VERBAL PEER FEEDBACK IN PROJECT BASED LEARNING COURSE: INSIGHTS FROM MICROSOFT TEAMS MEETING RECAPS

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ABSTRACT

The integration of verbal peer feedback into engineering education supports the development of disciplinary literacy and essential professional skills, aligning with 'Standard 7: Integrated Learning Experiences' of the Conceive-Design-Implement-Operate (CDIO) 3.0 framework and reinforcing student agency in collaborative learning environments. This study examines the implementation of verbal peer feedback within a Project-Based Learning (PBL) engineering course and explores the affordances of Microsoft Teams Premium's Intelligent Recap feature to support instructors in monitoring, evaluating, and facilitating students' peer feedback interactions by capturing key discussion points, action items, and participation patterns during recorded feedback sessions. A two-step feedback process was employed, in which students provided written feedback on peer reports, followed by verbal discussions conducted and recorded via Microsoft Teams. These sessions were summarised using Microsoft's Intelligent Recap feature, helping to explicate peer interactions and facilitate instructor monitoring. The study revealed variability in the quality of student feedback, with some students offering in-depth critiques while others focused on surface-level issues, underscoring the need for more explicit guidance and training. While the Intelligent Recap tool proved useful in capturing key discussion points and streamlining review processes, it lacked the sensitivity to capture nuanced verbal interactions. Student reflections further indicated that participating in the peer feedback process improved their understanding of assessment criteria, boosted confidence, and promoted motivation. However, challenges remained, particularly in students' ability to synthesise information and provide well-articulated critiques.

KEYWORDS

Artificial Intelligence, Feedback Literacy, Project-Based Learning, Standards: 7.

INTRODUCTION

Feedback is the information provided to students, usually after they have completed a learning task or an assessment, about their understanding, performance, or behaviour. Feedback helps students improve and achieve their learning goals by highlighting strengths, identifying areas for improvement, addressing misconceptions, guiding skill refinement, and promoting reflection. Feedback also boosts motivation by demonstrating progress and encouraging growth, making it a vital tool for fostering mastery and educational success.

Henderson *et al.* (2019) posit that effective feedback must be constructive, delivered in a timely manner, and provide students with clear strategies for improvement (i.e. actionable). The work of Carless and Boud (2018) further showed that effective feedback is a dialogic, socially situated process requiring active learner engagement. Instead of passively receiving feedback, Carless and Boud (2018) recommended fostering students feedback literacy, that is, their ability to recognise the value and purpose of feedback (appreciating feedback), discern quality in one's own work and that of others (making judgement), the emotional responses that feedback can trigger (managing affect), and translate feedback into concrete steps for improvement (taking action) through teacher–student and peer interactions. Feedback practice should also extend beyond a single learning task, that is, students should be able to track their progress and continually integrate feedback into future, similar tasks ('feed forward'). Nicol (2020) showed that natural comparisons have a more pronounced impact on learning than formal feedback and argued for comparison to be the core mechanism of all feedback.

