Journal of Work-Applied Management

Hand in hand: designing and integrating human and AI-generated feedback in business education

Carmen Vallis, Elaine Huber, Jennifer Z. Sun and Peter Bryant
The University of Sydney Business School, Sydney, Australia

Received 16 March 2026
Revised 9 May 2026
11 May 2026
6 June 2026
Accepted 7 June 2026

Abstract

Purpose – This paper aims to investigate how written assessments can be redesigned to foreground human connection within generative artificial intelligence (GenAI)-enabled feedback processes, examining how relational feedback practices operate in artificial intelligence (AI)-augmented environments through two case studies in a large Australian business school.

Design/methodology/approach – Using an exploratory multiple-case study design, the study draws on focus groups, student surveys and teaching team feedback across two units. Data were analysed deductively through the lenses of relational pedagogy and a relational GenAI integration framework.

Findings – Students engaged selectively with human and GenAI feedback, combining sources according to need and confidence. Effective integration depended on relational design elements including scaffolding, emotional engagement and co-design. GenAI was most effective as a complement to human judgement within structured, relationally grounded feedback systems.

Originality/value – This paper provides an empirically grounded account of relational feedback practices in AI-augmented assessment and advances design-based knowledge for intentionally combining human and AI-generated feedback.

Keywords Higher education, Generative AI, AI-Augmented assessment, Feedback design, Relational feedback

Paper type Research article

Introduction

Generative artificial intelligence (GenAI) is reshaping writing, assessment and feedback practices in higher education. Research suggests that GenAI can support evaluative judgement, higher-order thinking and academic integrity (Bearman *et al*., 2024; Kizilcec *et al*., 2024). Yet contemporary approaches to assessment and feedback emphasise learners' capacity to think and reason as practitioners in their field (Nieminen and Ketonen, 2023), supporting deeply human capacities such as ambiguity, creativity and discernment. Bryant (2023) argues that authentic assessment and feedback must also recognise the reflexive and uncertain experiences of learning and belonging. As GenAI becomes embedded in academic practice, there is an urgent need to understand how to maintain these human connections within AI-mediated feedback processes.

Debates about GenAI in feedback often focus on efficiency gains (Al Naqbi *et al*., 2024), or threats to academic integrity and learning (Matheis and John, 2024), prompting broader calls for assessment reform (Lodge *et al*., 2023). Drawing on relational pedagogy (Gravett and Carless, 2024), we argue for evidence-based, ethical and dialogical approaches to GenAI, centring learner agency within educational relationships tied to students' developing professional identities.

Funding: This research was supported by a Strategic Education Grant and the Connected Learning at Scale (CLaS) initiative at the University of Sydney.

Journal of Work-Applied Management
Emerald Publishing Limited
e-ISSN: 2205-149X
p-ISSN: 2205-2062
DOI 10.1108/JWAM-03-2026-0062

We present case studies of assessment redesign with varying GenAI integrations, drawn from a large Australian business school. Human and AI-generated feedback are considered together within an iterative feedback process. Working with learners as co-design partners enables feedback practices that better reflect their needs. This moves beyond instrumentalist notions of AI literacy towards AI as a site of epistemic agency and critical reflection (Arstorp *et al*., 2026). Our study contributes design-based knowledge on how relational feedback can be enacted within AI-augmented assessment systems.

We locate our research in business education, an interdisciplinary field focused on preparing learners for organisational participation and leadership (Hogan *et al*., 2021). This positioning is particularly relevant given the increasing integration of AI into organisational workflows, where graduates are expected to navigate hybrid human-AI feedback and decision-making environments. Assessment and feedback must therefore do more than develop competence; they should also shape how learners perceive themselves and are perceived by others (Nieminen and Yang, 2024). Relational approaches can prompt learners to consider why they accept, contest or defer to AI-generated feedback and what it reveals about their developing expertise.

Our study investigates how written assessments can be redesigned to support iterative learning while centring human connection within GenAI-enabled feedback processes. Despite growing research on relational feedback and GenAI in assessment, empirical evidence on how they are combined in practice remains scarce. This study addresses that gap through a practice-based analysis of hybrid feedback design, illustrating how human judgement, dialogue and care can be sustained alongside AI-generated feedback at scale. These issues extend beyond higher education into organisational and professional learning contexts, where maintaining human-centred developmental support within AI-augmented systems remains theoretically significant but empirically underexplored (Sposato and Dittmar, 2025).

Literature review

Assessment and feedback in the era of GenAI

As institutions explore AI-mediated systems to support grading and formative feedback, questions arise about the evolving role of educators and learning relationships. Students continue to regard teacher feedback as more trustworthy and contextually relevant than GenAI, valuing the personal connection and disciplinary expertise that human feedback provides (Corbin *et al*., 2025; Henderson *et al*., 2025). These findings suggest that GenAI is best positioned to supplement rather than replace human feedback, providing immediate responses while educators focus on contextualised and relational dimensions that technologies alone cannot replicate (Corbin *et al*., 2025; Henderson *et al*., 2025). Similar patterns are emerging in organisational contexts, where AI-supported feedback increasingly augments human judgement in complex decision-making processes (Sposato and Dittmar, 2025).

Relational approaches to assessment and feedback

Understanding and acting on feedback, what Carless and Boud (2018) term feedback literacy, has become central to educational research and practice. Feedback literacy emphasises dialogue and shared responsibility, with effective feedback understood as relational practice in which teachers attend to learner needs, emotional responses and conditions for meaningful exchange (Carless and Winstone, 2023). Structured and dialogic approaches help learners develop confidence and autonomy by clarifying performance and fostering positive emotional engagement (Ajjawi *et al*., 2022; Dai *et al*., 2024). In digital environments, affective responses continue to shape how feedback is interpreted and acted upon (Ryan and Henderson, 2018).

