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Artificial Intelligence Use in Feedback: A Qualitative Analysis

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Abstract

Feedback, particularly the formative or 'feed-forward' type is important for students in higher education to understand their errors and improve their expression and clarity of ideas. While technology-assisted feedback modes, e.g., audio or video are prevalent, ensuring their efficacy and succinctness, particularly for non-English-speaking background (NESB) educators can be challenging. This study investigates the attitudes and experiences of NESB educators in the School of Engineering of RMIT University, with a focus on their use of AI-assisted tools for providing feedback to students in higher education settings. Utilising a survey, the researchers examined how personal and linguistic attributes influenced feedback strategies and explored the educators' perspectives on integrating AI tools, such as ChatGPT and BARD, in their teaching practice and to enhance student engagement with the feedback they received. Through thematic analysis the findings reveal that personal background and linguistic proficiency significantly influenced the provision of feedback. Furthermore, even though educators had different levels of familiarity with AI-assisted tools, there was a general consensus on the potential utility of these tools for improving feedback provision. These will require targeted staff training, careful human oversight to ensure quality and avoid bias, and customised AI training to align feedback with individual teaching styles.

Citation

Introduction

The Australian higher education sector has seen an increasing number of students and academics from overseas, many of whom are from non-English-speaking backgrounds (NESB) (Dang & Vu, 2020). This demographic shift in academia necessitates a more nuanced approach to how educators provide feedback to students. Research indicates that educators' written feedback practices are significantly influenced by their sociocultural and language backgrounds (Cheng & Zhang, 2021).

Feedback, particularly the formative or 'feed-forward' type, is essential in guiding students in higher education to improve their learning performance, especially in writing and research. Feedback provides students with insights into their errors and on how to improve the expression and clarity of ideas (Starfield, 2019). While the advancement of technology has brought about innovative feedback modalities such as audio or video (Munshi & Deneen, 2018; Payne et al., 2022), there are inherent challenges in ensuring their efficacy and succinctness, especially when the feedback providers are NESB teaching staff (Bal-Gezegin, 2015; Demir & Özmen, 2017). Notably, NESB educators may often grapple in providing feedback with language and sentence structure (Starfield, 2019). Research has also revealed that the way educators express their feedback and their choice of words and comments have a significant impact on how learners accept and respond to that feedback (Hyland & Hyland, 2019).

With these challenges in mind, the advancement of artificial intelligence (AI) technology, such as Natural Language Processing (NLP)—a domain focused on enabling machines to communicate in human language—is a promising option for feedback provision (Rad et al., 2023). Within NLP, the new ChatGPT, developed by OpenAI, and BARD, developed by Google, are at the forefront of AI technologies. Specifically, ChatGPT and BARD are classified as Large Language Models (LLMs) that are trained on massive datasets, enabling them to generate human-like text, answer questions, and translate language (Rahman & Watanobe, 2023; Ram & Verma, 2023). AI technologies now offer new opportunities for educators to automate and personalise their feedback for students and further support student engagement (Kasneci et al., 2023) leading to better student outcomes (Zhai, 2022). AI can also be used to analyse a student's performance metrics and provide customised feedback rapidly, thus saving time and resources (Rahman & Watanobe, 2023). However, how AI should be used for providing feedback is still unclear, as is the more general impact of AI on the higher education sector (Cavaleri et al., 2019).

The increasing presence of NESB instructors and academics in English-speaking countries, particularly in universities where English is the primary language of instruction, reveals a number of important issues in educational instruction. This paper focuses on one issue: how to support and assist NESB educators in utilising AI technologies, which are predominantly English driven. The challenge extends beyond the application of AI in instruction by NESB teachers. There have been many studies examining the differences in feedback provision by English-speaking background (ESB) and NESB educators (see literature review), but the literature is silent on whether the use of AI for feedback also changes depending on the background of the staff member. How can we assist these educators in using AI technology in situations where English

is the primary language of instruction and the technology itself is English driven, and when their students may also not always be first-language English speakers? A goal of this paper is to encourage educators to harness the full potential of AI technology effectively in their pedagogy. Understanding how educators, especially NESB educators, can use AI technologies to improve teaching and feedback provision could offer insights that potentially transform the pedagogical approach to feedback in the higher education context.

