Employing AI in ESL Classrooms: Assumptions, Development, and the Use of AI-Integrated Writing Tasks

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ABSTRACT

As AI becomes increasingly inevitable in educational settings, understanding its effective implementation becomes paramount. This qualitative case study investigates the potential benefits and underlying assumptions of AI integrated writing tasks in the second language classroom. The study explores the effectiveness of an adapted version of a picture description writing task employing AI image generation, as an indirect feedback tool, in terms of learner autonomy, affective factors, and language enrichment. In addition, the paper gauges the prerequisite knowledge and competencies required by teachers to bring AI into the classroom. The writing task was administered to two groups of intermediate ESL learners, one group using an AI Image Creator as a support tool. Data was collected through the individual performance of each learner during the task. Perceptions and attitudes were also gathered through questionnaires and semi-structured interviews with the students and the teacher after the intervention. The results revealed the positive effect of using the Image Creator on the student writing, autonomy and motivation. It also shed light on the technical knowledge required to use AI integrated tasks in the second language classroom.

Keywords: indirect feedback, descriptive writing, ESL, Bing AI Image Creator, artificial intelligence

Introduction

Writing is a vital component of effective communication. It is a vehicle for self-expression. From texting our friends to writing novels, the written word is expected to capture the complexities of our thoughts and emotions. Mastery over writing not only empowers the individual to articulate themselves with clarity and precision but also exhibits a command over the language. Producing a written text is considered one of the most difficult parts of language learning (Nunan, 1999). It is a complex process that require the learner to simultaneously do several things like, generating ideas, organising, choosing the right lexicon, syntax and genre, reviewing and eliminating errors. This complexity is reflected in the plethora of studies that suggest various strategies, methods and approaches to teaching and learning writing such as

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product writing, process writing or genre-based writing to name a few (Selvaraj & Abdul Aziz, 2019). However, these different schools of thought agree on one crucial aspect of learning to write - feedback.

Feedback can be classified in different ways based on its source (teacher or peer), medium (written, oral, or technology-mediated), or type (formative or summative, direct or indirect). Lee (2011) notes that over the years, there has been a notable increase in research on feedback in writing. As a result, there is an abundance of guidance available in the literature on how to provide feedback. Despite the sound evidence supporting the positive effects of formative feedback in writing, teachers often revert to traditional models of summative feedback. This happens primarily because of the gruelling nature of providing formative feedback, especially when it comes to writing. An answer to easier and effective ways for teachers to give out feedback could be found in technology.

Advancements in Natural Language Processing (NLP) have brought forth automated assessment and feedback systems that mitigate this problem to a certain extent. However, these applications are usually not feasible or accessible enough for everyone. Teachers have relied on technology, to some extent, to provide feedback to students. They have reciprocated with considerable uptake of this technology-mediated feedback as well. With the advent of machine learning and artificial intelligence, particularly the sudden accessibility of tools like ChatGPT and DALL-E, technology has become more deeply ingrained in our lives, and consequently, in the language classroom as well. Some studies, such as those by Kasneci et al. (2023), have noted the potential for adopting and adapting it in the classroom to benefit teaching and learning at every level. While others have reservations about this nascent technology and its applications, it is here to stay and it is up to us to find ways to adapt and engage with it.

Reconciling with its inevitability, this qualitative study examines the potential of integrating AI into the language classroom as part of the learning process. We use an application called Bing Image Creator as a feedback tool in a descriptive writing activity and observe the effects it has on the students' writing, autonomy, and motivation. The thesis is that AI tools can help enhance the quality of student writing as well as their engagement with the process.

Literature Review

Feedback in Writing Classes

Feedback has one of the most important influences in learning (Hattie & Timperley, 2007). Its effectiveness hinges on the nuanced concept of feedback, which has sparked considerable debate (Ellis et al., 2008; Ferris, 2003; Hyland & Hyland 2006). Lee (2011) underscores that research emerging from process writing schools emphasizes the need for formative feedback strategies but often overlooks the strenuous demands on teachers. Lee's study also reveals that although teachers are inclined towards a 'feedback revolution,' a lack of training, support, and practical constraints, such as feasibility, hinder their ability to bring about change. With the advent of artificial intelligence and advancements in Natural Language Processing (NLP), Kasneci et al. (2023) proposes leveraging these accessible AI technologies to provide personalized feedback, potentially saving teachers time and effort in creating customized materials and feedback.

