tasks that include five elements: understand, access, prompt, corroborate, and incorporate. In short, the use of AI in writing requires students to understand the AI functions, strengths, weaknesses, and potential biases. They also need to be able to access and navigate the AI for specific purposes. Then, they need to expertly prompt AI to generate relevant content. They also need to know how to corroborate the accuracy of AI responses throughout the writing and revision process. Last but not least, they need to learn how to incorporate AI-generated text in their own writing ethically and effectively (Warschauer et al., 2023).

The use of AI in a writing context, however, invites some ethical considerations. Since AI is capable of generating human-like writing, it is very possible that students use AI unethically, specifically in article rewriting. Researchers have been aware of this "academic dishonesty" or "malpractice" for years. Research in higher education suggests that academic malpractice like this occurs not only in higher education but also in undergraduate and postgraduate studies (Sweeney, 2023).

Using AI to either rewrite a published article or to generate text to be used for publication may fall under the unethical use of AI. However, using AI as an agent or feedback provider may not. In this case, using AI is comparable to using existing AWE tools (e.g., Grammarly) to be provided with valuable feedback either on the form or content of the text.

The current study focuses on the capability of AI to provide feedback on content since many studies have confirmed that regardless of their limitations, existing AWE tools are good at detecting surface-level errors and providing surface-level feedback. Any AI (such as ChatGPT, Perplexity, or Bing AI) can offer this function. However, since ChatGPT, specifically the free version, only works with text input, it is impractical to copy and paste text in considerable length into the prompt form; not to mention the character limit allowed by the ChatGPT. Alternatively, we can use the Bing AI which, according to our observation, is much more convenient.

Bing AI is a GPT-powered AI developed by Microsoft. It is usually referred to as Bing Chat and is available for free, as long as we have created a free Microsoft account. Initially, Bing is Microsoft's search engine like Google. After Google released their AI designated as Bard, Microsoft wasted no time and announced the Bing AI. Microsoft claims it has developed an advanced web-browsing experience using conversational AI just like ChatGPT or Google Bard (Eliaçık, 2023; Mehdi, 2023). Additionally, this AI has been integrated with Microsoft Internet browser Edge (formerly Internet Explorer) so that everyone with an internet connection and Microsoft Edge installed can access this AI right from the browser.



Among other reasons why Bing AI is more convenient than other popular AIs are: (1) it has more features and options, (2) it uses GPT-4 while other AIs still use GPT-3.5, (3) it can analyze or interpret images such as charts and tables which is useful for those who are not familiar with statistical data, (4) it can process information from an opened web page while other AIs do not. Unlike ChatGPT, studies exploring Bing AI are scant because it is a new product. The latest version of Bing AI was just released in February 2023. Additionally, due to issues with the Internet Explorer browser, more people have chosen other Internet browsers such as Chrome or Firefox over Edge, making Bing AI less known (<u>https://www.quora.com/Why-does-almost-nobody-use-the-Edge-Browser</u>). Regardless of any limitations with the Edge browser, we focus only on the Bing AI features that may serve as a solution to challenges in feedback provision, especially in EFL writing instruction.

METHOD

The current study aims to examine the Microsoft Bing AI available in Edge browser as a feedback agent on writing. To achieve this end, a content analysis of Bing AI responses is conducted. This study tested the Bing AI in Edge browser in providing feedback on the content (and organization) of a research abstract which was taken randomly from Science Direct. Two prompts were supplied to Bing AI:

- (1) The document is a research abstract. Identify areas for improvement from the abstract and provide me with feedback about it;
- (2) The opened document is a research abstract. Evaluate the appropriateness of the method based on the research aim.

Additionally, several changes were made in the abstract text to test whether Bing AI could detect and provide relevant feedback. For example, important information regarding the aim or method of the study was removed from the abstract. By making this change, we can examine if the Bing AI could provide relevant feedback for correction and revision.

