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Assessment and feedback case study compendium 2026

Engaging students with feedback

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Contents

Enhancing learning: the added value of dialogue alongside structured self-assessment

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Background

Effective consultation skills are central to safe, patient-centred care. The Consultation Skills for Pharmacy Practice standards (Centre for Pharmacy Postgraduate Education (CPPE) and NHS Health Education England, 2014) and training programmes highlight expected behaviours for pharmacists and describe reflection and assessment as supporting development (Jee et al, 2016). Reflection on consultation skills supports deeper understanding of communication practices (Edwards et al, 2009), particularly in early post-qualification roles where opportunities for practice and direct feedback may be limited but are critical for development (Madden et al, 2023).

A key challenge in consultation skills development is ensuring that feedback allows meaningful practice change. This challenge is exacerbated in community pharmacy, where many pharmacists practice in isolation without regular access to another pharmacist to support direct observation of practice or peer feedback (Magola et al, 2018). For instance, pharmacists expressed uncertainty about how effectively they were delivering person-centred consultations in the absence of peer feedback. In this context, self-assessment offers a means for pharmacists to reflect on and evaluate their consultation skills. Self-assessment can provide valuable insights; however, when used in isolation it has limitations, as performance may be difficult to evaluate accurately and influenced by the individual's mood or state of mind (Atwater, 1998).

To address these challenges, this case study focuses on the use of a structured consultation skills assessment tool, combined with self-assessment and facilitated dialogue with an education supervisor (ES), which adds value to the initial self-assessment by supporting deeper reflection and sense-making. In postgraduate pharmacy education, education supervision aims to provide guidance on practice, support reflective learning and facilitate constructive feedback in the context of safe and effective patient care (Styles et al, 2022).

Central to the intervention is two-way dialogue with an ES, guided by Pendleton's rules, starting with learner-identified strengths and then addressing areas for development (Pendleton et al, 1984). This allows ESs to question, challenge and expand learners' reflections, so that the learner can uncover blind spots and clarify thinking.

The intervention can be understood through the lens of Vygotsky's Zone of Proximal Development, which describes the space between what a learner can do independently and what they can achieve with guided support (Vygotsky, 1978). Structured dialogue with an ES is conceptualised as providing scaffolding that promotes deeper reflection and development.

The intervention aligns closely with the principles of effective feedback in supporting self-regulated learning outlined by Nicol and Macfarlane-Dick (2006). Effective feedback helps learners understand their performance in relation to expected standards, interpret feedback, and identify actionable steps for improvement (Nicol and Macfarlane-Dick, 2006). There is growing recognition of the importance of feedback literacy, defined as learners' ability to understand, interpret and act on feedback (Carless and Boud, 2018; Mamad, 2023). In this case study we illustrate how feedback literacy is helpful for understanding how learners apply insights to develop their practice.

Overall, this case study highlights the added value of facilitated dialogue within a structured self-assessment and reflective writing approach, showing how engagement with an ES supports meaningful feedback use and ongoing professional development. By grounding these activities in established consultation frameworks and learning theory, the intervention offers guided scaffolding that extends learning beyond what is achievable through independent practice alone.

Approach

Building on the rationale for self-assessment and education supervision, the intervention provides a structured approach to support learning, reflection, facilitated dialogue and feedback.

The Medicines Related Consultation Assessment Tool (MR-CAT) was introduced at the start of a 12-month consultation skills module within the education programme for newly qualified pharmacists. Following a routine patient consultation, newly qualified pharmacists complete a self-assessment using the MR-CAT, a validated global assessment tool (Middleton et al, 2023) based on the Calgary-Cambridge model (Greenhill et al, 2011). The MR-CAT provides descriptors for consultation skills and behaviours across three performance levels: below expectations, competent and excellent. These descriptors offer a shared reference point for learners and ESs, creating a common language that underpins reflective dialogue about performance and professional development. An extract from the MR-CAT showing the consultation behaviours section can be found in Figure 1 and a full copy of the MR-CAT can be accessed via the Consultation Skills for Pharmacy Practice website.

5) CONSULTATION BEHAVIOURS – Overall summary of consultation behaviours which forms the structure of the consultation, power versus partnership and therapeutic relationship		
Below expectations ❑	**Competent ❑**	**Excellent ❑**
Overall, the consultation structure and discussion are led by the pharmacy professional's agenda and is one directional. Language, tone, body language and attitude may reflect signs of hierarchy from the pharmacy professional. Pharmacy professional focused on their own goals with little opportunity for patient (or others present) to contribute. Use of jargon or inappropriate language. Outcomes are pharmacy professional-centered	Clear structure although may appear rigid due to pharmacy professional addressing their own agenda before that of patient (or others present). Overall good balance of discussion with patient (and others present) offered the opportunity to contribute. Good demonstration of active listening skills although may disconnect at points to write notes without pause in discussion. Only minor points of jargon or inappropriate language. Outcomes are person-centered but may be led by the pharmacy professional.	Structure is clear and pharmacy professional summarizes to guide the discussion whilst allowing flexibility for the patient's agenda. Overall, a balanced equal discussion is established between pharmacy professional, patient (and others present) to demonstrate partnership. Patient (and others present) engage throughout. Good demonstration of active listening skills, empathy, and appropriate language for the patient. Outcomes are negotiated and person-centered.