However, feedback research has been critiqued for individualising its focus at the expense of broader relational, institutional and contextual dynamics (Nieminen and Carless, 2023), a

risk that extends to discussions of GenAI-enabled feedback. Feedback is better understood as a social process shaped by multiple actors, spaces, emotions and ethical influences (Gravett, 2022; Gravett and Carless, 2024; McArthur, 2023; Vallis, 2024). This paper therefore treats feedback as inherent in the learning relationship itself, not only in discrete assessment moments (Heron *et al*., 2023).

Relational pedagogy and GenAI integration

Our theoretical framework draws on Gravett (2025) relational pedagogy, in which connections, care and ethics are inseparable from meaningful assessment practice. Learning environments are understood as spaces where human and non-human elements shape each other (Gravett and Carless, 2024), with assessment practices emerging from ongoing interactions between teachers, learners, GenAI systems and broader educational contexts (Gravett, 2022). This demands critical reflection on how technology reshapes assessment and the ethical and ontological questions at stake (Vallis, 2024).

Humanising feedback encounters in technology-enhanced environments is a pressing concern (Payne *et al*., 2023). Drawing on relational feedback and AI integration research (Bearman and Ajjawi, 2023; Bearman *et al*., 2024; Gravett and Carless, 2024), we examine how educational relationships can be sustained within hybrid feedback systems.

Methodology

In this study, we use case-study methodology to examine GenAI-integrated assessment feedback across two courses at a large Australian business school. This approach enabled an in-depth investigation of contemporary phenomena within real-life contexts by adopting an exploratory, multiple-case, replication design (Yin, 2009).

Data sources included semi-structured focus groups, surveys and teaching team feedback on assessment submissions, providing triangulation through converging lines of inquiry (Yin, 2009). In Case 1, a co-design workshop informed the development of GenAI-integrated report writing resources, followed by an optional workshop attended by 32 students. Semi-structured focus groups were conducted with students from both units (FINC 2011, $n = 4$; BUSS6105, $n = 3$). Post-experience student satisfaction surveys were administered in both units (Case 1: $n = 34$ from 645 enrolled; Case 2: end-of-semester survey), alongside teaching team feedback on assessment submissions.

To manage the volume of data effectively, we limited the scope of our study to two cases, focusing on three specific assessment tasks across these cases. While the two authors taught these units, student feedback was gathered according to ethical research practice.

We approached the data deductively (Terry *et al*., 2017), drawing on theories of relational pedagogy and feedback to guide analysis while remaining open to new insights (Fife and Gossner, 2024). The relational GenAI integration framework (Table 1) functioned as an analytical lens, shaping an initial coding structure across three domains: relational elements, feedback design and implementation processes. Data from focus groups, survey responses and teaching team observations were examined iteratively within and across the two case studies to identify patterns of alignment, tension and variation in how human and AI-generated feedback interacted in practice.

Analysis proceeded iteratively, with data revisited to refine interpretations and examine how relational principles operated in AI-augmented environments.

Relational elements (Section 1) examine how feedback clarifies performance expectations, signals progress and identifies developmental next steps, while offering scaffolded guidance and supportive resources. This includes how dialogue, trust and emotional engagement are cultivated and how timing, pacing, psychological safety are intentionally structured to support meaningful, human-centred feedback.

Table 1. Design framework for relational GenAI integration

1. Relational elements[1]	Indicators
1.1 Performance clarification	Communicates clear expectations and standards
	Indicates progress and achievement
	Suggests next steps for development
1.2 Guidance	Offers success strategies
	Provides support resources such as recorded feedback sessions
	Scaffolds approaches
1.3 Communication	Invites discussion and creates opportunities for dialogue
	Facilitates response channels
	Participates in feedback discussions, or consultations
1.4 Emotional engagement	Builds trust
	Demonstrates care
	Supports positive experiences
1.5 Spatial-temporal elements	Considers feedback timing, frequency and pace
	Schedules feedback milestones and review cycles
	Creates safe, inclusive spaces
2. Feedback design[2]	Indicators
2.1 Socio-affective design	Designs for peer interaction and collaboration
	Builds community
	Encourages development of relationships
2.2 Technical design	Connects and integrates different feedback systems to work together
	Chooses and combines appropriate feedback methods for building relationships
	Creates equitable access to feedback
	Distributes and coordinates feedback through appropriate channels aligned with learning cycles
2.3 Communication design	Formats and crafts messages
	Sets up communication channels
	Designs response mechanisms
	Analyses and responds to interaction patterns
2.4 Feedback development processes	Analyses and applies exemplars and assessment criteria
	Engages in peer feedback
	Self-assessment
	Iterative cycles
3. Critical engagement[3]	Indicators
3.1 Quality standards orientation	Aligns with discipline / field context
	Follows industry practices / professional guidelines
	Manages complexity and ambiguity
3.2 GenAI system interaction	Evaluates GenAI sources and/or outputs
	Identifies potential biases and limits
	Chooses suitable GenAI tool for the context
3.3 Ethical awareness	Ensures fair and responsible GenAI practices
	Considers societal effects
	Knows when human judgment is essential when using GenAI
3.4 Reflective practice	Analyses process, actions and decisions
	Assesses the outcomes and impact of using GenAI
	Applies insights to new contexts and practice

Note(s) [1]Based on Ajjawi *et al*. (2022), Dai *et al*. (2024), Gravett (2022), Gravett and Carless (2024), McArthur (2023), Nieminen and Yang (2024), and Wanner and Palmer (2018), [2]Based on Carless and Boud (2018), Chen *et al*. (2023), Dawson *et al*. (2024), Huber *et al*. (2024), Payne *et al*. (2023), and Salehian Kia *et al*. (2023), [3]Based on Bearman and Ajjawi (2023), Bearman *et al*. (2024), Järvelä *et al*. (2023), Kizilcec *et al*. (2024), Malik *et al*. (2023), and Overono and Ditta (2023)

Feedback design (Section 2) analyses the socio-affective, technical and communicative architecture of AI–human feedback systems, including how peer interaction and community-

building are embedded, how technological tools are integrated to ensure coherence and equitable access and how communication channels support clarity, responsiveness and iterative engagement. Design choices are examined for their alignment with relational pedagogy and learning cycles.