Over the years, studies have consistently shown that new forms of feedback are well-received by learners. Cunningham (2019) discovered that students preferred screencast video feedback, a relatively new technology at the time, over text-based feedback due to its efficiency, clarity,

ease of use, and enhanced comprehension. The efficacy of technology-mediated feedback is evident, not only in enhancing writing skills but also in positively impacting student engagement, motivation, and perceptions. Francis (2017) corroborates that the use of technology in the classroom motivated students and enhanced their perception of the learning process. This is reflected in Harper (2009), where the use of digitized oral feedback and a classroom active response system increased students' feelings of competence, intrinsic motivation, and autonomy.

In these studies, direct feedback was employed, whereas the tool used in our study provides responses that can serve as uncoded indirect feedback. Direct feedback, as defined by Ellis et al. (2008), involves providing the correct form, while indirect feedback involves signalling and/or locating errors. Bitchener & Ferris (2012) argue that indirect feedback is better suited for advanced learners, as they are more likely to notice errors and subsequently learn from them in response to this type of feedback. Drawing from Schmidt's noticing hypothesis (2001) advanced learners tend to recognize gaps or errors and modify their production to correct themselves when exposed to indirect feedback, as hypothesised by Swain (1995). Recent studies, such as Jamalinesari (2015), have demonstrated that indirect feedback is more effective than direct feedback in enhancing students' composition writing skills. Similarly, Nusrat (2019) found that indirect written feedback, combined with revisions, resulted in improved performance in subsequent writing tasks compared to no feedback at all.

Returning to Lee's observation regarding teachers' reluctance to adopt formative feedback strategies in writing, inspired by process writing strategies, it is a promising step forward to address this concern by exploring the potential of providing students with accessible and engaging means of receiving indirect feedback in descriptive writing.

Writing with AI

The integration of Artificial Intelligence (AI) into educational writing support has emerged as a promising avenue for enhancing student writing skills. Rahman et al. (2022) investigated AI-driven writing platforms and found generally positive outcomes in student writing skills and perceptions. Mun (2024) specifically highlighted the effectiveness of tools like ChatGPT in addressing lexical and grammatical errors, providing immediate and personalised linguistic support. Marzuki et al. (2023) revealed that AI writing tools can also significantly contribute to improving both writing style and structural coherence. The ability to offer instant, personalised feedback represents a substantial advancement in writing instruction, addressing individual student needs more precisely than traditional methods (Song, 2023; Pham, 2025)

Despite these promising developments, researchers have identified critical limitations in AI-driven writing support. Oktarina et al. (2024) noted a significant concern: AI feedback tends to concentrate predominantly on surface-level writing elements, such as grammar and vocabulary, often overlooking higher-order writing elements. This surface-level focus can be particularly problematic for advanced learners. S (2024) highlights students' desire for more comprehensive feedback, particularly on higher-order writing concerns such as argumentation and critical thinking. The current AI tools provide mechanistic corrections that may inadvertently undermine students' opportunities for deep learning and self-correction.

The over-reliance on AI feedback raises important questions about learner autonomy and the development of critical writing skills. While AI tools offer objective and consistent feedback, they may potentially diminish students' intrinsic motivation to independently identify and correct their writing errors (Afiliani et al., 2023). This could lead to a dependency model where students become passive recipients of corrections rather than active participants in their learning

process.

Research Questions

To fulfil the purpose of the study, we sought to answer the following research questions:

1. How does the use of an AI Image Generator as an indirect feedback tool affect ESL students' writing?
2. What are the observable effects of using AI image generator as a feedback tool on learners' autonomy, motivation?
3. What are the assumptions, pre-requisites, and challenges in integrating AI into a writing task?

Methods

Pedagogical Setting & Participants

Fifty students from an autonomous college in Ernakulam, a district of southern state of Kerala, India, participated in the study. They were first-year psychology students, between the ages of 17 and 20. Although, the total strength of the class is 60, those who did not attend either one of the classes or turned in incomplete scripts were excluded from the data. The participants consisted of 78% girls and 22% boys who shared Malayalam as their first language and had studied in English medium schools. The students were assumed to be at a minimum level of low-intermediate proficiency, and their course teachers corroborated this based on their performance in the first internal examination.