Literature Review

Providing feedback to students in educational settings has attracted significant attention over the years. The meaning of feedback varies by context and source. For example, Hattie and Timperley (2007, p. 81) described feedback as "information provided by an agent (e.g., teacher, peer, parent or self) regarding aspects of one's performance or understanding". Whereas, Sadler (1989, p. 120) argued that feedback "is usually defined in terms of information about how successfully something has been or is being done", and effective feedback should serve as a motivational instrument and bridge the "gap" between current and desired performance levels.

Despite feedback being universally acknowledged as a critical factor in educational success, its effective delivery and reception by students remain challenging (Carless & Winstone, 2023; Hattie & Timperley, 2007; Yiğit & Seferoğlu, 2023). Earlier studies have investigated how ESB and NESB educators provide feedback to their students (Bal-Gezegin, 2015; Hyland & Anan, 2006; Porte, 1999; Sheorey, 1986; Shi, 2001). Despite both parties sharing similar opinions on the value of providing effective feedback, findings revealed disparities in their practices and assessments of the style of feedback process.

Feedback provision and practices

Research has suggested that educators' feedback foci vary in language, content and organisation (Bal-Gezegin, 2015; Cheng & Zhang, 2021; Elola & Oskoz, 2016; Shi, 2001). Language was often regarded as a local-level focus, whereas content and organisation were categorised as attention to global issues (Cheng & Zhang, 2021). There are existing studies that have investigated the feedback practices of ESB and NESB educators (Bal-Gezegin, 2015). These findings suggested there were variations in their feedback practices, but the variations were not entirely consistent. Some studies reported that ESB educators often showed more concern with linguistic issues in writing, which was considered a local level focus (Junqueira & Payant, 2015; Mao & Crosthwaite, 2019). ESB educators were considered more authoritative sources of linguistic knowledge as they focused more on the grammar, and their feedback generally was thought to carry an "insider perspective" on language use. As a result, ESB educators were usually regarded as stricter in their feedback as it focused more on style and grammar, an approach which was found to be effective but could also lead to learner anxiety and a reduced uptake of suggestions (Bal-Gezegin, 2015; Cheng & Zhang, 2021; Hyland & Anan, 2006). Instead, NESB educators, were reported to focus more attention on global issues when providing feedback, i.e., content and organisation of texts (Butler & Britt, 2011; Mao & Crosthwaite, 2019). Their feedback generally offered more on vocabulary, punctuation, capitalisation and general formatting of the text, and students often found that to be more encouraging because the focus was less on strict observance of grammar (Cheng & Zhang, 2021; Hyland & Anan, 2006; Sheorey, 1986).

For NESB educators, the task of providing effective feedback can be particularly challenging due to potential language barriers. Research has reported that these educators believed they needed to continue building their English proficiency and efficacy in using English to teach effectively and formulate their comments (Dang & Vu, 2020; Ying & Elder, 2010). AI technologies, particularly LLMs, offer exciting opportunities for educators to provide better feedback (Guo & Wang, 2023; Rahman & Watanobe, 2023). They are especially beneficial in larger classes, where providing individualised feedback becomes logistically challenging. Moreover, for NESB educators, LLMs offered supportive tools to ensure that feedback was linguistically accurate and contextually relevant and lessened their linguistic burden (Guo & Wang, 2023).

Differences in approached to feedback between ESB and NESB educators have been observed in previous studies. While grammar is a critical component, providing appropriate and effective feedback to convey the intended content and meaning effectively is also essential. These are the challenges faced by all educators but by NESB educators teaching in English in particular. There is a gap in current understanding of how AI tools can be used to support and address challenges such as language barriers in delivering information and providing feedback to avoid misunderstanding and enhance personalised learning support to leaners from diverse backgrounds.

Modes of communicating feedback and processes

Educators have engaged with various technology-enhanced methods to improve how they communicate their feedback to students over time (Boud & Dawson, 2023; Dawson et al., 2018; Munshi & Deneen, 2018; Orlando, 2016). Technology-enhanced feedback approach demonstrates that integrating technology into the learning process add value and improves the feedback mechanism. In this approach, educators use various technologies to provide comment on students' work (Munshi & Deneen, 2018). Such technologies can be categorised broadly into: text (Cheng & Zhang, 2021; Elola & Oskoz, 2016); audio (Cavaleri et al., 2019; Hennessy & Forrester, 2014; Mahoney et al., 2019); video (Cavaleri et al., 2019; Crook et al., 2012; Yiğit & Seferoğlu, 2023); screencast (Anson et al., 2016; Wood, 2023); and AI-feedback (Hooda et al., 2022; Rad et al., 2023)—all of which resonate with learning styles in the VARK model, namely visual, auditory, read/write, and kinaesthetic (Fleming & Mills, 1992).