Implementation and developmental processes (Section 3) focus on how feedback practices are enacted and refined across contexts, including the use of exemplars and criteria, structured peer and self-assessment, iterative feedback loops and the monitoring and adaptation of interaction patterns.

The use of multiple data sources enabled triangulation through converging lines of inquiry, supporting the identification of consistent patterns and differences in student and educator experiences. While each dataset was limited in scale, together they provided complementary perspectives on the design and enactment of feedback practices. The study is exploratory and design-oriented, generating practice-based insights rather than generalisable claims.

Relational pedagogy provides the epistemological foundation for our study. The relational GenAI integration framework guided our design and informed our analysis of how AI-generated and human feedback can support relational feedback in business education.

Case studies of relational principles in practice

This section presents our two case studies. Case 1 examines how developmental feedback for writing equity research reports in an undergraduate finance unit may be supported by GenAI. Case 2 investigates multimodal feedback approaches in a postgraduate leadership unit that integrates GenAI tools.

Case 1: finance report writing

Context. This undergraduate finance unit, typically enrolling 600+ students per semester, piloted GenAI workshops to support learning and assessment. A complex equity research report created opportunities for meaningful human-AI collaboration by combining collaborative writing and technical analysis. Students conduct comprehensive financial analysis, critically evaluate company performance and make reasoned investment recommendations, while producing professional group reports. Students find this assessment both rigorous and rewarding as there is no "correct answer", helping them engage with industry practice.

Our assessment design was guided by three key relational principles. Performance clarification through dialogue, emotional engagement through co-design and communication through multiple channels. We designed GenAI support that clarified assessment expectations while maintaining dialogic human interaction. Rather than creating an automated grading tool, we envisioned a system that prompted reflection and dialogue, within a broader feedback ecosystem.

Co-design process. The co-design workshops positioned students as active participants in shaping their own learning environment. Rather than imposing GenAI use, we created space for collective reflection on how these tools might support the assessment process (see Figure 1).

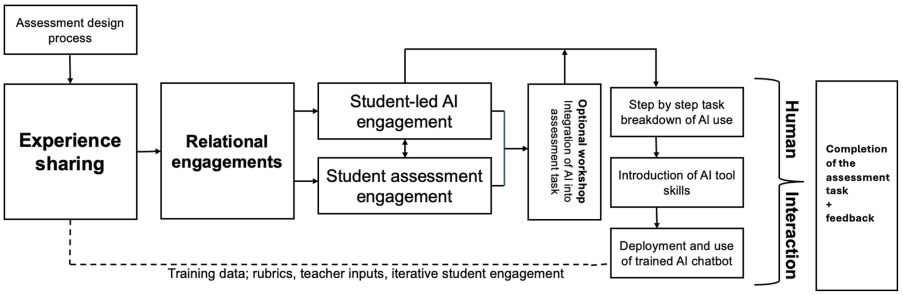

Figure 1. Assessment co-design process

Students, teaching staff and educational designers shared their experiences with GenAI and co-design feedback. Participants brainstormed how GenAI could enhance their research and writing practices, while keeping critical thinking and original ideas central to the process of learning. Three concerns emerged: critically evaluating GenAI outputs, understanding GenAI capabilities and applying them to academic work. Students viewed GenAI as a useful starting point rather than a replacement for analytical skill development. As one noted, "When it comes to investment and trading, you should have the knowledge first; what we can't and can do. AI can give us direction at the end." Students were also interested in using GenAI for timely feedback but wanted clearer guidance on its capabilities and ethical use in assessment writing. Scaffolding technical skills through GenAI support and guidance design was a key relational element.

Drawing on these co-design insights, an optional workshop was developed to help students integrate GenAI in writing equity research reports. The workshop was designed to combine relationship building with technology-enhanced feedback, aligning with many of the relational elements described in the literature in Table 1. Students were introduced to GenAI fundamentals and to institutional resources (1.2). This supports performance clarification (1.1), while prompting reflection on their GenAI use (3.4).

Next, students engaged with a diagram outlining the common steps of the report writing process, discussing and deciding where GenAI could support each stage (1.2). Students also considered and discussed the ethics of generating texts at these points (3.3), possible biases and issues around data transparency and privacy. Each group presented their ideas to the class, helping to compare and interrogate different ways of engaging with GenAI while writing reports.

Students were introduced to a customised institutional version of ChatGPT-4, designed to support critical engagement with equity research report writing. This on-demand chatbot on the learning management system (LMS) provided contextual feedback and linked to relevant learning resources, with equal access and data privacy (2.2). The chatbot referenced previous teaching team feedback, combined with lecture materials and tutorial discussions, to complement rather than replace human teaching (2.4). Assessment content and rubrics were aligned to support reflective evaluation (3.4).

The chatbot was designed to support dialogue (1.3) through prompts that encouraged reflection (2.3) rather than giving direct answers. It also linked to personalised human feedback on the LMS (2.2)

Students used the chatbot to clarify the assessment questions and expectations, conduct initial research, expand concepts, validate AI-generated responses and receive feedback on drafts (2.4). Students' work from previous semesters was used as a quality exemplar (2.3). Additionally, students compared AI-generated responses with their own research, assessing the validity and quality of both (3.1, 3.4). This process reinforced that GenAI may assist but does not guarantee quality. The customised institutional chatbot embodied our relational design intentions by referencing previous teaching team feedback and connecting to human-generated resources to complement rather than replace human teaching elements.