This class was chosen due to availability and time constraints. The common course in English follows an LSRW structure of delivery. Beginning with Listening and Speaking in the first semester and Reading and Writing in the second semester culminating in creative and academic writing.

The participants were informed about the research study and that the material they produced will be used for academic analysis. They were guaranteed complete anonymity, and that no personally identifiable information will be disclosed. Participant privacy and confidentiality were maintained throughout the research process.

Design of the Study

To answer the research questions, this study employed the following qualitative research methods:

1. Content analysis of the worksheets from the sessions.
2. Semi-structured interview with the teacher.
3. Focus group discussion with the students.
4. Feedback questionnaire for the students.

Data collection & analysis

The study was conducted in three 1-hour sessions over a period of two days. The first session focused on developing descriptive language. The session consisted of adjective-noun pairing, descriptive sentence expansion, and guided rewriting tasks, followed by freer practice pair activities such as describing an imaginary place or a scene, and concluded with peer feedback and group discussion. The researcher facilitated lexical enrichment by pre-teaching target

vocabulary, modelling descriptive sentences, and prompting students to use synonyms and sensory details. The preparatory session also helped to gauge the students' ability to follow instructions as well as their overall response to the material.

On the following day, the students were divided into an experimental and a control group. The students were further paired, upon their course teacher's guidance, to maintain similar skill levels across the group. The experimental group was seated the computer lab, while the other was seated in the classroom. Both groups completed the same core tasks. The researcher handled the experimental group, while the course teacher held the session for the control group.

Task 1 had the students read a description of a house and an excerpt from J.R.R. Tolkien's *The Hobbit.* The students were asked to infer the details from the passage to describe another room in the house. They were instructed to include at least three sensory adjectives and prepositional phrases as scaffolds to help complete the task. These requirements served as criteria for later evaluation. Task 2 required the students to describe, in their own words, an image (Figure 1) displayed on the screen, aiming to capture both content and emotional tone.

The experimental group used Bing AI to visualise their task 1 descriptions and to generate images in task 2 based on their own writing. The images were judged based on alignment with the written prompt, accuracy of details and general fidelity to the reference image in terms of tone and content. Students were encouraged to tweak and edit their descriptions, or in this case "prompts", to produce an image that meets these criteria. The control group followed the same writing tasks with classroom resources, but without the use of AI as a feedback tool in the writing process

Data sources included written description from both tasks, and screenshots of AI prompts and generated images from the experimental group. A survey questionnaire with Likert-scale items and open-ended questions on perceived writing improvement, use of AI tools and motivation was completed by the students in under twenty minutes immediately after the final task. Along with this, a semi-structured interview with the teacher on student engagement and motivation in writing classes was conducted by the researcher. In addition, focus group discussions were conducted with 5 volunteers from each group, where they shared their reflections and learning experiences.

Written and discussion data were analysed using inductive thematic analysis, with in vivo coding in the early stages. Early codes were related to descriptive elements, details of composition, and lexical patterns. Discussion and interview data saw emerging themes of writing quality, leaner autonomy and motivation. To ensure reliability, a second researcher independently coded a sample of the data, and discrepancies were discussed until agreement was reached.

Figure 1.

A still from Harry Potter and the Philosopher's Stone (2001)

Findings and Discussion

Impact on student writing

The content analysis from the written submissions of task two revealed that the use of the Image Creator had significant impact on the writing in terms of content. The experimental group attempted to capture more details from the image as compared to the control group. Moreover, they were aware of the composition and the spatial relationship between the different elements in the picture provided. The students could see that their prompts were accurately rendered, and they needed to be more specific when describing a scene. They noted in the post-task questionnaire that, "I had to write very specifically to get the result I wanted" and "It helped me describe things in a more detailed way." Most of the first prompts were simpler descriptions, for example, S29 wrote "there is a castle on top of rocky hills on the bank of a river…there are small boats in the river" without describing their relationship or how these elements are compositionally organised. Subsequent prompts saw the students add more detail to their descriptions in attempts to generate an image closer to the reference provided. S29's final prompt generated figure 2 which said:

> "a beautiful night sky with a full moon that is shining bright. A huge castle that has flickering lights. The majestic castle is built on top of a rocky hill facing a silent river, where there are several boats in the river with lanterns, approaching the castle. The warm light from the lantern and the moon is reflecting onto the water."