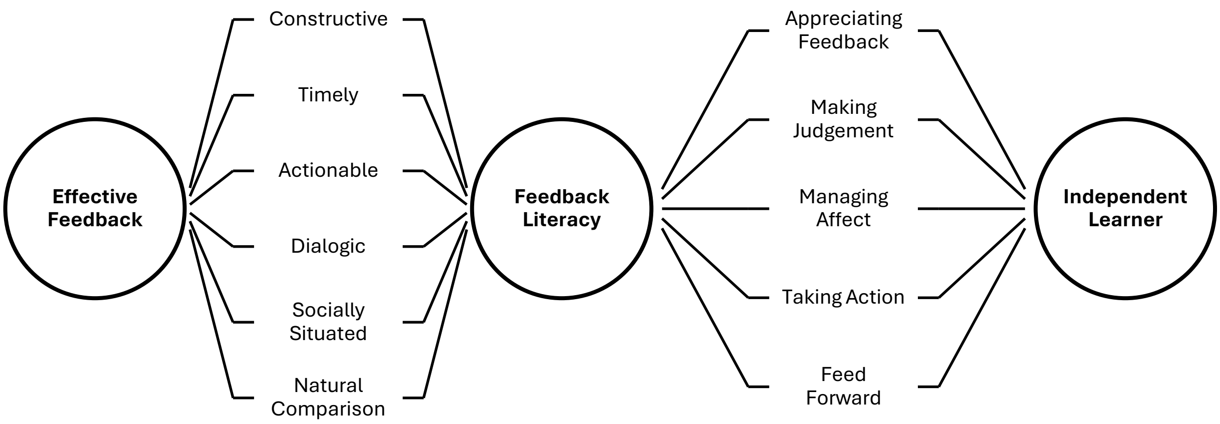

Figure 1. Schema showing how good feedback practice and feedback literacy are keys to developing the independent leaner

Despite its importance, providing effective feedback to students remains a significant challenge across many engineering disciplines, especially in courses taught using the Project-Based Learning (PBL) approach. Large class sizes and high student-to-instructor ratios hinder the provision of detailed, timely, and individualized feedback. Moreover, the diversity in students' learning needs and preferences, as well as the iterative and multifaceted nature of learning tasks and assessments in PBL courses, adds another layer of difficulty. To develop the disciplinary literacy and professional competencies needed to solve problems independently, feedback must be tailored and address both technical accuracy and broader professional skills that are often context-specific, further adding to instructors' workloads.

One approach that can address the challenge of providing feedback in PBL courses is the integration of verbal peer feedback with generative AI into the instructional design. Peer feedback involves students of similar status evaluating and providing constructive guidance on each other's work, rather than relying solely on instructors (Zheng *et al*., 2024). Verbal peer feedback refers to feedback delivered in real-time or recorded conversations (Carberry *et al.*, 2016; Yoong *et al.*, 2023). Due to its dialogic nature, verbal peer feedback can enhance students' understanding of assessment criteria, promote critical professional competencies such as communication, collaboration, and self-regulation, and support the development of students' disciplinary literacy. As such, peer feedback in general, and verbal peer feedback specifically, aligns with 'Standard 7: Integrated Learning Experiences' of the Conceive-Design-Implement-Operate (CDIO) 3.0 framework. It supports the CDIO goal of preparing engineers who are technically proficient and effective in collaborative, real-world professional contexts.

Generative AI refers to artificial intelligence systems trained on large datasets to summarise or produce text, code, images, audio, or video outputs. These systems leverage advanced machine learning techniques to recognise patterns, interpret context, and evaluate digital content based on instructional prompts. Generative AI tools, such as Copilot and Intelligent Recap, are now integrated into Microsoft Teams Premium. These tools can summarise meetings by automatically capturing key discussion points, generating timestamps and action items, and enabling users to query the transcript. As such, Copilot and Intelligent Recap can support the design and incorporation of verbal peer feedback practices in PBL courses.

This projects in progress employed a qualitative case study design to investigate the affordances of Microsoft Teams Premium's Intelligent Recap feature in supporting instructors' monitoring of student verbal peer feedback practices. The specific aims and objectives are to:

1. Explicate students' verbal peer feedback practices; and
2. Evaluate the accuracy and pedagogical value of the meeting recaps in representing student verbal peer feedback interactions.

METHODS

DESN2000 Engineering Design and Professional Practice is a course offered across eight engineering schools at the University of New South Wales (UNSW) to a mixed cohort of students from Levels 2 to 4 of the program. The course is designed to develop students' engineering design capabilities, with a particular focus on the early stages of concept development in response to open-ended problems. It emphasises user-centred research techniques for understanding design challenges, alongside technical skills for concept generation, prototyping, and user testing to evaluate potential solutions. In addition, the course aims to strengthen key professional skills, including project management, teamwork, and communication.