Figure 1. Extract from MR-CAT rubric.

Pharmacists write a reflective account to critically evaluate what went well, what could be improved and how future consultations might be approached differently, enhancing self-awareness and enabling them to monitor their own performance. This promotes learner agency, which is the capacity to actively engage in one's own development and make intentional learning decisions (Nicol and Macfarlane-Dick, 2006). The intervention positions pharmacists as active participants in identifying strengths, setting goals and planning improvements.

A study to explore ESs' views on the use of the MR-CAT for self-assessment and reflective dialogue with the pharmacists was approved by the University of Manchester Proportionate Research Ethics Committee (REF: 18453) on 16 April 2025.

Invitations were extended to all CPPE ESs with experience using the MR-CAT for self-assessment and facilitating post-consultation dialogue and feedback with newly qualified pharmacists. Eight ESs from across England and one researcher took part in the study.

Telephone and online interviews (conducted in January and February 2025) explored ESs' perceptions of using the MR-CAT to identify strengths and development needs, how dialogue supported discussion of learners' self-assessments and reflective accounts, and their role in promoting feedback literacy, learner agency and reflective practice in workplace learning.

All interviews were audio-recorded with consent, transcribed verbatim, anonymised and uploaded into NVivo for iterative thematic analysis (conducted between July and August 2025) to identify key themes from each interview question.

Resources required included access to the MR-CAT rubric, reflective templates, audio-recording software, transcription services and NVivo for qualitative analysis.

Outcomes

Iterative thematic analysis of the interviews identified four key themes reflecting ESs' perceptions of the added value of dialogue in structured self-assessment, including its role in fostering reflective feedback, developing feedback literacy, promoting learner agency and translating feedback into actionable steps.

Theme 1: Feedback as dialogue

ESs emphasised that the value lay not in the self assessment rating itself, but in the subsequent discussion.

> "I always say to learners the rating is not as important as the discussion and the development points and what you gained from that discussion after the consultation took place." (ES4)

Dialogue was seen as essential for deepening reflection, clarifying thinking and identifying meaningful development points, consistent with Nicol and Macfarlane-Dick's (2006) emphasis on feedback as a dialogic process that supports self-regulated learning.

ESs described how dialogue enabled learners to explore their reasoning, identify blind spots and consider alternative perspectives. Without this dialogue, there was a perceived risk that self-assessment could become superficial rather than developmental, reflecting Carless and Boud's (2018) argument that feedback is most effective when it is interactive and actively engages the learner, rather than being a one-way process.

Theme 2: Developing feedback literacy

The MR-CAT, when combined with facilitated dialogue, actively supported pharmacists to interpret and act on feedback, aligning with the principles of feedback literacy (Carless and Boud, 2018; Mamad, 2023). ESs reported using questioning to probe and challenge pharmacists' self-assessments, especially when self-assigned ratings were not supported by their account of the consultation.

One ES asked:

> "Now that we've had that discussion, would you still mark yourself as excellent?" (ES2)

This approach encouraged pharmacists to think more critically about performance standards and their own judgements. ESs highlighted the value of facilitated dialogue in distinguishing pharmacists who were overly self-critical from those unaware of their development needs.

> "Are they being hard on themselves, or do they not know what they don't know?" (ES7)

Through this process, pharmacists developed greater awareness of how to interpret feedback and use it to guide improvement, aligning with Nicol and Macfarlane-Dick's (2006) model of feedback supporting self-regulated learning.

Theme 3: Promoting learner agency

Nicol and Macfarlane-Dick (2006) conceptualise learner agency as learners' ability to actively engage with feedback, make judgments about their performance, and take intentional actions to direct their own learning, which aligns closely with this approach.

Self-assessment and reflective writing positioned pharmacists as active participants in the feedback process. Facilitated dialogue with an ES added value by providing scaffolding, consistent with Vygotsky's Zone of Proximal Development (Vygotsky, 1978), enabling learners to extend their current capabilities. ESs deliberately encouraged learners to identify strengths and decide how to build on them, shifting responsibility for development towards the learner.

One ES described asking:

> "What do you already do well and how do you take that forward to do it better?" (ES5)

Learners were also prompted to think about progression between levels of practice, for example:

> "What could you do to move this from 'competent' to 'excellent'?" (ES7)

ESs encouraged learners to identify strengths, set goals and plan how to improve, prompting reflection on progression between levels of practice (for example, moving from 'competent' to 'excellent'). The MR-CAT provided a structured framework to interpret performance, while dialogue helped translate these insights into actionable steps, reinforcing learner agency.

Theme 4: Transforming feedback into action

ESs emphasised the added value of dialogue in helping learners interpret the MR-CAT descriptors and translate reflection into actionable next steps. This aligns with Nicol and Macfarlane-Dick's (2006) principles of effective feedback, which highlight that learners must actively interpret feedback, compare it to expected standards, and plan actions to close the gap between current and desired performance. Similarly, Carless and Boud (2018) describe feedback literacy as the ability to understand, make sense of and act on feedback, emphasising that learning occurs when reflection and dialogue are transformed into practical steps for improvement.

