ASCILITE 2025

Future-Focused:

Educating in an Era of Continuous Change

AI-supported feedback for lifelong learning and educability

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The purpose of this study is to investigate how an AI-powered feedback tool can be effectively designed to enhance both student and educator feedback literacy, with the broader goal of supporting educability in higher education. Adopting an action design research (ADR) approach, the study will be piloted in classroom settings across two trimesters at a large higher education institution in Australia in the later half of 2025. The tool is designed to assist educators in transforming their formative reflections into detailed, personalised feedback, and any findings during the study will inform the iterative development of the tool to align with contemporary pedagogical principles. Although the interviews and classroom pilots are yet to commence, the design-based research methodology allows early engagement with literature and problematisation, allowing the research team to co-design and refine feedback features in a starting prototype.

Keywords: AI feedback system, feedback literacy, educability, higher education, action design research

Introduction

Improving feedback practices remains a critical priority in higher education, as institutions strive to support student learning, academic performance, and long-term engagement. Despite the known value of effective feedback, widespread issues persist, including limited student uptake, inconsistent educator practices, and a lack of meaningful interaction with feedback. These challenges point to a pressing need to rethink how feedback is designed and delivered, particularly in ways that foster feedback literacy and, more broadly, educability.

This study responds to this challenge by designing and piloting an AI-powered feedback tool intended to enhance the quality and effectiveness of feedback within university settings. The tool is built to support educators in providing structured, rubric-aligned feedback based on their informal reflections. Rather than replacing academic judgement, the system is intended to amplify it, enabling personalised, timely, and pedagogically sound feedback at scale.

Piloting will occur during Trimester 2 and 3 of 2025 in selected undergraduate classrooms at the University of New South Wales. The tool emerges from both a review of existing literature and early consultations with teaching staff, which highlighted gaps in both student and educator feedback literacy. Existing AI-feedback systems often lack alignment with shared responsibility models, which emphasise the co-construction, interpretation, and application of feedback by both students and educators (Carless & Winstone, 2023).

These conditions have hence prompted the research team to explore how AI can assist teaching staff with feedback delivery, without replacing educator involvement. The pilot aims to explore three areas:

(1) How can AI-generated feedback address current limitations in feedback practices?
(2) To what extent do students engage with and act on AI-generated feedback?
(3) How can feedback design support feedback literacy and educability for both students and educators?

The AI-powered feedback tool is ultimately designed to support student understanding, improve academic performance, and foster critical thinking - skills that are essential for lifelong learning beyond university (Winstone et al., 2022). At the centre of this approach is the concept of educability, defined as a student's readiness and ability to engage with feedback in ways that promote continuous academic growth. By embedding educability as a core design principle, the project seeks not only to enhance the delivery of feedback but also to generate new insights into how AI can support deeper learning, reflective practice, and development in higher education.

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Literature review

As higher education institutions seek scalable ways to improve learning outcomes and student engagement, feedback remains a critical area for innovation(Winstone et al., 2022). Despite its recognised role in promoting academic performance and grading, feedback practices in universities continue to remain a persistent challenge, often falling short of its intended impact on student learning (Carless & Boud, 2018).

This is mainly because the barriers to effective feedback are multifaceted and persistently undermine its educational benefits. Among the challenges is limited student engagement with feedback, which has been linked to a significant feedback literacy gap between both students and educators. Carless and Boud (2018) suggest that traditional educational practices often position students as passive recipients of feedback, lacking the necessary scaffolding to help them comprehend and act on the information provided. This is compounded by instances of feedback described as vague or generic, alongside timing issues, which can lead to increased disconnection from the learning process (Henderson et al., 2019). Moreover, teacher feedback literacy also needs improvement, as feedback practices can be inconsistent across educators due to structural constraints and varying workloads (Haughney et al., 2020). This in turn, can complicate students' understanding and application of feedback that is truly aimed at fostering at academic growth.