In order to supply the Bing AI with the text, the text was retyped in the .docx format and then converted into .pdf. This has been carried out to prevent Bing AI from rendering irrelevant information from the text such as illustrations or links to other pages (e.g., DOI link).

RESULTS AND DISCUSSION

Results

In order to work with Bing AI in the Edge browser as a feedback provider, the text should be formatted in PDF and opened on the Edge browser. A blue icon at the top-right center of the browser should be clicked so the AI interface unfolds. The Bing AI uses the term copilot to describe itself; it is there to help or assist us in navigating the web or the page. When this interface unfolds, it detects the opened page. When it detects a PDF file or a webpage opened, it automatically provides us with a button for generating a summary of the text as shown in the figures below.



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Figure 1. Copilot interface: not opening any page

Figure 2. Copilot interface: opening a PDF file or a webpage

There are three main features that we can use (Chat, Compose, and Insights). However, the current study only focused on the first feature. This feature offers conversation-like interaction with three styles: more creative, more balanced, and more precise. Each style is self-explained. This study only used the last style, more precise. At the bottom of the interface is the prompt placeholder.

Bing AI Feedback on Research Abstract

The following is the abstract text used in this study. Parts in brackets are removed from the abstract.

Online Versus Offline Peer Feedback in Higher Education: A Meta-Analysis. In recent years, the technical possibilities of educational technologies regarding online peer feedback have developed rapidly. However, the impact of online peer feedback activities compared to traditional offline variants has not specifically been meta-analyzed. [Therefore, the aim of the current meta-analysis is to do an indepth comparison between online versus offline peer feedback approaches.] An earlier and broader meta-analysis focusing on technology-facilitated peer feedback in general, was used as a starting point. We synthesized 12 comparisons between online and offline peer feedback in higher education, from 10 different studies. Moreover, we reviewed student perceptions of online peer feedback when these were included in the studies. [The results show that online peer feedback is more effective than offline peer feedback, with an effect size of 0.33.] Moreover, online peer feedback is more effective when the outcome measure is competence rather than self-efficacy for skills. In addition, students are mostly positive towards online peer feedback but also list several downsides. Finally, implications for online peer feedback in teaching practice are discussed and leads are identified for further research on this topic.

Prompt 1: The document is a research abstract. Identify areas for improvement from the abstract and provide me with feedback about it.

Bing AI response on prompt 1:

Here is some feedback on the abstract:

Title: The title is clear and concise, but it could be more specific about the type of peer feedback (e.g., written, oral, formative, summative, etc.).

Introduction: The introduction provides a good background and motivation for the study, but it could also state the research questions or hypotheses more explicitly.



Methods: The methods section briefly describes the meta-analysis procedure, but it could provide more details about the inclusion and exclusion criteria, the search strategy, the coding scheme, and the statistical analysis.

Results: The results section reports the main findings of the meta-analysis, but it could also include some effect sizes, confidence intervals, and forest plots to illustrate the results more clearly.

Discussion: The discussion section summarizes the main implications and limitations of the study, but it could also compare and contrast the findings with previous literature and suggest directions for future research.

The study used prompt 1 to ask the Bing AI to identify the areas of improvement in the abstract. Additionally, feedback related to the areas of improvement was requested. In responding to prompt 1, the Bing AI first listed the elements of the abstract and then identified the areas of improvement. The Bing AI tends to provide us with extended feedback, giving the impression that it addressed unasked questions.

However, the feedback it provided was quite critical. What Bing AI recommended was based on what the abstract lacked. As mentioned earlier, we removed parts that mention the aim and the results of the study including the effect size. Within the Bing AI response (in the results part), it clearly mentioned that "but it could also include some effect sizes..." signifying that it fulfilled the test. In terms of research aim, it responded "but it could also state the research questions or hypotheses more explicitly..." The Bing AI might have identified the aim of the study based on the title. However, it still suggested that research questions or hypotheses (which usually reflect the aim of the study) should be stated explicitly.