One ES noted:

> "I think it's useful to support them to pick out specific things they can work on, so they go away with definite actions. It's not wishy washy." (ES2)

Action planning was often supported by signposting to relevant learning resources or opportunities for further practice. This helped ensure that feedback became a starting point for continued development rather than an endpoint. The MR-CAT provided a structured framework for learners to reflect on and interpret their performance (Middleton et al, 2023), while the facilitated discussions with ESs offered scaffolding, consistent with Vygotsky's

Zone of Proximal Development, enabling learners to extend their current capabilities (Vygotsky, 1978).

Summary of outcomes

Overall, the findings suggest that structured self-assessment using the MR-CAT, when combined with facilitated dialogue, supports meaningful engagement with feedback. ESs perceived that facilitated dialogue enhanced reflection, supported the development of feedback literacy, promoted learner agency and helped transform feedback into actionable development plans. While self-assessment alone allows learners to reflect on their consultations, dialogue added value by challenging assumptions, helping learners check and adjust their self-ratings against expected standards and uncovering blind spots. ESs perceived that these outcomes were unlikely to occur through self-assessment in isolation. These findings align with Nicol and Macfarlane-Dick's (2006) principles of effective feedback, Carless and Boud's (2018) concept of feedback literacy and Vygotsky's (1978) concept of scaffolding, where guidance and dialogue help learners extend their capabilities beyond independent practice.

All ESs were from a single organisation. Therefore, including perspectives from other pharmacy educators, peers, and learners may provide further insight into how dialogic feedback can be sustained across different practice settings. Interviews with community pharmacists are currently underway to explore learners' perspectives on self-assessment, reflective practice, and dialogue with an ES.

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Scaffolding assignments using self- and peer feedback

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Background

Many undergraduate and postgraduate students face challenges in engaging with the whole content of modules, which negatively affects their ability to achieve the intended learning outcomes of the modules as well as the programmes they study.

With increasing distractions due to social media (Faure-Carvallo, 2025) or the need to seek employment (Oldfield et al, 2025), students increasingly struggle with cognitive, affective and behavioural engagement in lectures and seminars, as well as independent studies outside of class (Oseghale, 2025).

Prior research indicates that many students act strategically, and that their behavioural as well as cognitive, psychological and affective engagement with learning activities depends on their perceived relevance to summative assessment (Sloan et al, 2020). However, despite constructive alignment between summative assessment and a module's intended learning outcomes, students frequently struggle to engage successfully with the complex tasks set in assignments, which cover a wide range of relevant learning outcomes.

Problems occur due to students'

+ limited ability to structure complex problems and develop cohesive plans of investigation due to a lack of prior experience or disabilities, such as ADHD or dyslexia
+ temptation to outsource the structuring of problems, investigations or complex analysis to generative AI (Hou et al, 2025; Wang et al, 2026)
+ procrastination.

Research indicates that 50% to 70% of students in higher education are regularly affected by procrastination (Hen and Goroshit, 2020; Shaked and Altarac, 2023), leading to unsatisfactory academic performance, stress and anxiety, which affect students' emotional and psychological attitudes towards learning (Faure-Carvallo, 2025).

While optimistic procrastinators tend to underestimate the tasks or overestimate their abilities, pessimistic procrastinators tend to be paralysed due to a lack of clarity of the tasks set or how to structure it, or a lack of confidence in their ability to develop the relevant skills and understanding to engage with it successfully (Geitz et al, 2016; Torrens et al, 2025). Complex assignments, which require students to develop and demonstrate a range of different learning outcomes, are often perceived as difficult and frightening, fuelling avoidance behaviours and poor levels of engagement (Shaked and Altarac, 2023).

This highlights the potential benefits of scaffolding engagement with summative assignments during classes, to help students develop effective learning behaviours, support their ability to develop time and project management skills, and improve their self-efficacy.

Approach

To support students' development of self-regulated learning skills, scaffolding of assignments is used in an undergraduate finance module and a postgraduate, post-experience managerial economics module at a Russell Group university.

The scaffolding aims to help students develop skills in planning, knowledge acquisition, self-monitoring and regulation, strategy development, reflection as well as a better understanding of their motivational processes and self-efficacy beliefs (Wesiak et al, 2014).

For undergraduate students, with little experience in independent studies, the focus is on developing self-regulated learning skills. For postgraduate students the focus is on reminding them of their ability to self-regulate learning. As highlighted by Gašević et al (2015), students are often capable of self-regulated learning but forget to do it. Especially when students return to higher education after periods of employment, externally facilitated regulation of learning and motivation can be helpful.

When developing scaffolding for the two student groups, it was necessary to balance structured support (eg, task breakdown and question prompts; Demetriadis et al, 2008) with autonomy-supportive teaching, so that students could reflect on their experiences and develop the skills and attitudes needed for future independent learning (Capetta and Paolino, 2015; Van de Pol et al, 2010).