In defining feedback, it is essential to see it as an iterative process that encompasses various dialogues, enabling students to not merely absorb information but also engage with and utilise it effectively. This leads to a deeper issue: it is not enough to provide feedback for students, but students must also be able to see meaning in it and use it. This therefore requires a willingness and ability to reflect, engage and adapt one's approach overtime, which is referred to as feedback literacy (Carless & Boud, 2018). In this study, the term educability is used frequently to bring this idea of feedback literacy together. Educability refers to a student's readiness and capacity to engage with feedback in ways that support ongoing learning and academic improvement. It encompasses the value of feedback, interpreting it appropriately and taking action on it (Siljander, 2012).

This is where educability serves as a vital design goal. Currently, AI powered feedback systems have been designed primarily to focus only on automation and scale, rather than on the learner experience. Furthermore, the shared responsibility model proposed by Carless and Winstone (2020) highlights the collaboration between educators and students in creating an environment conducive to effective feedback utilisation. This model recognises that both parties must have feedback literacy and engage in the feedback process for it to be genuinely effective. Thus, by centring system design around educability and the shared responsibility model - a students' capacity to interpret and act on feedback - we can shift the focus from simply delivering feedback to enabling learning.

Research methodology: ADR

Designing with educability in mind requires a deep understanding of student behaviour and how students interact and apply AI feedback. As there is little guidance on embedding educability in feedback systems, this research adopts an Action Design Research (ADR) methodology. ADR is suitable for this context as it supports iterative development and evaluation of digital tools in real-world settings (Sein et al., 2011). Given the project's aim is to investigate how AI-powered feedback systems can enhance feedback literacy and educability, ADR offers a flexible but extremely detailed framework for refining and testing the tool through ingoing engagement with educators and students.

Through interviews, user testing, and feedback cycles, this research will examine how students experience AI-generated feedback and design features that better support educability. The aim will be that feedback systems in higher education are truly learner-centred. As the AI feedback tool pilot trials will be trialled around its effectiveness and ease of use, the research questions developed are:

1. How can educator and student feedback literacy be effectively enhanced through the use of AI-powered feedback tools?
2. How can an AI-powered feedback system be designed to support educability and promote lifelong learning in higher education?

The ADR methodology is an outcome-based approach to information technology research that involves both observation and intervention to evaluate the effectiveness of a designed artefact. It comprises four steps: Problem Formulation, Building Intervention and Evaluation (BIE), Reflection and Learning and Formalisation of Learning (Sein et al., 2011). Ultimately, ADR is distinct in its focus on creating and refining design artefacts, involving planning, acting, observing and reflecting. With the goals of continuous organisational learning, the application of ADR emphasises collaboration, iterative learning, and the design of solutions that are responsive to the complexities of the environments in which they are deployed.

Step 1: Problem formulation

The research team reviewed existing literature and conducted initial consultations with UNSW teaching staff to identify shortcomings in current feedback practices. Based on our findings, current AI tools rarely support educator generated feedback aligned with feedback literacy principles, or align with Carless and Winstone's shared responsibility model.

Table 1
Advantages and disadvantages with existing AI-empowered feedback tools

	Advantages	Disadvantages
Timeliness and Scalability	Provides immediate and scalable feedback	May sacrifice depth and contextual nuance (Campbell & Levin, 2009)
Personalisation	Offers personalised learning paths	Quality of feedback relies on data quality; limited ability to capture holistic performance (Rahiman & Kodikal, 2024)
Student Literacy	Encourages peer interaction and feedback literacy	Students may misinterpret feedback without scaffolding or guidance (Guo et al., 2024)
Clarity	Improves understanding with explanations	Over-reliance may hinder critical thinking and reflection (Gorham et al., 2025)

Step 2: First BIE cycle

The initial prototype was developed and piloted in undergraduate classrooms at the university during Trimester 2, 2025. The prototype system uses large language model (LLM) agents in a human-in-the-loop workflow. Educators first draft brief feedback on student work. The system then evaluates the work against assignment criteria, extends and polishes the draft, and fills in any missing points. Finally, educators review and refine the generated feedback, ensuring efficiency, completeness, and preservation of their professional judgment. Data was collected through educator interviews to document problems with the design principles.