Throughout this process, the teaching team monitored chatbot interactions to assess the quality and accuracy of AI-generated responses, intervening where outputs required correction or contextualisation. Students were also explicitly encouraged to verify AI-generated content against their own research and course materials, reinforcing critical evaluation as a core skill. This human oversight ensured that the chatbot functioned as a complement to, rather than a substitute for, educator judgement. Responses suggested this process supported engagement with industry-relevant practices, though research into its longer-term impact on professional outcomes is still under development.

Design reflections. The chatbot's integration suggested that GenAI could extend rather than replace human consultation. The reduction in consultation hours from approximately 40 h to 15 indicates that well-designed GenAI may redistribute rather than eliminate human connection. The chatbot served 641 conversations from 110 unique users, with interactions focused on complex financial concepts that previous cohorts had found challenging. For

students unlikely to attend human consultations, the chatbot potentially widened access to feedback support.

The results from an optional student survey ($n = 34$ from 645 enrolled, 5.3% response rate) offered comments and valuable individual perspectives that otherwise might not have emerged in group settings (Caillaud and Flick, 2017). Students expressed cautiously optimistic attitudes toward the GenAI feedback in the unit (although this varied across levels of confidence and engagement), valuing automated feedback while preferring human feedback for establishing expectations and standards. One student noted, that the chatbot enables critical thinking because it doesn't flat out give me the solution but instead gives me hints. I find myself understanding and engaging with the content more."

However, engagement with the chatbot was uneven. While some students used it iteratively to refine their thinking, others engaged minimally or expressed uncertainty about how to integrate AI-generated feedback into their workflow. There was also evidence of cautious reliance, where students used GenAI for initial scaffolding but avoided deeper engagement due to concerns about accuracy or academic integrity. These variations suggest that access to AI tools alone does not guarantee meaningful engagement and that relational and pedagogical scaffolding remains critical in shaping how students interpret and act on feedback.

Overall, this case study indicated that thoughtful GenAI integration, grounded in relational pedagogy and shaped by student input, can enhance rather than diminish educational human elements in large cohorts. AI-mediated feedback, when strategically integrated with iterative human interaction, may support cognitive and metacognitive engagement in this context. The findings suggest that AI-generated guidance can function effectively as a scaffold in this context rather than a substitute for human expertise, amplifying reflective judgement and task performance.

Case 2: leadership portfolio

This case study examines how one teacher intentionally incorporated relational principles into a GenAI feedback system for a postgraduate leadership unit of 65 students, offering practical insights for educators working without extensive co-design resources.

The assessment task analysed here is a leadership portfolio, where students aggregate activities, reflections and evidence to chronicle their leadership journey over a semester. Feedback for the leadership portfolio assessment was guided by key relational principles from our framework (Table 1). This case study is broken into two components. First, we discuss the use of personalised, multimodal feedback, including a custom AI-generated avatar of the author and coordinator of this unit. Secondly, our deployment of a custom chatbot called the "Leadership Whisperer" is explored.

Multimodal feedback. Students engaged in activities throughout the semester to build a leadership portfolio. Feedback for these activities was intended to convey care and personal attention, particularly when GenAI tools were used. We aimed to create emotional engagement (1.4) through personalised, multimodal feedback that maintained a sense of teacher presence, rather than generic automated feedback. Communication through diverse channels (1.3, 2.3) was designed to increase connection and engagement. This approach recognised that relational feedback occurs across multiple modalities and contexts. Temporal-spatial aspects (1.5) were also considered in the feedback, which was structured to evolve over the semester, creating a rhythm of communication that would build trust and engagement through consistent, timely interactions.

Before the semester began, a communication plan was designed with the explicit aim of engendering a sense of personal connection through multimodal feedback formats. This socio-affective design (2.1) included varied messaging strategies to strengthen connection. The development of this communication plan illustrates how educators can map specific relational goals, such as emotional engagement and personalisation, to technological implementations within automated feedback systems.

Personalised video messages were sent via an automated system from the unit coordinator to all students, based on data gathered from workshop attendance, engagement with LMS

content and activities and weekly online reflections. These messages acknowledged engagement, celebrated achievements and directed learners to relevant support and next steps, providing personalised performance clarification (1.1). The following workshop activities, targeted messages offered feedback on presentations and progress, providing further scaffolded guidance (1.2).

This communication plan aligns with research advocating for GenAI technologies that manage routine tasks while leaving judgement and oversight to educators (Swiecki *et al*., 2022, p. 6). The automated system enabled efficient delivery of personalised messages while complementing in-person workshops and integrating multiple feedback channels through deliberate technical design (2.2). Communication was intentionally the most frequent and detailed in the early stages to build trust and engagement, with messages addressing learners by preferred name and combining text, multimedia and links. Early weeks featured personal videos from the coordinator, with AI-generated avatar videos providing personalised feedback in subsequent weeks, reflecting a structured approach to communication design (2.3).

Interactive feedback via a chatbot. The "Leadership Whisperer" chatbot was designed to help learners articulate and evaluate their leadership assumptions and to test their understanding through guided interactions. Its role was to be an expert coach that provides supportive, leadership-focused feedback for their portfolio, referring to teaching and assessment resources. Its purpose and guidelines for effective use were communicated in announcements, workshops and *in situ* instructions beside the chatbot to address potential student concerns such as reliance on its guidance or plagiarism.

The chatbot exemplified several key relational elements from our framework. As a guidance tool (1.2), it supported articulation and reflection on leadership assumptions. Its communication design (1.3, 2.3) facilitated guided interaction linked to assessment resources.

Our implementation revealed selective engagement patterns (144 conversations across the semester), although it is not possible to determine the extent to which this reflects strategic use, uncertainty or disengagement (3.2). As with Case 1, the variation in interaction points to differing levels of confidence, need and perceived value in AI-mediated feedback, reinforcing that student engagement with such systems is neither uniform nor predictable.