Providing digital text and written comments as feedback to students were still common practices for most educators. Learners still preferred textual comments for convenience and accessibility, especially when learners need to revisit specific suggestions and errors in their own time on a personal device regardless of where they were located (Dawson et al., 2018; Orlando, 2016). Written feedback was suitable for correcting writing issues such as spelling or grammatical errors. However, writing detailed feedback was time-consuming for educators, especially for more complex or conceptual problems. Written feedback also reportedly perceived by learners to lack an emotional and relational quality (Cavaleri et al., 2019; Payne et al., 2022).

Learners preferred feedback that offered a high level of detail and addressed higher-order conceptual issues, which was not always possible to provide via conventional written modes (Ice et al., 2010; Orlando, 2016). Audio, video and screencast technologies have been utilised to obviate the drawbacks of written modes of feedback (Cavaleri et al., 2019; Payne et al., 2022). The combined use of video and text feedback was reported to be more effective in encouraging

students to engage with, and apply the feedback to, their assignments (Yiğit & Seferoğlu, 2023). Moreover, screencast feedback has been identified as more workload-sustainable than text-only methods (Dawson et al., 2018).

The consensus in the literature suggested that technology-mediated feedback enhanced the feedback process by allowing greater detail and more constructive advice, making learners feel that the feedback was more personalised (Anson et al., 2016; Orlando, 2016; Wood, 2023). As such, it motivated students to respond by actively engaging with and enacting the feedback. Despite these benefits, educators needed to be mindful of the potential technical barriers, such as the need for access to appropriate technology and proficiency in using feedback software and tools, as well as the risk of potential misinterpretation of feedback, especially for NESB students (Wood, 2023).

Advanced AI technologies, specifically the latest ChatGPT and BARD, have brought many changes to feedback processes in higher education (Guo & Wang, 2023; Munshi & Deneen, 2018). AI has been used to train computers to analyse essays and provide feedback designed to promote understanding and grammar correction (Marzuki et al., 2023). Cao and Zhong (2023) found that when compared with educator's feedback, ChatGPT provided more balanced feedback across three key areas: content, organisation, and language. While the authors recognised the value in integrating ChatGPT to enhance the feedback provision, they also acknowledged the potential benefits and limitations of AI-assisted feedback.

As the mode of delivering feedback and associated technologies continue to evolve, there are added benefits in using AI tools in education. However, there is a lack of attention paid in higher education to the adoption and implications of AI in feedback provision. Hence, it is critical to investigate how educators, particularly from NESB, can enhance their feedback processes using AI to improve learning outcomes for diverse student cohorts.

Aim and research questions

The aim of this study is to explore and develop effective strategies for assisting NESB instructors in English-speaking academic environments in understanding how they can use AI technologies to enhance the quality and effectiveness of their feedback provision to students. Specifically, in this paper, we address the following:

> **Research Question 1**: How do educators' language backgrounds influence their experience of providing feedback to students?
> **Research Question 2**: How do educators address or overcome English language barriers in order to contribute to effective and personalised feedback? How do educators think AI-technology can assist?
> **Research Question 3**: What do educators consider the most effective ways to use AI technology when providing personalised feedback in higher education?

Method

In this study, we used open questions in a survey of teaching staff from our higher education institution in Melbourne, Australia. Our interest lay in investigating their subjective experience of,

and perspectives on, the use of AI-assisted technology, such as OpenAI's ChatGPT and Google's BARD, in providing feedback to students in higher education.

Participants and ethics

Participants were teaching staff from the School of Engineering, based in the Science, Technology, Engineering and Mathematics (STEM) College of RMIT University. We selected a range of teaching staff with diverse characteristics such as their academic levels, gender, and region of origin including Asia, the Middle East, Latin America, and Eastern and Western Europe. Our research team made initial contact with them, either face-to-face or by email. We briefed them on the study and sent each interested staff member a copy of the standard Participant Information Sheet and Consent form. The study received ethics approval from the University's STEM College Human Ethics Advisory Network (ref. 26253).