The design of the assignment and its supporting activities required careful consideration of how key scaffolding dimensions were explicitly integrated. The key scaffolding dimensions considered were:

+ metacognitive scaffolding: guidance on how to approach learning
+ conceptual scaffolding: guidance on which issues to consider
+ procedural scaffolding: guidance on how to use resources or tools
+ strategic scaffolding: guidance on how to solve problems (eg, Huang et al, 2012)
+ recruitment: getting students interested and focused on a task
+ contingency management, by adjusting the support offered to the needs of students, and frustration control, by providing support before students' frustration with their inability to successfully engage tasks affect their engagement (Van de Pol et al, 2010).

To ensure that all of the different scaffolding dimensions were covered, developing the scaffolded assignments was broken down in a number of steps:

1 Designing the assignment

+ The assignment topic must align with all module learning outcomes, in terms of both knowledge and skills, as this constructive alignment promotes engagement among strategic students (Sloan et al, 2020).
+ To promote engagement, the assignment topic should offer student agency, for example through practical relevance and choice of case. Recognising the employability skills developed can increase interest and perseverance.
+ The assignment should be designed, so it can be broken down in a number of tasks. This does not mean, that the assignment question itself is broken down into separate statements or tasks. Having a complex assignment statement provides students with metacognitive scaffolding to learn how to manage complex tasks.

2 Designing the scaffolding activities

+ Work on the assignment should be carefully deliberately sequenced across the module, with scaffolding activities timed to match the staged development and application of knowledge and skills, so that students need to stay engaged across the whole module, and do not focus only on specific topics, sessions or activities.
+ Develop in- and out-of-class activities, based on realistic expectation of students' engagement with out-of-class preparation. Clear guidance on expectations and tasks facilitate student engagement, especially for strategic students who are more extrinsic incentive driven.
+ Plan both conceptual scaffolding (guidance on relevant topics) and procedural scaffolding (clear instructions on finding and using resources). Clear guidance is especially critical for out-of-class preparation in large classes, where opportunities for contingency support are limited and the risk of student frustration is higher.
  Template documents that prompt students to record findings or reflections can enhance their sense of purpose, support the monitoring of engagement in workshops and seminars, and improve the quality of peer discussions.
  As scaffolding is faded, later activities can place greater emphasis on students' initiative in identifying relevant topics and appropriate tools.
+ Given its importance for both module performance and employability, strategic scaffolding should focus on developing students' critical self-reflective and analytical skills.

3 Activities to promote self-and peer feedback

Lecturer feedback on scaffolding tasks often encourages a focus on the 'correct answer' rather than critical reflection. In contrast, peer feedback prompts students to think more

carefully about the feedback they receive, and the feedback they provide, and can prompt them to self-reflect on their own work.

Well-designed peer-feedback activities, moreover, have the benefit of requiring students to engage in detail with assessment criteria and grade descriptors (Gielen and De Wever, 2015). Engaging in a review of other students' work using guidance on assessment criteria and grade descriptors, increases students' understanding how these criteria also apply to their own work.

Two effective methods to facilitate this are round robin group work activities and silent debates.

+ Round robin sessions are group work sessions where students discuss their findings or thoughts, eg based on their template reports of work they engaged in outside of class. The benefit of a round robin approach to the group discussion is to provide additional structure, ensuring that each student will be heard, one by one, and each student needs to contribute, improving introvert students' ability to participate and reducing free riding. As part of the scaffolding, initial sessions might be simply based on students sharing factual findings of their research, and identifying similarities and differences, whereas later sessions can increase the level of analysis and debate required.

+ In silent debates, students are asked to write an (eg 10 minute) answer on a topic, without looking at any notes. They then swap their answers with another student who provides written feedback (eg for 5 minutes). Afterwards the feedback is swapped back and considered. Discussions within small groups or plenaries then explore what students learned from the exercise, both in terms of the feedback they provided and received (eg in terms of topics they have missed, misunderstandings, their ability to explain arguments clearly or reason coherently). As many students struggle to start writing, this exercise can help with writers block. Moreover, by being required to work without notes, students are more likely to develop their own structure to arguments and identify which information or arguments they are the most relevant. This might reduce their reliance on other authors' or AI's suggestions.

Outcomes

Drawing on the experience with the two different modules over a number of years, they key outcomes of using scaffolding of assignments throughout the whole module using self- and peer feedback are:

+ The success for all students depends on attendance in teaching sessions. Where the relevant teaching sessions are compulsory, students' engagement with the process improves, leading to fewer assignments which are characterised by surface learning, lack of criticality, or miss key parts of the assignment tasks. Where teaching sessions are not compulsory, the activities do not seem to have a strong impact on attendance.

+ Student engagement in seminars and workshops typically improves over time, alongside increased engagement with out-of-class tasks. Preparation for the first session is often uneven, and for subsequent sessions it is important to be kind but firm, ensuring that underprepared students do not detract from the learning experience of those who have prepared, or get used to being able to free ride.
+ Student feedback indicates that many students found the scaffolding of the assignment beneficial to their continuous engagement the module, especially when faced with material they initially found very challenging. They also noted that it helped them gain confidence in their ability to systematically explore and analyse complex topics, actively employing a wide range theories, empirical evidence as well as data and analytical tools covered in the modules.
+ Despite scaffolding, many students, particularly undergraduates, lack confidence in their ability to structure the final assignment answer, and resort to asking generative AI for structure suggestions and therefore turn to generative AI for structural guidance. This often results in unfocused structures characterised by unnecessary repetition.