The end of semester survey responses attested to students' emotional engagement (1.4) and the effectiveness of socio-affective design (2.1) elements. Connection and care emerged as strong themes: "This unit of study has been one of my favourite during my time at the university. While the content was engaging and rewarding, the biggest skill I learnt was more confidence in public speaking and collaboration." Such comments indicate that students benefitted from intentional design that supported relational skills, beyond content mastery.

The quality of engagement reflected successful implementation of spatial-temporal elements (1.5), with one student noting: "[Coordinator's] class has been the one I've felt the most engaged with . . . "[Coordinator] pays close attention to each student's learning progress and provides timely and effective assistance." This feedback is consistent with creating a "supportive learning environment" with appropriate feedback timing and frequency.

In some instances, students found the experience transformative: "This learning will certainly impact me in personal and professional life in future." Students' valuing of "videos and tutorial discussions to spark ideas and meaningful connections" further validates the communication design (2.3) choices across multiple modalities, showing how the technical integration of GenAI complemented rather than replaced meaningful human interaction.

Practical considerations. Implementing relationally focused GenAI in this manner required significant design effort, coordination and ongoing management. Automating video production, which enabled connection, required careful balancing of technological capabilities with human elements. The personalisation of AI avatars needs thoughtful management for transparent and ethical use (Vallis *et al*., 2024). Explicit discussion about GenAI use and avatars in class was necessary, even if, as one student noted "definitely everyone became more comfortable using AI."

Coordinating chatbot activities, AI avatar communications and human feedback required careful orchestration to maintain coherence across channels. Producing personalised AI avatar content was effective but resource-intensive, demanding sustained investment in time, skill and coordination. Those working independently might begin with smaller-scale trials, establish a relational framework before selecting technologies, use existing learner data to inform personalisation and develop consistent communication rhythms blending human and AI-generated content.

Simplified versions of these approaches are adaptable for smaller cohorts or educators with varying technical expertise. Less resource-intensive options, such as scheduled text messages or pre-designed chatbot templates, can retain relational elements within these constraints. Learner responses and usage patterns, used judiciously, may also offer insights that shape ongoing adjustments, allowing relational approaches to evolve iteratively and remain responsive to context.

Discussion

The two case studies illustrate how the relational design framework (Table 1) can guide human-AI integration in assessment practices. In both cases, students actively and strategically drew on human and GenAI feedback sources, and these feedback processes were "hand in hand", shaped by relational foundations and institutional context.

Combining and choosing feedback

Students in the case studies demonstrated sophisticated decision-making when choosing between human and AI-generated feedback sources combining them according to learning needs. Students benefitted from a multi-layered support system that enabled self-assessment, routine questions and immediate feedback combined with collaborative peer feedback or teacher guidance (Wanner and Palmer, 2018). In case 1, students used the chatbot in initial research and concept clarification while preferring human consultation for assessment-specific guidance, to establish expectations and deepen understanding. This reflects performance clarification (1.1) and communication (1.3) elements in practice.

Guidance (1.2) played an important role in supporting learner decision-making. The scaffolded approach used in co-design workshops encouraged learners to exercise agency over their learning while drawing on AI support, indicating how relational design principles can position AI to complement learner judgement.

In case 2, the "Leadership Whisperer" chatbot recorded 144 conversations across the semester. Usage data alone cannot determine whether learners were making strategic choices about GenAI interaction, though the patterns suggest selective rather than extensive or absent engagement with the optional tool. A different pattern was observed in case 1, where those who used the chatbot tended to do so multiple times, possibly reflecting the more extensive scaffolding, use case development and platform support provided in that unit.

Critically, students' ability to combine feedback sources varied with their understanding of GenAI capabilities and the extent to which critical engagement (3) elements were embedded in the design. During our design workshop, focus groups and survey, students expressed a desire to understand more about how GenAI operates and its limitations. Other students were adept users and knew more than we initially anticipated; one was even developing bespoke language models. This finding aligns with research indicating that GenAI integration requires structured pedagogical guidance (Chen *et al*., 2023; Matheis and John, 2024). Earlier research also found that students don't always know how to use technology effectively for education (Bennett and Maton, 2010). Rather than assuming digital fluency, our ethical awareness (3.3) and reflective practice (3.4) elements supported students to develop sophisticated approaches to feedback integration.

At the same time, these patterns were not universally consistent. Engagement with feedback sources was uneven, with some demonstrating sophisticated integration of human

and AI feedback, while others defaulted to a single source or disengaged from available supports altogether. This unevenness reflects broader challenges in feedback literacy, now compounded by the need to interpret and evaluate AI-generated input. It also raises questions about whether hybrid feedback systems may inadvertently advantage those who are more confident or experienced in such technologies. Relational design must account for accessibility and also for different capabilities and engagement preferences.

Relational foundations

The shift in consultation patterns in case 1, from approximately 40 h to 15 per tutor, alongside 641 chatbot conversations from 110 unique users, offers suggestive but inconclusive evidence about how learners navigated the hybrid feedback system. Whether this reflects greater learner independence, displacement of human interaction or simply different patterns of engagement cannot be determined from usage data alone. These patterns nonetheless point to an important question for hybrid feedback design: whether reductions in human consultation represent a genuine reorientation or reduction of relational work. This distinction matters for how feedback labour is valued and organised and warrants further investigation.

Emotional engagement (1.4) was crucial to case 2, where personalised, multimodal feedback sustained a sense of teacher presence through technically mediated channels. Student comments describing their experience as "one of my favourites during my time at the university" and recognising how the coordinator "pays close attention to each student's learning progress" demonstrated successful socio-affective design (2.1). Those learners perceived this care despite the automated delivery of avatar videos and personalised messaging suggests the relational intent of the design was effectively communicated.

The technical design (2.2) element was also essential for coherent feedback. In our cases, GenAI tools were integrated with existing LMSs and human feedback channels rather than operating as isolated systems, working best when deliberately combined with human input (Bearman and Ajjawi, 2023).