Staff who participated were asked to complete a questionnaire and return it to the research team. We used this method of an open-ended question survey to minimise interruptions to their busy schedules, and it was the best approach to obtain answers to questions in which we were interested in terms of staff time and efficiency.

Data coding and analysis

The data were analysed using the NVivo 12 software package. Based on the approach used by Saldana (2009), the research team read the survey answers to obtain a general sense of what participants were saying. We then divided the data into smaller samples of text and assigned codes or labels to them, similar to the approach used by Varpio et al. (2017). Then, our research team reviewed these sample texts and applied the codes we had created. Where codes did not match subsequent text samples, our team created additional codes. These codes were then clustered into broader categories as themes. Finally, we analysed the themes to identify the potential key findings. (See Appendix A for an example of the coding of survey data.)

Results

The participants who responded to the questionnaire were diverse in terms of gender, cultural background, years of teaching experience, and the class sizes they handled (Figure 1). Of the nineteen participants, thirteen were male and six were female. The most common region they came from was East Asia, followed by South Asia and Western Europe. More than two-thirds of the participants had more than five years of teaching experience. The class sizes managed by these participants also varied, with 36% managing classes ranging from 101 to 250 students. In addition to English, all the participants spoke another language at home. To maintain confidentiality and anonymity of participants, pseudonyms have been used to report their quotes.

Figure 1

Distribution of Study Participants by Gender, Region of Origin, Years of Teaching Experience, and Class Sizes They Managed
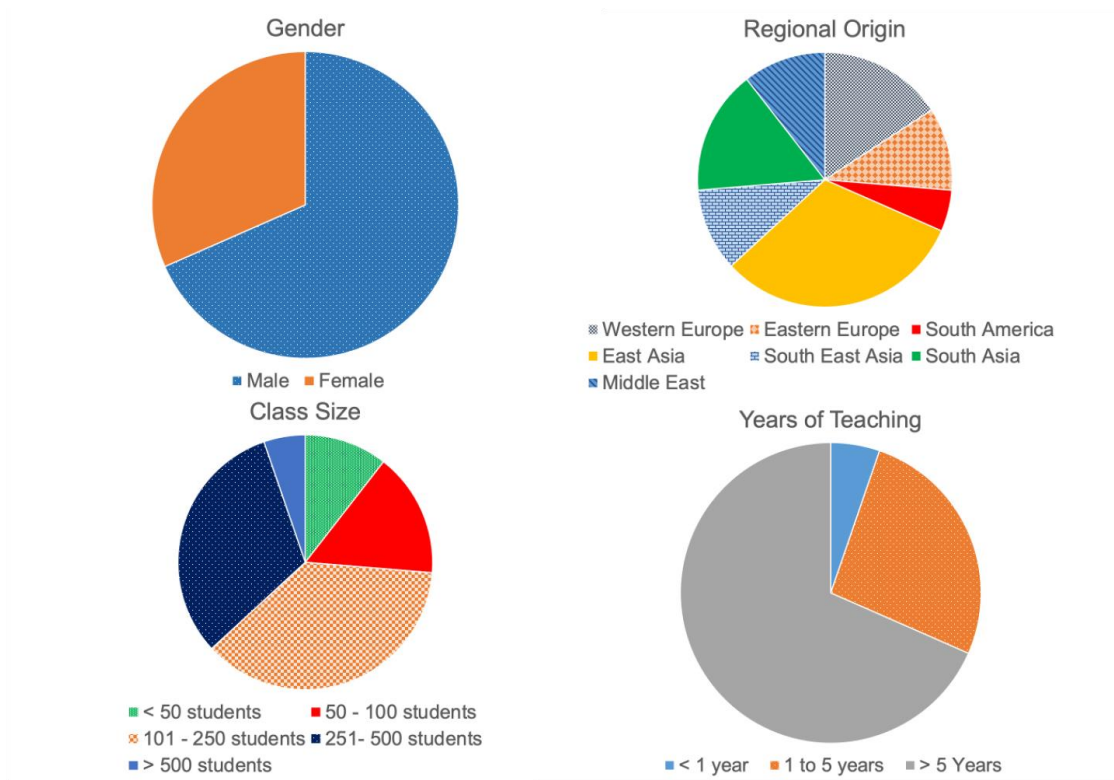
Influence of personal background in providing feedback