The latter experience highlights the need to develop scaffolding activities that support students in critically assessing AI-generated suggestions and using AI tools more effectively.

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Transforming feedback: a multi-faceted strategy for better outcomes

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Background

Assessment and feedback continue to represent one of the most persistent areas of student dissatisfaction within UK higher education, as evidenced by National Student Survey (NSS) outcomes over successive cycles. An array of literature has highlighted this ongoing concern, consistently identifying assessment and feedback as a key driver of student experience and engagement (Blair, 2017; Shafi et al, 2018; Dobson et al, 2025). While improvements have been made institutionally in areas such as feedback turnaround times and standardisation of marking processes, NSS data suggests that these procedural enhancements alone have not translated into improved student perceptions. Instead, dissatisfaction increasingly centres on the quality, clarity and usefulness of feedback content.

Much of the literature emphasises the central role of academics in shaping feedback practices, not only through what feedback is provided, but how it is framed, communicated and contextualised for students. Blair (2017) argues that feedback is often written from an expert academic perspective that assumes shared understanding of disciplinary norms, while Shafi et al (2018) highlight that students frequently struggle to interpret feedback in ways that meaningfully inform future work. More recently, Dobson et al (2025) have reinforced the importance of feedback literacy, positioning feedback as a relational and dialogic process rather than a one-directional transmission of information.

Within the Faculty of Health and Life Sciences at De Montfort University (DMU), these sector-wide concerns were mirrored locally through a year-on-year decline in NSS scores for assessment and feedback. While overall student satisfaction across the faculty remained strong, assessment and feedback emerged as a relative area of weakness when compared to institutional and sector benchmarks. Analysis of longitudinal NSS data revealed that this decline was not attributable to a single programme or discipline, but was evident across a range of undergraduate provision.

Importantly, qualitative NSS comments provided further insight into the nature of student dissatisfaction. Students frequently reported that feedback lacked clarity, consistency, or sufficient guidance on how to improve future assessments. Comments often referenced feedback being “too vague”, “unclear”, or “not helpful”. Yet this student narrative appeared to be in tension with external perspectives on assessment and feedback quality. External examiners consistently commended the standard, rigour and academic appropriateness of feedback practices within the faculty. Reports frequently highlighted alignment between

learning outcomes, marking criteria and feedback commentary, as well as the professionalism and consistency of academic judgement. This apparent disconnect raised an important question: if feedback was academically robust and externally validated, why was it not resonating with students?

This tension suggested that the issue was not one of compliance or academic standards, but of communication and shared understanding. Feedback was meeting regulatory and disciplinary expectations, yet its purpose, meaning and intended use were not always transparent to students. What was missing, therefore, was not feedback itself, but what can be described as an assessment and feedback "trick": the deliberate creation of conversations around feedback.

By reframing feedback as a dialogic process rather than a static product, opportunities emerge for discussion, reflection and clarification. Such an approach aligns with contemporary feedback literacy frameworks, which emphasise students' active role in interpreting and using feedback (Carless and Boud, 2018). Through dialogue, feedback becomes something students do something with, rather than something that is merely received. This conceptual shift provided the pedagogical foundation for the project and informed its subsequent design.

Approach

In response to these challenges, the Faculty of Health and Life Sciences developed and implemented the 'Feedback Toolkit', adopting a three-stage, partnership-led approach that placed student understanding at the centre of assessment and feedback practice.

The first stage of the project focused on identifying the language routinely used in assessment feedback across the faculty. A bank of commonly used feedback terms was developed through analysis of anonymised feedback comments drawn from a range of undergraduate assessments. This analysis revealed a high frequency of recurring phrases and academic shorthand, such as "lack of critical analysis", "too descriptive", "unclear argument" and "issues with referencing".

Students were involved at this early stage to identify which terms they found confusing, ambiguous, or difficult to act upon. Through student consultation, students highlighted that while such phrases were familiar, their precise meaning varied across modules and markers. For many students, these terms signalled that something was "wrong" with their work but did not articulate what needed to change or how improvement could be achieved.

This stage surfaced an important insight: consistency in language did not necessarily equate to consistency in understanding. Academic shorthand functioned effectively but often lacked student understanding or indicate how a student could 'take action' on their feedback. The second stage of the project involved the co-creation of an innovative web-based resource: Understanding Feedback - CLaSS Student Resources - LibGuides at De Montfort University. The resource was designed to support shared understanding of assessment and feedback terminology for both academic staff and students. Working in partnership with both

students and colleagues in Learning Services, the project team developed the Feedback Toolkit as a digital, accessible resource that unpacked commonly used feedback phrases.

Each entry in the Toolkit provided:

+ a clear explanation of what the term means in an academic context
+ examples of how the issue might appear in student work
+ practical, action-oriented guidance on how students could address the feedback in future assessments.

Students played a central role in shaping the language, tone and structure of the Toolkit, ensuring that explanations were accessible. This partnership approach positioned students as active contributors to pedagogical design, rather than passive recipients of support materials.

Importantly, the Toolkit was not framed as a remedial resource, but as a shared reference point for both students and staff. By making expectations explicit, it aimed to support dialogue around feedback and reduce the hidden curriculum often associated with academic writing and assessment.