In the 2024 offering of the course at UNSW's School of Chemical Engineering, 12 student teams, each comprising 6 members, were tasked with developing methods for valorising spent coffee grounds. The project spanned 10 weeks, and the students' solution had to meet two key criteria: (1) it must be feasible for the café to implement; and (2) it must generate a profit for the café. These requirements encouraged students to tailor their solutions to the café's operational context and business objectives, pushing them to think creatively and move beyond conventional options such as biofuel production or soil enhancement.

As part of the concept development stage, students were tasked with conducting a technology landscape survey, that is, a structured process for evaluating existing technologies, innovations, and research within a specific field. Students were required to produce a report identifying trends, gaps, opportunities, and cutting-edge solutions relevant to the valorisation of spent coffee grounds. In line with the course level (Level 2), only two technology landscape survey methods were taught to the students: (1) Literature review, where students used Web of Science, a citation database, to search for journal articles on technologies related to the use of spent coffee grounds, and (2) Bibliometric analysis, where students used Scite, an AI-powered tool, to summarise literature, extract key insights, and analyse citation contexts.

The students then formed pairs within their six-member teams to review and provide feedback on each other's technology landscape survey reports. This process was carried out in two steps: first, reviewers provided written feedback on content, writing style, and analysis; then, the reviewer and reviewee met on Microsoft Teams to discuss the feedback verbally. Meetings were recorded automatically, and detailed meeting summaries and attendance reports were generated by Microsoft Teams' Intelligent Recap feature once the meeting ended. Students were provided with a comprehensive guide outlining which aspects of the report to review and give feedback on. They were also instructed on how to provide feedback that is actionable.

Observational logs were maintained to document how students engaged with the verbal peer feedback activity. Students' written reflections on the peer feedback process were analysed thematically for recurring patterns, insights, and perceptions related to their engagement, learning outcomes, challenges encountered, and the perceived value of giving and receiving verbal peer feedback. A document analysis was conducted on one feedback session to evaluate the clarity, accuracy, and pedagogical value of the meeting recap, and the results were compared with human-coded transcripts to assess their reliability and usefulness. Ethical approval for this study was obtained from the University of New South Wales Human Research Ethics Committee prior to data collection (Project Reference Number: HC200047). All participants were informed of the study's purpose and their rights, including voluntary participation, confidentiality, and the option to withdraw at any time without consequence. Written informed consent was obtained from all participants, including permission for the recording and analysis of verbal peer feedback sessions conducted in Microsoft Teams.

RESULTS AND DISCUSSION

Features of Microsoft Teams Meeting Recaps

A typical Microsoft Teams AI meeting recap generated from the meeting transcript of an online peer review and feedback session is shown in Figure 2. The feedback sessions range from 30 min to 1 h per report. The 'Speakers' section visualises the duration and cadence of the students' interactions with each other (bottom left of the top screenshot). The 'Topics' section categorises the students' peer review session into distinct, colour-coded topics by duration (bottom left of the bottom screenshot). The 'Chapters' section (not shown) provides a time-stamped thematic breakdown of the peer review session, offering a structural overview of the discussion flow. The 'AI Notes' section includes two parts: 'Meeting notes,' summarise discussions and key decisions, and 'Follow-up tasks,' detail action items (right half of the top screenshot). Additionally, the recap offers a searchable transcript and meeting recording, enabling users to quickly locate topics using the search function, by clicking a topic in the 'Topics' section, or by using the 'Sync to video' feature (right half of the bottom screenshot).