Of the nineteen participants who took part in the study, twelve considered their ethnicity, language, and experience did influence how they provided feedback to students. Three main themes emerged based on how they thought their background influenced them. The first group stated that their background affected what they commented on. This group was mainly people who for whom English was not their first language. They also reported apprehension in providing grammatical feedback. This hesitation stemmed from a concern about potentially providing inaccurate corrections and indicated that they thought that their non-first language status affected the validity of their grammatical assessments. One participant, Taylor, noted:

> *As a non-English speaker, I'm more hesitant to provide suggestions and recommendations on grammar, sentence structure, and writing style.*

A second educator group stated that their background affected how feedback was provided. This group of participants usually thought in their native languages first. Then, they translated those thoughts into English. This translation step could change the type of feedback they gave to their students. As Avery stated:

> *In terms of language proficiency, initially, I tend to think in Vietnamese and then translate the sentences into English. I believe this might make the sentences appear unnatural or overly complicated.*

The third group reported that their background did not have a significant effect compared with external factors. For them, it was more important to make the feedback effective and relatable for students who might be grappling with language barriers. The words they chose to use were seen to be more important in shaping how they gave feedback. A similar response came from Reese:

> *My background gives me a first-hand understanding of the challenges students could face because of language barriers. This understanding may facilitate a more empathetic and tailored approach when providing feedback, ensuring it is clear, constructive, and supportive to students from diverse linguistic backgrounds. Through my experience, I've learned the importance of clear communication and am continually working on strategies to overcome linguistic barriers and deliver effective feedback that promotes learning and understanding.*

Barriers in English usage contribute to providing feedback and how AI can assist

Eleven out of nineteen participants (57.9%) acknowledged facing linguistic barriers when delivering feedback to students. These educators found it challenging to choose the most appropriate words or expressions to convey their messages clearly. Hayden stated: '*I know what I want to say but finding the right words to say it can be difficult at times*'.

Those participants who were aware of linguistic barriers in delivering feedback suggested ways to overcome such challenges. These suggestions had two themes in common. The first theme related to the style of feedback provided and included four basic ideas: 1. Feedback must be individualised; 2. Feedback needs to be believable and actionable; 3. Language of the feedback must be clear; and 4. Timing of feedback should be as soon as possible. The second theme was about what is commented on in the feedback.

Individualisation of feedback
Six participants (31.6%) highlighted the importance of personalised feedback suiting the individual student's needs, understanding and learning style. Participants argued that general feedback was ineffective and a waste of time. They believed AI could be a useful tool in providing detailed comments to individual student, as Sage noted:

> *Need to point out why a student made a specific error and how they can avoid this in the future. With a large class, it is difficult to provide a deep level of feedback with allowable marking time. AI may enable this by providing detail feedback in a short period of time.*

Credibility and actionability of feedback
Seven participants (36.8%) indicated that effective feedback centres on several key factors such as being clear, specific, constructive and encouraging, and serving as a tool for improvement not just critique. Participants regarded it as essential for students to know what they did wrong and how they could correct it in the future. They also acknowledged the potential of AI to assist them in providing more objective feedback. Riley commented:

The feedback should be focused and constructive with clear instructions to improve the performance. AI technology can help write a focused feedback and word it to make it easy to understand.

Language of the feedback

Nine participants (47.3%) considered the language used was a critical factor in effectiveness when providing feedback to students. Expression, wording and tone were all important in feedback and determined the extent to which students perceived guidance on addressing areas needing improvements. As Hayden indicated, NESB educators may have experienced language barriers and they realised the potential of AI tools in supporting them in feedback provision. Hayden stated:

AI technologies can assist with editing the feedback that may not be written well originally. It gives the academic an opportunity just to write and not worry too much about the language. The AI-revised text will need to be proof-read and checked for the desired meaning of the feedback. However, this is much quicker compared to spending 10 minutes just trying to compose a well-written feedback. My accent is strong, and my pronunciation may be a bit difficult to understand on few occasions; when this happens, I just spell the word or try to write it somewhere.