Table 2
Problems encountered with design principles

Problems (Uncertainties)	**Sources of data that inform design principles**	**Design Principles**	**Problems encountered**
Lack of clarity and actionability	Prior literature on feedback engagement; tutor interviews	DP1: Enhance feedback clarity through actionable scaffolding	Tutors felt AI suggestions were too generic and sometimes misaligned with the rubric. Some worried this reduced trust and made it harder for students to act on the advice.

Delays in timing	Prior literature on disengagement; tutor interviews	DP2: Ensure timeliness to support engagement	Although AI produced draft feedback quickly, tutors said reviewing and approving still took considerable time. They worried students may not actually get feedback any faster.
Limited emotional support	Prior literature on affect and motivation; Tutor interviews about the importance of tone in feedback	DP3: Humanise tone to support affective engagement	Tutors noted the AI sounded formulaic and impersonal. They feared this would disengage students and reduce trust in both the tool and the tutor.
Gaps in feedback literacy (educators and students)	Prior literature on shared responsibility; Tutor interviews	DP4: Build mutual feedback literacy for students and educators	Tutors thought the "assessment chain of thought" (which was the was positive but not detailed enough. They questioned whether it really built understanding or just added confusion, which risked trust in the tool.

Findings from the first round of interviews indicate that, while the tool was seen as valuable in reducing workload and improving structure, concerns revolved around trust in the accuracy of the AI outputs and the higher need for more human touchpoints. Specifically, participants stressed the importance of human oversight and wanted for more customisation of feedback and detail to align with their personal feedback method. These insights enabled a revision of the design principles.

Step 3: Second BIE cycle

In Trimester 3, 2025, refinements from the first cycle will be integrated into an enhanced prototype into the refined design principles. A second round of implementation will be conducted with a larger sample of academic practitioners and students. Emphasis will be placed on the feedback literacy impacts, student uptake, and how the tool shapes educator feedback practices. Comparative data will be gathered and analysed to assess improvements in quality and engagement.

Step 4: Formalisation of learning

Findings from both BIE cycles will inform a set of design principles to guide future development of AI tools focused on feedback literacy and educability between both educators and students. These principles will be grounded in the real-world classroom application and reflect the iterative co-design process, expecting to provide significant theoretical and tangible contributions.

Expected outcomes and conclusion

This study aims to address a key gap in feedback literacy in higher education by exploring how AI-powered tools can help both educators and students engage more meaningfully with feedback. Using an Action Design Research (ADR) approach, this project is designed to develop and improve an AI feedback tool through real-world classroom testing. The aim will be to generate design knowledge through devising a set of IS design principles for our AI tool to encourage educability and mitigate any negative consequences of feedback literacy gaps.

The expected outcomes of this project include the development of an AI-powered feedback tool that actively supports educators with assessment marking while promoting feedback literacy and educability among students and staff. The early-stage prototype reflects the research team's objective in enhancing feedback literacy and educability amongst both educators and students, highlighting a shared responsibility for greater learning outcomes amongst both ends of the feedback process in feedback content.

Looking ahead, the research seeks to extend beyond the content of AI-generated feedback to explore how feedback design - including structure, delivery, and integration into learning activities - shapes student engagement and literacy. This focus on feedback design, and not just content, aligns with emerging thinking that views feedback as dialogic and two-way.

This research takes a proactive step toward improving feedback practices in higher education by combining AI technology with pedagogical principles centred on educability and shared responsibility. It focuses on both the design and delivery of feedback and contributes to a more responsive and student-centred approach to learning. The outcomes will guide future development of AI tools in education encourage higher education institutions and educators to see feedback as a collaborative process essential to lifelong learning.

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