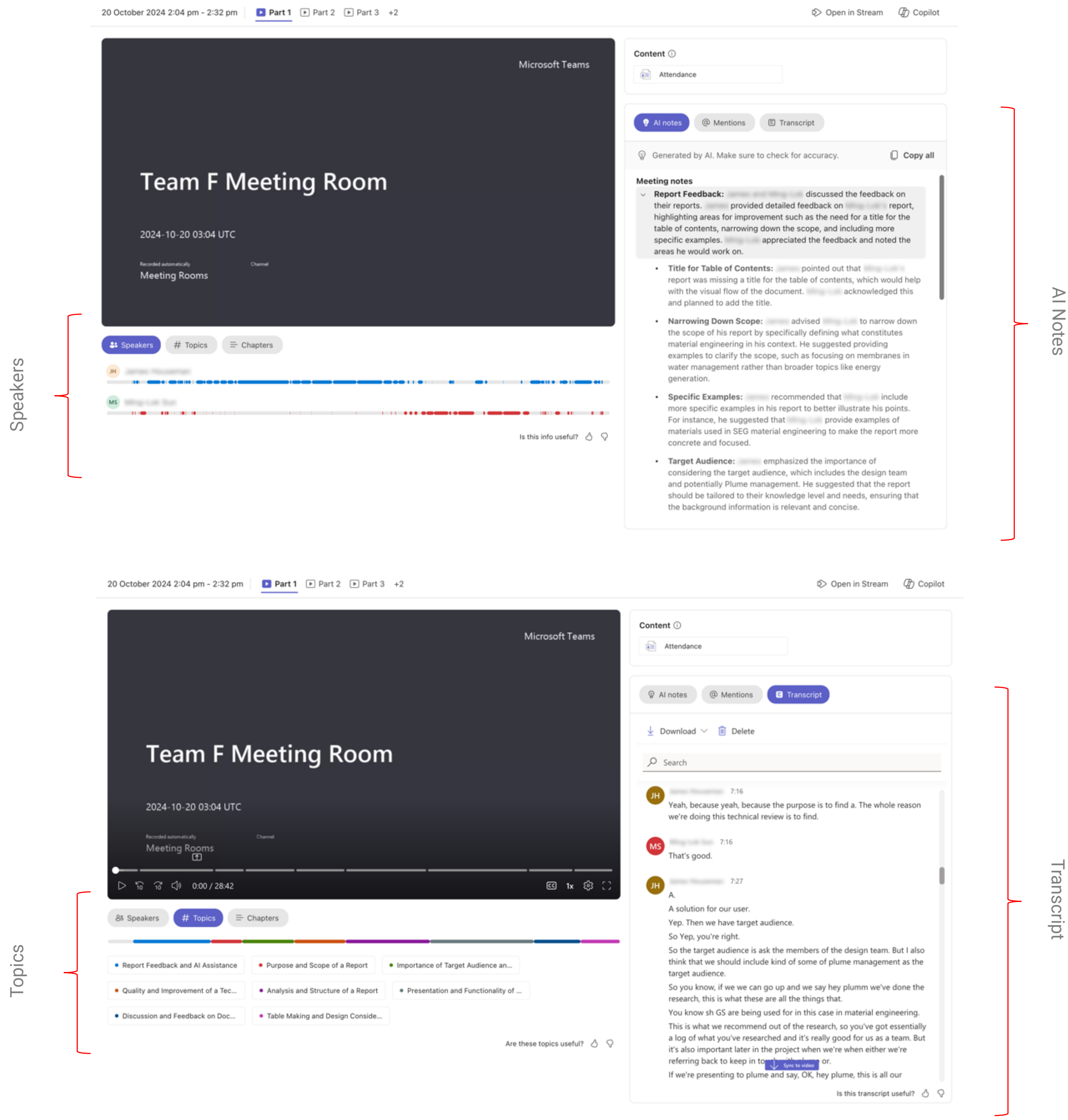

Figure 2. Screenshots of a Microsoft Teams meeting recap generated from the transcript of a recorded online verbal peer feedback session

Observation of Students' Verbal Peer Feedback Practices

Observation of students' verbal peer feedback practices revealed that they actively engaged in negotiation, sense-making, and peer support during the feedback process. For example, students discussing referencing would suggest the use of referencing tools for easier citation management and ensuring that all references are accurate and recent.

Most students closely followed the provided guide, often stepping through it carefully to ensure nothing was missed. The provision of a structured guide informed students about key areas of focus and assisted them in approaching peer feedback in a systematic and thorough manner. However, some students may have followed the guide too rigidly, limiting critical thinking and making their feedback formulaic, potentially missing unique or nuanced aspects of the work that fell outside the guide's scope.