It is also clear that each response has two parts, corresponding to the prompts which also requested two information (areas of improvement and relevant feedback). The first part of the response describes the areas of improvement and the second part (signified with a conjuctive phrase *but it could also*) presents feedback for improvement in the identified area.

Since the prompt was not focused on the "removed parts," Bing AI tends to extend its responses to overall parts. This shows that Bing AI was sensitive to prompts that users provided. Among the extended responses was the response on method. In the abstract, the writer did not put the statistical tool used in analyzing the data, although all removed parts were returned to their places. Thus, Bing AI provided us with information that the area could be improved by adding several details including statistical analysis used in the study.

Prompt 2: The document is a research abstract. Evaluate the appropriateness of the method based on the research aim.

Bing AI response on prompt 2:

The research aim of this document is to compare the impact of online and offline peer feedback activities in higher education. The method used is a meta-analysis, which is a statistical technique that synthesizes the results of multiple studies on the same topic. A meta-analysis is an appropriate method for this research aim because:

It can provide a comprehensive and objective overview of the existing evidence on online and offline peer feedback.

It can quantify the effect size of online and offline peer feedback on different outcomes, such as competence and self-efficacy.

It can explore the potential moderators and mediators of the effect of online and offline peer feedback, such as feedback quality, feedback type, and feedback source.

It can identify the gaps and limitations of the current literature and suggest directions for future research.



Unlike prompt 1, prompt 2 was more focused. Prompt 2 requested for feedback related to the method by supplying the Bing AI with a command to evaluate the particular area in the abstract. Although the responses were not as extended as responses on prompt 1, Bing AI began its responses by describing the method used in the study along with its definition.

It can be seen that words used in the prompt significantly influenced its understanding and consequently the responses. In prompt 2, instead of using words like *feedback*, we use *evaluate* and *appropriateness*. Intuitively, the word *evaluate* may have a sense of "looking for what works and what does not work." Since the method used in the study, based on the aim of the study, is theoretically appropriate, Bing AI did not further proceed to find any weak side of the method.

It also provided necessary explanations as to why the method used is appropriate for the study. Thus, as with its responses on prompt 1, Bing AI provided extended feedback that, especially in this study, goes beyond what was requested. However, this should not be perceived as a drawbacks of Bing AI (or AI in general) since extended feedback on writing, especially on content, is always beneficial for revision.

Discussion

Bing AI responses on prompts 1 and 2 shown that Bing AI could provide us with extended feedback on content. In general, the feedback provided by Bing AI was noncorrective but suggestive. It could detect the removed parts from the text but the effect might be depended on the importance of the parts. Moreover, the feedback it provided could also be either negative or positive. However, the responses were ultimately depended on the words used in the prompts. Therefore, in using AI as a feedback provider, it is important to ensure that students have enough knowledge and skills stated in the AI literacy framework where knowledge of prompts is one of the elements (Warschauer et al., 2023). Based on the responses that it provided, this study assumes that Bing AI is a considerable means to complement teacher, peer, and automated feedback.

CONCLUSION

This study aims to examine Bing AI as a feedback agent by observing the responses it provides on the content scope of a research abstract. Two predetermined prompts were fed into the AI and returned extended noncorrective feedback which is subject to the word used in the prompt. The Bing AI responses on two prompts inform that it is considerable to be used as a feedback agent that, hopefully, can serve as a solution to EFL writing feedback challenges.

However, several notable limitations must be acknowledged. First, this study only included one research abstract and two predetermined prompts. Since AI such as Bing AI works based on prompts that users provide, experimenting with different prompts would result in various responses in which the capability of the AI can be better understood. Moreover, this study did not include texts with different genres. Bing AI may provide different responses to different texts that will enrich our understanding of its role as a feedback agent. Additionally, this study included a well-written research abstract that we also assume to influence the feedback. Future studies should address these limitations by including multiple texts from different genres and various prompts.

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