Analysis of chatbot conversation histories also suggested that careful communication design (2.3) can create feedback loops that inform and improve teaching practice. In both cases, interaction logs revealed recurring questions and common areas of confusion, enabling teaching staff to adjust their approaches responsively. In this sense, relational design extends beyond direct learner-teacher interaction, with AI-generated data offering insights into broader patterns of learner need that can shape ongoing pedagogical decisions (Salehian *et al.*, 2023).

Institutional considerations

Integrating GenAI into relational feedback practice poses institutional questions that reach beyond individual course design. Workshop participation rates and chatbot usage patterns indicated the need for structured support addressing quality standards orientation (3.1) and ethical awareness (3.3). Learner concerns about academic integrity and AI detection reflect broader tensions between institutional policies and industry expectations, as GenAI becomes increasingly standard in professional practice (Al Naqbi *et al.*, 2024; Lodge *et al.*, 2023). One student captured this tension directly, noting that their employer "encourages AI" while "in all my courses it was kind of discouraged." Embedding reflective practice (3.4) and ethical awareness (3.3) within relational feedback design offers one way of engaging learners with these tensions productively rather than sidestepping them.

Feedback development processes (2.4) demand considerable expertise and institutional support to be viable. Both cases involved careful coordination between GenAI tools, human feedback and existing assessment systems. The finance unit's co-design workshops exemplified how socio-affective design (2.1) can build buy-in by positioning learners as partners rather than recipients of technology, consistent with evidence that co-design produces more inclusive and relational assessment practices when multiple stakeholders are

meaningfully involved (Zeivots *et al*., 2026). However, scaling such approaches requires commitment to relational pedagogical principles rather than efficiency-driven implementation, as relationally grounded AI integration is resource-intensive and difficult to sustain through individual effort alone.

Implications for relational feedback practice

Our research suggests that effective GenAI integration may depend on more than technological capability, requiring attention to relational elements, feedback design and critical engagement. As multiple human and algorithmic feedback sources become integrated into learning environments, feedback literacy itself becomes more demanding, as learners must navigate when, how and whether to engage with different feedback types. This points to the need to rethink assessment and feedback systems in ways that foreground human capabilities and competencies, whilst distinguishing between tasks that benefit from human engagement and those GenAI can handle independently (Swiecki *et al*., 2022).

Strong human presence remains critical for building learner trust, with emotional engagement and clear communication explicitly designed into AI integration rather than assumed. GenAI feedback is most effective when positioned as complementary to human judgement and judgement and disciplinary expertise.

Clear communication about these complementary roles helps to develop appropriate and critical approaches to GenAI interaction. Finally, developing ethical institutional frameworks that align academic integrity requirements with workplace practices is an ongoing challenge (Matheis and John, 2024), requiring ongoing attention to ethical awareness and quality standards.

Our relational design framework (Table 1) offers practical guidance for educators and institutions seeking to integrate GenAI without displacing the human dimensions of feedback. Building on Gravett and Carless (2024), we argue that strong human presence remains critical for meaningful feedback in AI-augmented environments.

The relevance of these findings extends beyond higher education, particularly to organisational and professional learning contexts where feedback is increasingly mediated by AI-enabled systems and carries implications for professional capability, decision-making and evaluative judgement. Raisch and Krakowski (2021) argue that in AI-augmented organisations, the balance between automation and human augmentation is paradoxically interdependent and neither can be determined by technology alone. The cases examined here suggest that relational design offers one practical response to this paradox and that efficiency gains do not automatically produce richer relational engagement. Our framework emphasises human presence, dialogue and ethical awareness and may be transferable to professional learning contexts, though empirical investigation in those settings remains necessary.

These findings also suggest that integrating relational feedback in AI-augmented environments means critically attending to the tensions, trade-offs and uneven experiences such system engender.

Limitations and future directions

The cases represent a focused, context-specific sample within business education, with relatively small qualitative samples and a low survey response rate in one case, limiting the extent to which findings can be generalised. The study is positioned as an exploratory, design-oriented investigation offering insight into how relational feedback practices can be enacted within AI-augmented environments, with larger-scale and longitudinal studies needed to examine outcomes over time.

Conclusion

Knowledge, confidence and experiences with GenAI vary significantly, making differentiated feedback and assessment approaches that balance AI support with meaningful human interaction essential. Our findings suggest that GenAI integration is not a binary choice between efficiency and human connection; when guided by relational design principles from the outset, AI-enabled systems can, in some contexts, enhance rather than dilute human learning relationships.

The relational design principles framing this study emphasise that feedback is most meaningful when purposeful, authentic and attuned to what we know, can do and aspire to become. Designing GenAI-augmented feedback with care and attention to learner development supports the interpreted, cyclical nature of feedback that enables deeper learning, cultivating the relational understanding and reflective engagement that technology alone cannot produce.

Data availability

Ethical approval conditions restrict public data sharing for this research.

References

Ajjawi, R., Kent, F., Broadbent, J., Tai, J.H.-M., Bearman, M. and Boud, D. (2022), "Feedback that works: a realist review of feedback interventions for written tasks", *Studies in Higher Education*, Vol. 47 No. 7, pp. 1343-1356, doi: 10.1080/03075079.2021.1894115.

Al Naqbi, H., Bahroun, Z. and Ahmed, V. (2024), "Enhancing work productivity through generative artificial intelligence: a comprehensive literature review", *Sustainability*, Vol. 16 No. 3, p. 1166, doi: 10.3390/su16031166.

Arstorp, A.-T., Amdam, S.H., Nagel, I., Letnes, M.-A. and Tømte, C.E. (2026), "Bildung at a crossroads: teacher education in the age of GenAI", *Teaching Education*, pp. 1-19, doi: 10.1080/10476210.2026.2625721.