The final stage of the project focused on embedding the toolkit into institutional systems and academic practice. The feedback toolkit was integrated into the university marking system, enabling staff to link directly to relevant toolkit entries when providing feedback. This approach allowed feedback comments to remain concise while offering students immediate access to expanded explanations and guidance.

Targeted staff development sessions were delivered to support academics in using the Toolkit effectively and in developing more action-oriented feedback. These sessions encouraged reflection on feedback language, assumptions about student understanding and the role of dialogue in assessment practices. By aligning the Toolkit with staff professional development, the project sought to influence not only tools and resources, but to influence and promote an improved feedback culture more broadly.

Outcomes

Analysis of the most frequently accessed Toolkit entries provided valuable insight into student engagement and learning needs. Students consistently sought clarification on common feedback phrases such as “What is your argument?”, “You need to be more critical / too descriptive”, “Issues with grammar or syntax”, “Ref? / Source?”, and “This work lacks analysis”. The prominence of these entries confirmed that these phrases represented key points of misunderstanding or uncertainty.

The high usage of these terms highlighted a persistent gap between academic shorthand and student understanding. While such phrases are efficient for staff, they often lack the specificity required for students to translate feedback into action. Through student

partnership, these terms were unpacked within the Toolkit to clarify expectations, illustrate disciplinary conventions and provide concrete strategies for improvement.

This process reframed feedback from a purely evaluative judgement to a dialogic learning process. Students anecdotally reported greater confidence in interpreting feedback and a clearer sense of how to apply it to subsequent work. Although the impact on NSS scores has been incremental – a recognised “slow burner” – early indicators suggest increasing alignment between staff intent and student feedback literacy.

Beyond the Faculty, the project has adopted a cross-institutional approach, expanding across all three faculties at DMU. This expansion reflects recognition of the Toolkit’s transferability and relevance across disciplinary contexts. To support this scaling, short, student-co-created digital resources (“Shorts”) are being developed to raise awareness and promote consistent use of the Toolkit. These concise resources support staff in developing action-oriented feedback aligned with Toolkit principles and are particularly effective for just-in-time professional learning.

Dissemination has been embedded through multiple institutional channels, including the internal PG Cert Empowering Education programme, opt-in professional development sessions and co-delivered workshops in partnership with the DMU Education Academy. This multi-layered dissemination strategy has helped to normalise dialogue around feedback language and reinforce shared responsibility for feedback literacy.

The next phase of the project will focus on evaluating the longitudinal impact of the Feedback Toolkit on NSS Assessment and Feedback outcomes, alongside deeper qualitative exploration of student engagement with feedback across levels of study. Attention will be given to how feedback literacy develops over time and how early exposure to shared feedback language influences student confidence and independence.

Central to future development is the continued strengthening of student–staff partnership. Students will be positioned not only as recipients of feedback, but as co-educators and co-designers of assessment and feedback practices, supporting sustainable cultural change across the institution.

This case study demonstrates that improving assessment and feedback does not necessarily require more feedback, but better shared understanding of feedback language. By co-creating resources with students, unpacking academic shorthand and embedding dialogic, action-oriented feedback into everyday marking practices, institutions can narrow the gap between staff intent and student experience. While cultural change in feedback practice is incremental, a partnership-led, institution-wide approach offers a scalable and sustainable model that other HEIs can readily adapt within their own disciplinary and institutional contexts.

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When social constructivism meets transformational learning theory: strengthening the learning community, student self-reflection and agency

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Background

Occupational Therapy is an accredited health profession in Australia. University programmes offering accredited Occupational Therapy degree programmes are required to ensure that graduates meet professional competency standards to ensure safe and ethical practice across diverse practice settings and clinical populations. Occupational Therapy students must complete a minimum of 1,000 hours of professional placement and be assessed as competent by registered clinician educators in a range of clinical settings. Programmes must ensure that students have achieved foundational competencies in the domains of communication, professionalism, occupational therapy knowledge and learning, and occupational therapy process and practice prior to interacting with the public as part of their studies, as outlined in the Australian Occupational Therapy Competency Standards (Occupational Therapy Board of Australia, 2018).

In an Australian, two-year, master's level, accredited Occupational Therapy programme, an introductory subject called Foundations of Occupational Therapy was reviewed and re-designed to ensure that students have been formally assessed and can demonstrate that they meet a safe level of practice prior to being allocated to their first external placement. This foundational subject requires students to understand and apply core Occupational Therapy theory to clinical case studies and demonstrate their learning through written assessment and a viva voce. This subject includes a hurdle assessment (the viva voce in week nine of the semester), which is compulsory for students to pass to progress in the programme. It assures students' safety and competency at a foundational level prior to engaging in the first of six work-integrated learning placements in the programme, under supervision in community-based health services. This foundational subject requires students to understand and apply core occupational therapy theory to clinical case studies.

As part of annual programme monitoring and review, feedback from a range of internal and external stakeholders, including students, industry partners, clinicians, consumers and educators is regularly solicited and analysed to inform ongoing curriculum development. In 2024, consultation with some stakeholders revealed that a proportion of students required significant support to demonstrate the expected level of competency during placement. Student feedback specific to the Foundations of Occupational Therapy subject also highlighted potential gaps in some students' understanding of the links between theoretical

concepts learned during class and application to practice during supervised placement in clinical and community settings. Some students also reported feeling that expectations for demonstration of professional competencies increased substantially from one semester to the next.