Timing of feedback

Timeliness was also crucial (reported by 18%). Providing feedback promptly allowed students to reflect on and apply corrections while the task was still fresh in their minds, thereby maximising the educational impact. Yet, the issue of time constraints on teaching staff in providing individualised feedback was a critical challenge for educators. Our participants noted the potential of AI tools in reducing the time required to write feedback. Of note was the participants' interest in the capability of AI to generate individualised feedback by being integrated with marking rubrics for each assignment. However, in such an approach, educators need to experiment with both assessing content development, such as the quality of a written report, and evaluating the correctness of technical engineering feedback. As Finley stated:

The key factor is time. A meaningful individual feedback is highly time consuming and we are often very time constrained. I always overspend time in providing feedback…[to] generate individual feedback with AI and crossing a marking rubric with each assignment. It would be nice to try if, at some extent, the AI can also make the feedback not only dependant on the content development (e.g. written report) but also considering if the technical development is correct or not.

In relation to the second theme: what is commented on in feedback, 42.1% of the participants indicated that three key factors contributed to effective and personalised feedback: 1. Identifying knowledge gaps to specify clear areas where students lack understanding or skills as this helps them know exactly where they need to focus their efforts to improve; 2. Providing clear comments to note the strengths and weaknesses in the students' work to help students understand what they did well and where they need to improve; 3. Guidance or suggestions for improvement, which

can involve suggesting resources, providing lists of ideas, examples, and suggesting specific steps for students to take to address areas in which they fall short. One participant, Reese, offered this perspective:

> *In my opinion, feedback should be precise and related to particular aspects of the students' work, helping them understand exactly what was correct or where improvement is needed. Also, it should be constructive and provide actionable suggestions on how students can improve or extend their learning. And somehow feedback should be tailored to the individual needs, understanding, and learning style of each student—if it is possible.*

A large majority of the participants (78.9%) believed that AI technology could greatly assist them in delivering effective and personalised feedback. For instance, AI could be programmed to use templates that speed up the feedback process, ensuring that all necessary aspects of an assessment can be considered. Furthermore, AI tools could be used to analyse students' work in detail, identify gaps in knowledge, and provide specific examples to explain the feedback. However, participants' noted that it was also crucial to be aware of AI's limitations, e.g. it may not always provide accurate feedback or facts. Jamie offered this example:

> *AI could be okay to give feedback from template, and helping to speed up and give some more detailed feedback. But things like ChatGPT and Bard are not guaranteed to give the right answers or feedback, so [there's] still need [for] someone to check. And I would have some caution against relying on them to give complete feedback without some guidance and guardrails. It will be non-ideal if the wrong feedback is provided—and to make it worse, usually ChatGPT or Bard sounds very confident and sure, and this can be confusing to students.*

Using AI to improve feedback

Participants were grouped into three categories in terms of their experience with AI: advanced users; intermediate users; and novice users. Each group had distinct perspectives on and recommendations for optimising the use of AI technology, such as ChatGPT or BARD, in providing personalised feedback to their students, particularly for non-English-as-a-first-language speakers.

Advanced user educators (21.1%) advocated for a more collaborative approach. They suggested the implementation of a system in which educators could give feedback on AI-generated responses. Such an iterative process would serve to refine and improve the AI models continuously, making the models more accurate and relevant for diverse educational contexts. For non-English-as-a-first-language speakers, this process could be particularly useful in detecting and addressing language errors that automated systems might otherwise overlook. Reese said:

> *Having a dedicated AI language model within a controlled sandbox environment addresses the integration issue, as the model can be designed to interact with the existing educational platforms seamlessly and tools utilised within the institution. It can be integrated to provide a coherent and user-friendly experience for the staff*

and students, aiding in more effective communication and personalised feedback. … Furthermore, having a sandbox environment allows for continuous monitoring, assessment, and improvement of the AI language model. It provides a space where the model can be regularly updated and refined to meet the university community's evolving educational and linguistic needs. This also allows for real-time addressing of any emerging ethical or privacy concerns, fostering a responsible and effective utilisation of AI technology in the educational process.