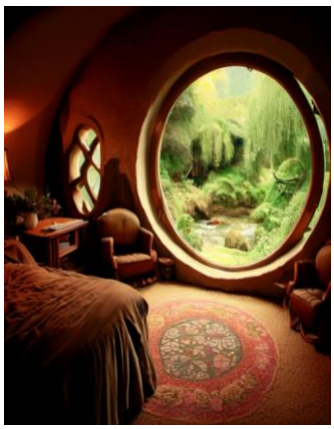
72% percent of the students in the experimental group added descriptions that showed either a relationship between the elements or their composition in the frame. Whereas only 27% of the students' writing exhibited a similar quality in the control group.

Figure 2.
Image generated by S29's prompt.

However, the writings from the control group were more evocative and syntactically sound. Grammatical accuracy was not a criterion for assessment and yet it was evident in comparison that prompting did not require proper sentences for the Image Creator to respond with considerable accuracy (much like search engines). This resulted in the use of minimal phrases in the prompts as summarised by a student's response, when asked about how the AI tool helped her write, "It was easy as I didn't have to write a whole sentence." On the other hand, the descriptions from the control group were more elaborate – including atmosphere and sentiment. For example, "eerie night", "calm waters", "anxiously waiting in the boats", and "mysterious charm" were some of the qualifiers used. 59% of the students in the control group included such qualifiers that set a tone or mood as opposed to only 11% from the experimental group.

Interestingly, while doing task one, we noticed a difference in students' response to the reading material. Those in the experimental group were boxed into the renditions of the image creation, which were sometimes off the mark. These were based on prompts drawn from partial descriptions from the passage. It was evident that few students did not synthesise the information from the passage. Figure 3 is the image generated by S27, based on the description, "…rooms were on the left side and had round widows, and the view from inside was looking over a scenic garden which is a little overgrown with vines." Whereas S31 had synthesised the information that this house was built into the side of a mountain and generated a different image, based on the same text.

Figure 3.
Images generated by S27 (left) and S31 (right)



The literature notes a significant concern that AI feedback often concentrates on surface-level writing elements, such as grammar and vocabulary, potentially overlooking more complex writing elements like argumentation and critical thinking. This study paints a mixed picture. The experimental group, using the AI Image Creator, demonstrated an increased awareness of composition and spatial relationships and became more specific in their choice of words to accurately render prompts. This suggests that for descriptive writing AI can encourage attention to detail and content fidelity, which goes beyond grammatical correction. However, the study also found that the control group's writings were more evocative and syntactically sound, focusing on grammatical propriety as well as an attention to the atmosphere and tone. Compared to the experimental group's minimal phrases, because AI does not require whole sentences, the control group was spared from the interference of AI tools that could have inadvertently hindered the experimental group's development of complex sentence structures and nuanced expressions.

Effect on learner autonomy and motivation

The experimental group showed remarkable engagement with the task, primarily due to the Image Creator. They were eager for the next task, anticipating an opportunity to experiment with the tool. The result from the questionnaire indicates that 85% of the students had not used an AI Image Generator before. Seventy-four % were looking forward to using it again, and 26% mentioned that they might find some use for it. Apart from the novelty (Clark 1983), students admitted that "It helped me to describe my preferred image exactly like I wanted" and that "The image generated was similar to the description, which validated our work, I guess. It was interesting." In contrast, their course teacher noted that the students in the control group were not as enthusiastic or engaged with the descriptive task. Post-task discussion revealed that they found the writing task difficult because they had to produce something original. This was due to some certain factors such as a lack of vocabulary.

The inclination to write a prompt in as fewer words as possible pushed the students in the experimental group to come up with precise words that would describe what they were looking for, as a student notes, "To think of more words to generate perfect images." The struggle to find the right words was very evident, as is corroborated by their responses in the questionnaire. Students were not restricted from using online dictionaries, and a few of them used them to find the right words. Other students brainstormed among their groups to come up with the right descriptions.