Consultation with academic and placement staff resulted in three considerations for the subject review. First, the hurdle assessment was not adequately providing an assurance of learning of the subject learning outcomes and needed to become more robust to ensure that students were placement ready and could effectively work with industry partners. In the context of readily accessible generative AI (GenAI) tools and enhanced digital literacy in the use of GenAI among the student population in 2023-25, assurance of achievement of learning outcomes has become a key focus for tertiary degree programmes (Tertiary Education Quality and Standards, 2025). Second, further scaffolding to consolidate the integration of theory and practice across the 12-week semester was identified as an area for improvement by the academic team. Third, we needed to create activities to support practice, formative feedback, reflection, revision and refinement of skills in advance of the hurdle assessment. For these aims to be achieved, the team supported the creation of an interconnected, sensitive suite of learning activities and assessments. Over 12 weeks, students would be encouraged to engage with feedback, self reflect and develop agency in learning to support their success and meet the minimum standard requirement by the end of the subject.

Post review, the revised assessments included:

1. an essay where students could use GenAI to plan their essay and revise their writing
2. a hurdle assessment pass viva voce which prohibited GenAI use
3. a case analysis assessment, completed under exam conditions.

In summary, the revised subject included 70% of assessment tasks in the subject would require students to demonstrate their learning without the support of GenAI. A cohort of 36 students, taught by a teaching team of two staff, engaged in four hours of face to face learning each week, with the expectation that they would engage in approximately six hours per week of self-directed learning to ensure they were prepared for class.

Approach

One of the challenges with teaching theory and models that underpin and guide clinical practice is that it can feel intangible, distant and not relevant to students (Yardley et al, 2012). In the first assessment (essay), students were provided with a chance to make sense of Occupational Therapy theory, read and understand the theoretical foundations of the profession. They had time to research, read, draft and reflect in advance of the due date in week six. However, the final two assessment tasks were more demanding as students would be required to produce their application of knowledge under timed conditions; either verbally or in written format which more closely mirrored clinical settings (Peloquin et al, 2003). To reduce the demand of a substantial amount of new clinical information, the team

decided that each student would interview one simulated client (week three) and their simulated family member (week seven) to support experiential learning (Kolb, 2014) and use the information gathered about that client and their family to inform both the viva voce in week nine and the case study analysis in week 12. This reduced the risk of students becoming overwhelmed by multiple case studies and clinical complexity and supported them to focus on application of theories and models and the development of a client profile. These skills are represented in the subject learning outcomes and are also critical to students succeeding on their first placement.

The design of weekly activities provided students with time to develop, practice and refine skills required to pass the assessments. In designing activities, the team were mindful of challenges with group work, including passive participation, group dynamics and surface-level engagement (Hendry et al, 2003). Individualising interviews could also impact student confidence, engagement and opportunity for formative feedback (Rico-Juan et al, 2022). Therefore, it was decided that each student needed to engage in the interviews to gather information individually, thereby increasing motivation to engage and supporting experiential learning (Merriam, 2018; Ryall et al, 2016; Yardley et al, 2003) but they would be supported by two peers. The roles for peers included: one peer to be the observer and who could give advice throughout if the student became ‘stuck’ and one peer as the note-taker. The intention of the peer learning was that the interviewing student would have a comprehensive set of notes and information about the client they could review after completing the interview. This design was intended to provide peer support, peer feedback, vicarious learning via modelling, peer reflection and engagement in multiple forms of feedback to support collective learning (Alexander, 2008; Bandura and Walters, 1977). This approach provided all students with time to develop their interviewing and communication skills as well as practice again in week seven when the second interviewing activity occurred. These experiences occurred in advance of the mandatory pass assessment in week nine so that students could continue to reflect and refine their skills. During the workshops that followed the weeks where students conducted an interview, they reviewed their client’s information in groups, collectively checking their understanding (Alexander, 2008), receiving feedback from educators and through discussions with peers, reflected on the experience and consolidated their knowledge (Kolb, 2014; Boud and Walker, 1990,1998). This encouraged active participation, peer support and self-reflection (Amineh et al, 2015; Faller et al, 2020; Horsburgh and Ippolito, 2018; Mann et al, 2009).

The following theoretical perspectives informed subject structure and the revision of assessment tasks two and three. Social constructivism (Bandura and Walters, 1977) and experiential learning (Kolb, 2014) underpinned the reasoning for the use of simulated clients, and the development of peer learning activities that were embedded throughout the subject. These activities required the students to support each other, be observant and actively engage when their peers were interviewing their client and provide feedback, creating an environment where students collectively grappled with the application of theory to clinical practice (Alexander, 2008).