Bearman, M. and Ajjawi, R. (2023), "Learning to work with the black box: pedagogy for a world with artificial intelligence", *British Journal of Educational Technology*, Vol. 54 No. 5, pp. 1160-1173, doi: 10.1111/bjet.13337.

Bearman, M., Tai, J., Dawson, P., Boud, D. and Ajjawi, R. (2024), "Developing evaluative judgement for a time of generative artificial intelligence", *Assessment and Evaluation in Higher Education*, Vol. 49 No. 6, pp. 893-905, doi: 10.1080/02602938.2024.2335321.

Bennett, S. and Maton, K. (2010), "Beyond the 'digital natives' debate: towards a more nuanced understanding of students' technology experiences", *Journal of Computer Assisted Learning*, Vol. 26 No. 5, pp. 321-331, doi: 10.1111/j.1365-2729.2010.00360.x.

Bryant, P. (2023), "Navigating the dissonances of authenticity in assessment: (Re)defining authentic assessment in business education (part 3)", *Disruptive Innovations in Business Education*, available at: https://diberg.blog/2023/10/04/navigating-the-dissonances-of-authenticity-in-assessment-redefining-authentic-assessment-in-business-education-part-3/

Caillaud, S. and Flick, U. (2017), "Focus groups in triangulation contexts", in Barbour, R.S. and Morgan, D.L. (Eds), *A New Era in Focus Group Research: Challenges, Innovation and Practice*, Palgrave Macmillan, London, pp. 155-177, doi: 10.1057/978-1-137-58614-8_8.

Carless, D. and Boud, D. (2018), "The development of student feedback literacy: enabling uptake of feedback", *Assessment and Evaluation in Higher Education*, Vol. 43 No. 8, pp. 1315-1325, doi: 10.1080/02602938.2018.1463354.

Carless, D. and Winstone, N. (2023), "Teacher feedback literacy and its interplay with student feedback literacy", *Teaching in Higher Education*, Vol. 28 No. 1, pp. 150-163, doi: 10.1080/13562517.2020.1782372.

Chen, B., Zhu, X. and Díaz del Castillo, H.F. (2023), "Integrating generative AI in knowledge building", *Computers and Education: Artificial Intelligence*, Vol. 5, 100184, doi: 10.1016/j.caeai.2023.100184.

Corbin, T., Tai, J. and Flenady, G. (2025), "Understanding the place and value of GenAI feedback: a recognition-based framework", *Assessment and Evaluation in Higher Education*, Vol. 50 No. 5, pp. 718-731, doi: 10.1080/02602938.2025.2459641.

Dai, W., Tsai, Y.-S., Gašević, D. and Chen, G. (2024), "Designing relational feedback: a rapid review and qualitative synthesis", *Assessment and Evaluation in Higher Education*, Vols ahead-of-print, pp. 1-15, doi: 10.1080/02602938.2024.2361166.

Dawson, P., Bearman, M., Dollinger, M. and Boud, D. (2024), "Validity matters more than cheating", *Assessment and Evaluation in Higher Education*, Vols ahead-of-print No. 7, pp. 1-12, doi: 10.1080/02602938.2024.2386662.

Fife, S.T. and Gossner, J.D. (2024), "Deductive qualitative analysis: evaluating, expanding, and refining theory", *International Journal of Qualitative Methods*, Vol. 23, 16094069241244856, doi: 10.1177/16094069241244856.

Gravett, K. (2022), "Feedback literacies as sociomaterial practice", *Critical Studies in Education*, Vol. 63 No. 2, pp. 261-274, doi: 10.1080/17508487.2020.1747099.

Gravett, K. (2025), "Postdigital relational pedagogies", in Jandrić, P. (Ed.), *Encyclopedia of Postdigital Science and Education*, Springer Nature Switzerland, pp. 1-4, doi: 10.1007/978-3-031-35469-4_83-1.

Gravett, K. and Carless, D. (2024), "Feedback literacy-as-event: relationality, space and temporality in feedback encounters", *Assessment and Evaluation in Higher Education*, Vol. 49 No. 2, pp. 142-153, doi: 10.1080/02602938.2023.2189162.

Henderson, M., Bearman, M., Chung, J., Fawns, T., Buckingham Shum, S., Matthews, K.E. and de Mello Heredia, J. (2025), "Comparing generative AI and teacher feedback: student perceptions of usefulness and trustworthiness", *Assessment and Evaluation in Higher Education*, Vol. ahead-of-print, pp. 1-16, doi: 10.1080/02602938.2025.2502582.

Heron, M., Medland, E., Winstone, N. and Pitt, E. (2023), "Developing the relational in teacher feedback literacy: exploring feedback talk", *Assessment and Evaluation in Higher Education*, Vol. 48 No. 2, pp. 172-185, doi: 10.1080/02602938.2021.1932735.

Hogan, O., Charles, M.B. and Kortt, M.A. (2021), "Business education in Australia: COVID-19 and beyond", *Journal of Higher Education Policy and Management*, Vol. 43 No. 6, pp. 559-575, doi: 10.1080/1360080X.2021.1926616.

Huber, E., Harris, L., Wright, S., White, A., Raduescu, C., Zeivots, S., Cram, A. and Brodzeli, A. (2024), "Towards a framework for designing and evaluating online assessments in business education", *Assessment and Evaluation in Higher Education*, Vol. 49 No. 1, pp. 102-116, doi: 10.1080/02602938.2023.2183487.

Järvelä, S., Nguyen, A. and Hadwin, A. (2023), "Human and artificial intelligence collaboration for socially shared regulation in learning", *British Journal of Educational Technology*, Vol. 54 No. 5, pp. 1057-1076, doi: 10.1111/bjet.13325.