Regardless of the group, 62% of the class mentioned that they "couldn't find the right words" when asked what their biggest challenge in the task was. Twelve % of the participants felt that their sentences were grammatically incorrect, and 7% attributed this to their lack of understanding or confidence in writing on their own. As noted above, the "validation" received from the image generator promoted confidence in the user. The students in the control group revealed that they were unsure of their writing and lacked confidence.

This positive effect on motivation and engagement aligns with studies suggesting technology-mediated feedback can positively affect student engagement and perceptions. However, the ease of inputting fragmented phrases to achieve a visual output might reduce the cognitive effort traditionally required, potentially developing a passive recipient role rather than an active participant in the full writing process.

Assumptions and challenges of integration

The study required a computer lab with stable internet connection that could seat 27 students simultaneously. Each pair had to sign up to use the Image Creator service and required a certain

level of technical knowhow to navigate through it. We had to assist certain students through the process, and a considerable time was spent to familiarise them with the process of prompting and generating images. This tool can be demanding in terms of infrastructure and of the teacher to be technologically savvy and pro-active. Some institutions may not find it feasible or easy to adopt such tools on a large scale. Interview with the teacher and discussions with the students informed us that although AI Image Creator can be engaging to use in class, it is very close to being a visual distraction in of itself. It does have the potential to be adapted as a feedback tool and integrated into learning management systems but in its present state it is not designed as a feedback tool. The teacher voiced similar concerns regarding classroom management and maintaining the students' focus on the task. Teachers are expected to be aware of how prompts work. Prompt engineering is very different from creative or academic writing, and it is shaping up to be a vital skill in the present world. These findings underscore the crucial need for teacher training and support to effectively integrate AI tools, directly addressing the "lack of training" and "practical constraints" mentioned the review of literature.

Discussion

AI Feedback and Writing Development

This study extends existing research on technology-mediated feedback by demonstrating that an AI Image Generator can improve descriptive language in ESL writing. The experimental group's writing revealed a greater awareness of composition and spatial relationships than the control group, reflecting that visual AI feedback can promote higher-order cognitive engagement rather than focusing solely on surface-level accuracy. This finding contrasts with concerns raised by Oktarina et al. (2024) and S (2024), who argue that AI feedback often privileges grammar and vocabulary over content and organization.

However, while students in the experimental group demonstrated heightened specificity, their writing showed reduced syntactic and emotive complexity. The control group produced more expressive sentences and mood-setting qualifiers, echoing Afiliani et al.'s (2023) caution that AI may reduce opportunities for comprehensive language use when it rewards brevity and fragmented input. This trade-off aligns with Loncar et al. (2023), who noted that technology-mediated feedback often prioritises immediacy and precision over depth of expression.

Indirect Feedback and Learner Cognition

The AI Image Generator functioned as an uncoded indirect feedback mechanism, prompting students to refine their linguistic output through iterative prompts. This iterative noticing and refinement process mirrors the feedback mechanisms described in Jamalinesari (2015) and Nusrat (2019), who found indirect feedback to be effective in promoting active engagement and revision. In this study, learners' iterative prompting cycles revealed awareness of the gap between their descriptive texts and the visual output, supporting the applicability of the noticing and output hypotheses (Schmidt, 2001; Swain, 1995) in AI-mediated writing contexts as well. The validation students felt upon successful image generation suggests that the visual output acted as a form of nonverbal feedback (Jamalinesari, 2015; Nusrat, 2019). This study also noted that some students failed to synthesize textual input comprehensively. The findings align with Loncar et al. (2023) suggesting that indirect visual feedback may focus learner attention on individual elements instead of a holistic understanding, without structured guidance.

Motivation, Engagement, and Learner Autonomy

The novelty and immediacy of image-based feedback significantly enhanced learner motivation. A majority participants (85%) had not previously used AI image tools, and 74% expressed willingness to reuse them. This is consistent with previous findings that technology-mediated feedback fosters engagement and positive attitudes toward writing tasks (Francis, 2017; Harper, 2009; Cunningham, 2019). Students' comments, such as "It helped me describe my preferred image exactly as I wanted", indicate that visual immediacy provided intrinsic validation, reinforcing Francis's (2017) and Harper's (2009) findings on motivation through technological intervention.