The students demonstrated proficiency in providing feedback on the quality of communication and information within the reports. They were able to comment on the logical flow, clarity, and overall cohesiveness of the reports, and noted areas where these aspects were lacking. A few students also expressed confusion about the task requirements, including the use of track changes, document control, writing and formatting styles, referencing conventions, and the appropriate use of visual aids. Their uncertainty was heightened by differences in requirements compared to similar tasks in other courses they had taken.

Regarding the technical aspects of the report, students were generally able to provide feedback on the quality of information abstraction, particularly the clarity with which the underlying operating principles of the reviewed technologies were explained. Many students also emphasised the importance of using empirical data to support claims and accounting for statistical uncertainties, noting that these elements enhance the credibility and reliability of the report.

Where students struggled was in providing feedback on the quality of information synthesis within the reports. They found it difficult to provide feedback and justify how well the report used diverse sources, ideas, and data to form a logical argument for or against the selection of a specific technology. Many students also lacked the experience or language to critique whether the connections between concepts were clearly articulated or whether the evidence presented effectively supported the overall conclusions.

There is also a discernible variation in students' ability to provide verbal feedback across the cohort. While some students demonstrated strong skills in identifying key issues, offering actionable suggestions, and supporting collaborative improvement, others struggled to deliver meaningful or detailed critiques. For example, some feedback focused primarily on surface-level issues such as formatting or minor grammar errors, rather than addressing more substantive aspects like the clarity of ideas, strength of arguments, or alignment with project objectives. These challenges highlight the need for additional guidance and training in critically evaluating both technical and professional competencies in engineering contexts.

Clarity, Accuracy and Pedagogical Value of Microsoft Teams Meeting Recaps

Microsoft Teams' Intelligent Recap feature provides a streamlined way to summarise virtual meetings by capturing key discussion points, tagging speakers, and generating action items. In educational settings, particularly those involving peer feedback activities, this tool can be valuable for instructors seeking to review student interactions efficiently. It offers a time-saving solution for tracking participation, identifying discussion trends, and gaining a high-level overview of collaborative sessions. For busy educators managing large cohorts, the meeting recaps can act as a first-pass filter, highlighting potentially important moments in verbal peer feedback sessions without requiring them to listen to entire recordings.

Despite these strengths, document analysis showed the accuracy of meeting recap in capturing the details of verbal peer feedback remains limited. Peer feedback is inherently dialogic, often involving tentative suggestions, clarifying questions, and emotionally nuanced exchanges. These subtle yet critical aspects of student interactions are frequently oversimplified or excluded in the meeting recap. For instance, a student expressing uncertainty or offering constructive criticism with caution may be reduced to a vague or overly assertive summary, distorting the original intent. Furthermore, Intelligent Recap sometimes misattributes comments, especially in fast-paced discussions or when multiple speakers contribute simultaneously, which can undermine accurate assessments of individual participation or group dynamics.

Another limitation lies in the Intelligent Recap's handling of domain-specific language. In peer feedback sessions where students discuss technical topics, such as engineering principles, empirical data, or analytical methods, specialised terms or paraphrase can be interpreted inaccurately. This not only reduces the precision of the summary but also risks omitting or misrepresenting key learning moments. Additionally, the tool may struggle to recognise when students are synthesising ideas, negotiating meaning, or offering critical yet constructive commentary, all of which are essential components of high-quality feedback and collaborative learning.

Given these challenges, Intelligent Recap should be viewed as a supportive rather than standalone solution. Instructors should supplement the AI-generated meeting recaps with manual review of key dialogue segments, student self-assessments, and observational notes. This triangulated approach can help preserve the nuance and context often lost in automated summaries. Ultimately, while the Intelligent Recap feature contributes to administrative efficiency and surface-level monitoring, it currently lacks the fidelity required to capture the depth, complexity, and pedagogical value of verbal peer feedback in educational settings.