Kizilcec, R.F., Huber, E., Papanastasiou, E.C., Cram, A., Makridis, C.A., Smolansky, A., Zeivots, S. and Raduescu, C. (2024), "Perceived impact of generative AI on assessments: comparing educator and student perspectives in Australia, Cyprus, and the United States", *Computers and Education: Artificial Intelligence*, Vol. 7, 100269, doi: 10.1016/j.caeai.2024.100269.

Lodge, J., Howard, S., Bearman, M. and Dawson, P. (2023), *Assessment Reform for the Age of Artificial Intelligence*, TEQSA, Canberra, available at: https://www.teqsa.gov.au/sites/default/files/2023-09/assessment-reform-age-artificial-intelligence-discussion-paper.pdf

Malik, A.R., Pratiwi, Y., Andajani, K., Numertayasa, I.W., Suharti, S., Darwis, A. and Marzuki (2023), "Exploring artificial intelligence in academic essay: higher education student's perspective", *International Journal of Educational Research Open*, Vol. 5, 100296, doi: 10.1016/j.ijedro.2023.100296.

Matheis, P. and John, J.J. (2024), "Reframing assessments: designing authentic assessments in the age of generative AI", in Mahmud, S. (Ed.), *Advances in Educational Marketing, Administration, and Leadership*, IGI Global, pp. 139-161, doi: 10.4018/979-8-3693-0240-8.ch008.

McArthur, J. (2023), "Rethinking authentic assessment: work, well-being, and society", *Higher Education*, Vol. 85 No. 1, pp. 85-101, doi: 10.1007/s10734-022-00822-y.

Nieminen, J.H. and Carless, D. (2023), "Feedback literacy: a critical review of an emerging concept", *Higher Education*, Vol. 85 No. 6, pp. 1381-1400, doi: 10.1007/s10734-022-00895-9.

Nieminen, J.H. and Ketonen, L. (2023), "Epistemic agency: a link between assessment, knowledge and society", *Higher Education*, Vol. 88 No. 2, pp. 777-794, doi: 10.1007/s10734-023-01142-5.

Nieminen, J.H. and Yang, L. (2024), "Assessment as a matter of being and becoming: theorising student formation in assessment", *Studies in Higher Education*, Vol. 49 No. 6, pp. 1028-1041, doi: 10.1080/03075079.2023.2257740.

Overono, A.L. and Ditta, A.S. (2023), "The rise of artificial intelligence: a clarion call for higher education to redefine learning and reimagine assessment", *College Teaching*, Vol. 73 No. 2, pp. 123-123-126, doi: 10.1080/87567555.2023.2233653.

Payne, A.L., Ajjawi, R. and Holloway, J. (2023), "Humanising feedback encounters: a qualitative study of relational literacies for teachers engaging in technology-enhanced feedback", *Assessment and Evaluation in Higher Education*, Vol. 48 No. 7, pp. 903-914, doi: 10.1080/02602938.2022.2155610.

Raisch, S. and Krakowski, S. (2021), "Artificial intelligence and management: the automation–augmentation paradox", *Academy of Management Review*, Vol. 46 No. 1, pp. 192-210, doi: 10.5465/amr.2018.0072.

Ryan, T. and Henderson, M. (2018), "Feeling feedback: students' emotional responses to educator feedback", *Assessment and Evaluation in Higher Education*, Vol. 43 No. 6, pp. 880-892, doi: 10.1080/02602938.2017.1416456.

Salehian Kia, F., Pardo, A., Dawson, S. and O'Brien, H. (2023), "Exploring the relationship between personalized feedback models, learning design and assessment outcomes", *Assessment and Evaluation in Higher Education*, Vol. 48 No. 6, pp. 860-873, doi: 10.1080/02602938.2022.2139351.

Sposato, M. and Dittmar, E.C. (2025), "The AI-powered future of digital transformation: enhancing organizations and leadership development", *Journal of Work-Applied Management*, Vol. 18 No. 1, pp. 150-164, doi: 10.1108/JWAM-02-2025-0039.

Swiecki, Z., Khosravi, H., Chen, G., Martinez-Maldonado, R., Lodge, J.M., Milligan, S., Selwyn, N. and Gašević, D. (2022), "Assessment in the age of artificial intelligence", *Computers and Education: Artificial Intelligence*, Vol. 3, 100075, doi: 10.1016/j.caeai.2022.100075.

Terry, G., Hayfield, N., Clarke, V. and Braun, V. (2017), "Thematic analysis", in Willig, C. and Rogers, W.S. (Eds), *The SAGE Handbook of Qualitative Research in Psychology*, SAGE Publications, London, pp. 17-36, doi: 10.4135/9781526405555.n2.

Vallis, C. (2024), "Authentic assessment in higher education: the spectre of lost futures", *Teaching in Higher Education*, Vol. 30 No. 3, pp. 744-751, doi: 10.1080/13562517.2024.2362217.

Vallis, C., Wilson, S., Gozman, D. and Buchanan, J. (2024), "Student perceptions of AI-generated avatars in teaching business ethics: we might not be impressed", *Postdigital Science and Education*, Vol. 6 No. 2, pp. 537-555, doi: 10.1007/s42438-023-00407-7.

Wanner, T. and Palmer, E. (2018), "Formative self-and peer assessment for improved student learning: the crucial factors of design, teacher participation and feedback", *Assessment and Evaluation in Higher Education*, Vol. 43 No. 7, pp. 1032-1047, doi: 10.1080/02602938.2018.1427698.

Yin, R.K. (2009), *Case Study Research Design and Methods*, 4th ed., SAGE, Thousand Oaks, CA.

Zeivots, S., Sun, J.Z., Kennedy, A., Cram, A. and Liao, Y. (2026), "Assessment design through co-design: reimagining assessment design practices in higher education", *Assessment and Evaluation in Higher Education*, pp. 1-18, doi: 10.1080/02602938.2026.2643341.

Corresponding author
Elaine Huber can be contacted at: elaine.huber@sydney.edu.au