However, this engagement also gave rise to an emerging dependency. The tendency to use fragmented prompts ("I didn't have to write a whole sentence") indicates reduced cognitive investment, echoing Afiliani et al.'s (2023) concern that ease of AI use may weaken autonomous learning behaviours. Students could develop conditional autonomy, where engagement and agency are dependent on tool facilitation rather than internalized skills. This aligns with Vu's (2022) findings, which suggest that while technology enhances motivation, it also requires pedagogical oversight to ensure meaningful, rather than mechanical, engagement.

Pedagogical Integration and Teacher Competence

The practical challenges observed during AI integration validate Lee's (2011) observation that teacher training, institutional readiness, and technical infrastructure are essential for the sustainable use of technology-mediated formative feedback. Effective integration required significant involvement by the instructors, from tool orientation to managing learner expectations. Vu (2022) similarly identifies both opportunities and challenges in integrating technology within higher education, noting that technological innovation requires adaptation, training, and institutional support to avoid superficial implementation.

The AI Image Generator used in this study was not designed as a pedagogical instrument, which underscores the need for careful contextualization. As Loncar et al. (2023) emphasize, technology-mediated feedback should not be viewed as an autonomous or replacement system but as a complement to teacher-led feedback that supports specific learning goals. The observed dependence on visual feedback further suggests that AI-based tools should be used as supplementary instruments rather than comprehensive feedback systems.

Conclusion

In this study, we investigated the impact of using an AI Image Generator as an indirect feedback tool on the writing of ESL students. Our research questions focused on the effects on writing content, learner autonomy, and motivation, as well as the assumptions, prerequisites, and challenges of integrating AI into a writing task.

Students who used the AI image generator demonstrated a heightened awareness of composition and spatial relationships within the provided images. They became more specific in their choice of words, striving for accuracy in rendering the prompts. This led to improved descriptions that showcased relationships between elements and their composition in the picture. In contrast, the control group's writing was more syntactically proper and emotive, but they did not exhibit the same level of detail and composition awareness as the experimental group.

Students using the AI image generator displayed remarkable engagement with the task. Many of them had not previously used such a tool, and they expressed eagerness to experiment with

it further. This novelty factor, combined with the tool's ability to help them describe their preferred images precisely, contributed to their motivation and engagement. Comparatively, the control group found the task more challenging, without any tools for support, leading to lower engagement.

Integrating AI into a writing task requires certain prerequisites and comes with its own set of challenges. Some students required additional guidance to navigate the tool. The tool itself is not designed for pedagogical purposes. Despite its potential, the image creator must be carefully tweaked to fit into a pedagogical task. Institutions considering the adoption of such tools on a large scale should be aware of the infrastructure and technical demands. Additionally, teachers need to be technologically savvy and proactive to facilitate the integration of AI tools effectively. Furthermore, the study highlighted the importance of prompt engineering as a distinct skill in the context of AI-assisted writing tasks.

To summarize, the use of an AI Image Generator as a formative feedback tool positively influenced ESL students' writing in terms of content, engagement, and motivation. However, it also raised challenges related to technical requirements and classroom management. Educators should carefully consider these findings when incorporating AI tools into language learning environments, recognizing both the benefits and potential pitfalls.

Limitations of the Study

We had a limited window of 3 hours to work with the participants. While we successfully validated our hypotheses within this time frame, a longitudinal study would have yielded more pronounced and conclusive results. The study could have had different outcomes had it been conducted in the second semester, as part of their writing course. The novelty factor of the tool may have skewed the perceptions of this study, which is why a longer time frame could have helped.

Recommendations for Future Studies

Further studies could explore the impact of using an image generator on the students' imaginative capacities and reading comprehension. The long-term impact of using such tools could also be measured. Future studies could also explore the use of other AI tools like ChatGPT in flipped classrooms and redesigning pedagogical methods to incorporate and encourage the ethical use of such tools. An evaluation of the feasibility of integrating AI into language education and teacher training is essential for educational institutions and policymakers. This study has unravelled one potential application of integrating AI into the language classroom.

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Biodata

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