Intermediate users (52.6%) were more reserved in their use of AI, applied primarily for grammar checks or occasional information retrieval. Their recommendation was more straightforward, focused on applications that could benefit from AI, such as automated grammar and syntax correction tools. For non-English-as-a-first-language speakers, these functionalities could be particularly beneficial, as they address immediate language barriers without requiring proficient technological skills. Quinn suggested:

Vocabulary and sentence formation. AI tools can help us understand the context and even it can generate feedback with high language proficiency when the content is given to it….AI tools can help with suggestions, If AI is incorporated into feedback tools when something wrong is highlighted suggestions can be viewed (like Grammarly).

Novice users (26.3%), who had limited-to-no prior experience with AI, saw the potential of AI, but due to their lack of exposure they suggested the need for introductory training and simplified interfaces to take advantage of AI tools. Kai commented:

AI technologies are an unavoidable reality and they are surely going to be the very next paradigm shift in our society. We (lecturers) need to be able to follow the trend so that we can integrate these technologies as efficient and effectively as possible into our teaching activities (including feedback to students). So, training in this area is a must.

Discussion

In higher education, particularly in English-speaking countries, there exists a significant and often underacknowledged challenge: educators and instructors, particularly those from non-English speaking backgrounds, are navigating an academic environment in which English is the primary language of instruction, giving such staff an extra challenge in doing their jobs effectively and efficiently. This challenge is compounded by the increasingly widespread use of AI technologies, which are also predominantly English driven. While AI tools may hold the potential to revolutionise educational practice, their effectiveness and usability are not uniformly experienced by NESB educators. Such educators are not only teaching students, some of whom may also be from NESB backgrounds, and for both teaching and learning environment is dominated by English. The adoption of AI technologies in educational settings has predominantly been viewed through the lens of student benefits, with less attention paid to the instructors' experiences. Furthermore, the literature suggests that, while AI can be a powerful aid in pedagogy, its effectiveness is dependent on the educators' ability to interact with and command the technology effectively.

This study investigated the views and AI engagement of educators with NESB, especially in the context of providing feedback to students in the higher education engineering sector. Drawing upon nineteen participants and their teaching experience and familiarity (or lack thereof) with AI tools, this study revealed that personal characteristics, including region of origin and linguistic proficiency, have notably influenced the provision of feedback. The results of this study showed that NESB educators often focused more on the overall flow and logic of a student's work rather than on the finer points of English grammar, sentence structure and writing style. Their feedback was usually more about the quality of the ideas and the content, rather than in English language usage itself. Similar findings have been reported previously (Bal-Gezegin, 2015; Cheng & Zhang, 2021), confirming that educators' grasp of English influenced what aspects of student's' work they commented on in providing feedback. Our participants also noted that they tended to keep feedback simple, focusing more on discipline knowledge that fell within their areas of expertise.

Our results also revealed that NESB educators brought their unique backgrounds to their teaching, which affected the manner and style of how they provided feedback. Our participants noted that their ability to think in more than one languages also helped them to develop different ideas and vocabulary, which could then be translated into English to ensure that students understood. Some participants from certain cultures stated that their backgrounds definitely helped them understand the needs of their students from similar cultures and the challenges that the students faced. Therefore, they could provide more direct, polite, and empathetic feedback to students (confirming the findings of Payne et al. (2022)).

Our participants reported that they faced linguistic challenges in delivering feedback due to various factors. These included limited vocabulary to convey necessary information and initial challenges in a lack of familiarity with technical terms and academic jargon, which hindered these educator's ability to provide feedback that was both accurate and comprehensible to the students (confirming the research of Ying and Elder (2010), and Dang and Vu (2020)). AI tools, such as ChatGPT and BARD, have been widely acknowledged for their efficiency in helping users with writing and organising content, making then particularly beneficial for NESB educators. However, Kasneci et al. (2023) has questioned the depth of the application for broader pedagogical needs beyond grammar assistance. In this study, our educators adopted various strategies to complement their feedback delivery with AI tools. They utilised AI tools to personalise feedback and provide specific examples. When conveying feedback, they maximised the benefits of face-to-face interactions, incorporated visual aids and diagrams, and often complemented written feedback with spoken language.