Student Reflection of the Verbal Peer Feedback

The students' reflections on their peer feedback experiences provide insights into their engagement with and perspectives on the verbal peer feedback process. Generally speaking, students found the peer feedback invaluable for improving their work, fostering collaboration, and enhancing their understanding of the subject matter.

Several students noted the benefits of participating in the peer feedback process as both givers (reviewers) and recipients (reviewees), particularly in relation to understanding and meeting the report requirements. They found the feedback they received valuable for identifying and clarifying issues in their own work, as well as for offering alternative perspectives on how to approach and improve their writing tasks.

> "The feedback on the report from my peer, J, was particularly helpful in identifying and clarifying issues within my work. Additionally, reviewing my peers' reports allowed me to identify common mistakes and areas where I could improve clarity in my own report, which ultimately helped strengthen my work."

> "Report feedback from W was extremely useful as he made it clear that my analysis was missing certain sections, and through giving my feedback on his report, I was able to understand the marking criteria better."

> "I was able to see my report from another perspective and more clearly recognise both key structural parts as well as how different report elements interact."

Students expressed appreciation for the interactive, dialogic nature of verbal peer feedback, highlighting the importance of offering both encouragement and constructive input to their peers. Several students valued the opportunity to give feedback to peers at a lower academic level or receive feedback from those at a higher level. They viewed these interactions as a meaningful part of the learning experience and a key strength of the peer feedback process.

> "I did my best to mention good elements of her report and use constructive criticism where needed. When engaging with feedback, I accepted it without becoming defensive."

> "When I provided feedback, I aimed to do it in a way that would still encourage A to keep enhancing the current work."

> "I think I had a particularly important role here, as I am a 4th year student who has already finished all of 3rd year core. As such I have more experience with report writing and have lots of tips and tricks to offer to others. I believe [junior student] benefitted significantly from my feedback because of this."

> "I did find the feedback meeting with [senior student] to be particularly helpful. I learnt a lot about some of the standard ways to write an engineering report."

Students also noted that the peer feedback process increased their confidence and motivation. Two students further suggested that peer feedback should be incorporated into the other tasks their team was required to complete.

> "Talking with my teammates has given a lot of motivation in believing in myself."

> "I think having greater opportunities to give feedback to other members of the group in various other tasks would have increased team cohesion and forced us to work more proactively."

> "I think my peer review was one of the more productive meeting I had […] it's easier for two like-minded people to agree rather than a group of 6 very different people, but I think this prepared me for what work in industry will be like. I feel a lack of team review at the end of each group assignment hinders the feedback my team members give, as I always found that anonymous feedback very productive for figuring out things I could personally improve on. There not being an anonymous avenue prevents a lot of actually honest feedback."

CONCLUSION

Verbal peer feedback plays a vital role in fostering students' engagement, critical thinking, and professional development within project-based learning environments. By giving and receiving spoken feedback, students are exposed to diverse perspectives and interpretations, which not only enhances their technical understanding but also builds essential competencies such as communication, collaboration, and reflective practice. When integrated with AI tools like Microsoft Teams' Intelligent Recap, these feedback practices can be monitored and analysed more effectively, providing instructors with timely insights into student peer feedback practice. Although Microsoft Teams' Intelligent Recap is not without limitations, it offers valuable support in identifying areas where students may require additional guidance. This integration of peer feedback and AI can help alleviate instructor workload while ensuring students can receive timely and dialogic feedback. Ultimately, these combined approaches should support students' transition from novices to confident, literate professional in their chosen field.

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BIOGRAPHICAL INFORMATION

May Lim is a UNSW Nexus Fellow and Senior Fellow of the Higher Education Academy. She works longitudinally across her institution to foster environments conducive to learning and teaching. Her contributions are multifaceted and include leading cross-disciplinary teams of academics and education developers to develop procedures, resources, and toolkits aimed at scalable improvement to assessment and feedback.

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