On the issue of what constituted personalised feedback, our participants emphasised that it should be individualised and tailored for a specific student's needs, be clear on ways to improve, be actionable, accurate and constructive, and above all timely. This finding echoed Hyland and Hyland (2019). Our participants suggested integrating AI tools in higher education has offered possibilities for enhancing the delivery of personalised feedback, particularly for NESB educators. By analysing data from nineteen participants with varying levels of experience, ranging from advanced and intermediate users to novices, this study found that optimising these tools for improved feedback provision is a worthwhile strategy for implementation. For those who were uncertain and lacking in experience with AI tools, training modules were frequently mentioned as necessary for educators to familiarise themselves with these tools. Intermediate users perceived

that AI could act as valuable language support, offering corrections and suggestions that addressed immediate language barriers. Rahman and Watanobe (2023) reported a similar finding in their recent study. The advanced users suggested that educators using AI could enhance their feedback, as recently noted by Guo and Wang (2023). Such collaboration could improve the feedback's expression by offering alternative phrasing options to avoid text sounding repetitive and by rewording feedback for clarity. Educators' handling of sensitive data also needs to be addressed, as highlighted by Zhai (2022). However, the participants also noted that AI did not always match an individual staff member's style. For optimal AI performance, they recommended an initial human review of feedback to align AI with academic language and subject-specific terms, and fine-tuning AI to mimic the style and tone of the individual academic. This discussion highlights the need for future research to investigate the technical and ethical challenges in the higher education sector on how AI can be integrated into the feedback process of existing educational frameworks that support student engagement.

Limitations and Implications

As this study focused on a specific subject area, institution and NESB educators only, this may limit the generalisability of its conclusions. There is a need for future research to investigate these dynamics in other educational settings and academic disciplines. Future research should also include English as first language educators to gain a more comprehensive understanding of the effectiveness and reception of feedback practices enhanced by AI tools.

A paper-based survey was used for the study due to the staff availability constraints and the best use of the participants' time. As such, the findings provide insights into and understanding of the challenges and perspectives of NESB educators in relation to the AI tools used for educational feedback. Future research might also include using in-person interviews to capture more depth to staff experiences if time constraints allow.

The study has several implications for both policy and the development of teaching practices. For educational institutions, there is a clear need to provide tailored training programmes to familiarise teaching staff with new and emerging AI tools, thereby enhancing their efficient use in a variety of educational contexts. Concurrently, AI developers should consider an iterative design process that incorporates ongoing feedback from educators, ensuring that the AI models remain sensitive to educational and cultural differences.

The evolving expectations of 21st-century higher education necessitate individualised feedback, emphasising interactions between educators, students and the assessment process. In this context, a feedback system that offers tailored guidance to facilitate student progression is essential. Students are more likely to respond to and benefit from feedback when there is a sense of connection with the feedback provider, i.e. their educators. The findings of this study indicate a recognition among educators of the potential of and challenges in the use of AI tools in expediting the feedback provision process and enhancing the quality of feedback provided. Integrating AI tools requires maintaining a balance between the efficiency of feedback mechanisms and their personalisation to support students' learning and development.

In the absence in the literature of a critical assessment of AI-provided feedback, a significant area for future research also emerges. It is crucial to explore if staff can be supported, particularly those

from NESB backgrounds, in critically evaluating the feedback provided by AI. This evaluation should extend beyond examining the syntax and academic applicability of the AI-generated responses. There is also a need to assess the accuracy of the information provided by AI, especially considering that AI can, at times, produce inaccurate information. Developing strategies to enable educators to critique the content of AI feedback effectively is essential, ensuring that they are not only assured in its technical use but also skilled in discerning the quality and relevance of the information it offers.

Conclusions

This research offers valuable insights into using emerging technologies such as LLMs to improve educator feedback in higher education, especially for staff for whom English is not a first language. The findings could guide feedback strategy development and refine LLMs for educational use. The findings indicated that country of origin and linguistic backgrounds do influence feedback provision in distinct ways. It was also found that linguistic challenges are not uncommon, particularly in delivering complex, technical information in English and when English is educators' second language. The study found considerable optimism among educators concerning the integration of AI tools in the feedback provision process; however, enthusiasm varied depending on the educators' prior experiences with such technology.

Conflict of Interest

Acknowledgement

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Appendix A

Figure A1

An example of coding of raw survey data to generate codes and identify emerging themes to address the research questions that represent the inquiry of the study