Reflective learning (Boud and Walker, 1998) and transformational learning theory (Mezirow, 2000) also provided a theoretical basis for embedding group learning activities throughout the semester, and the reasoning to have students each partake in two individual interviews related to the client they had been assigned. While the first interview in week three was challenging for many students, it provided an early experience which required students to reflect not only on their own abilities to engage in the interview, but also, in observing and providing feedback to their peers, encouraged students to reflect on their peers' abilities or challenges to engage with the simulated clients. This was a critical component of the subject design, as students didn't just rely on formal feedback from educators, but rather had multiple opportunities to receive informal feedback, reflect, re-evaluate their performance and, with new perspectives, change behaviours ready to apply to the next week's activities (Boud and Walker, 1990,1998).

The weeks in between the simulated client interviews involved groupwork, and these activities were underpinned by dialogic pedagogy (Alexander, 2008; Teo, 2019). Weeks one through eight of the semester provided students with multiple opportunities for peer, simulated client and educator feedback to help them to prepare for the hurdle assessment in week nine. This assessment was adapted to explicitly assess a culmination of the skills students had acquired. In a simulated case conference with a supervisor, students summarised the key issues of their client and were required to apply the relevant theories that supported their justification for professional considerations and emergent clinical reasoning.

Outcomes

Since reviewing this subject, two cohorts have completed the Foundations of Occupational Therapy subject. Overwhelmingly, the feedback from students, both formal and informal, has been positive. While students have reflected that the first interview experience is "*nerve-racking*", all students were observed to improve their interviewing skills and understanding of the theory over the weeks leading up to the assessments. Those who underperformed on the hurdle assessment or the subject overall had the opportunity for early, explicit feedback related to where they need to focus their skill development. Feedback was themed around applying theory to understand the client's needs or communicating knowledge professionally in written and spoken formats. Educator observations indicate the combination of peer support, modelling and critique of culturally responsive, active learning and repeated opportunities to apply learning and receive timely feedback from peers *as well as* educators resulted in high levels of student motivation and active participation. Weekly workshops explicitly built on previous learning, which enabled students to perform in their assessments. Importantly, students felt safe to make mistakes and learn from each other. Students viewed peers as allies in their learning process and the opportunity to compare their progress with others allowed for deeper self-reflection. Further, students were observed to improve based on the feedback they received from peers and educators. Finally, students understood that they relied on their community to support them, and through discussions with peers, they improved their feedback literacy, skills in self-reflection and their growth mindset.

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Making thinking visible: AI-generated process mapping to enhance feedback processes in simulation-based learning

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Background

Clinical reasoning (CR) is a cornerstone capability for health professionals, yet its underlying cognitive processes are inherently difficult to observe and assess (Lee et al, 2013). Health professional education (HPE) programmes employ a range of pedagogical strategies, such as problem-based learning and clinical placements, to develop this capability (Edgar et al, 2023; Rudland et al, 2025). While these approaches support learners' engagement with clinical problems, they primarily emphasise observable performance outcomes rather than the cognitive processes that drive decision-making (Daniel et al, 2019).

Simulation-based education (SBE) is widely used to develop CR by placing students in realistic clinical scenarios that require decision-making, consequence evaluation and reflection (Durning and Artino, 2011; Edgar, Chong et al, 2024). However, in such situations, the process of CR is not visible for teachers, assessors and the students themselves (Audétat et al, 2017).

One approach to making these processes visible is process mapping. This method captures and visually represents CR in the form of maps (Corrigan, 2001) supporting more focused reflection and targeted feedback by making CR visible in SBE. Feedback in SBE is a core element of these learning activities and is often embedded as structured debriefing, where students explore the relationships among events, feelings and performances (Eddy et al, 2013; Fanning and Gaba, 2007; Rudolph et al, 2007). Whether facilitated or self-guided, this is a reflective element of SBE that is critical for learning (Issenberg et al, 2005; Motola et al, 2013). Process mapping could enhance this process; however, its implementation requires substantial time, resources and expertise, limiting its scalability in routine educational practice.

With the rapid emergence of artificial intelligence (AI), attention has shifted to its potential to support timely, scalable and personalised feedback (Chan and Hu, 2023; Lee and Moore, 2024; Shi and Aryadoust, 2024). Despite this growing interest, little is known about the feasibility and trustworthiness of AI-generated process mapping. Integrating AI-generated process mapping in SBE may yield novel opportunities to surface learners' clinical reasoning processes and enhance feedback processes while reducing resource burden.

This study aimed to explore the feasibility of developing AI-generated process mapping as a methodological approach. Specifically, it investigated the trustworthiness of AI-generated

annotations and visualisations of CR, using expert-generated outputs as a benchmark. It was guided by two research questions:

+ Can AI-generated annotations reliably identify components of CR in process mapping transcripts?
+ Can AI-generated process maps validly represent CR pathways in a way that aligns with expert judgement?

Approach

This case study drew on an established process mapping methodology that involved analysing interview transcripts and generating visual process maps. A combination of quantitative and qualitative approaches was used to assess the trustworthiness of AI-generated process maps. Reliability of outputs was assessed using statistical analysis, and validity was examined qualitatively through expert review.

The study was conducted in the context of a CR simulation, which has previously been used as a case example in research on process mapping methodology (Edgar, Estaphan et al, 2024). To focus on methodological trustworthiness, synthetic transcripts were used. This allowed full control over transcript structure and content, which is helpful when evaluating AI-generated annotation and process mapping. This approach is consistent with both ethical and common practice in AI development (Hao et al, 2024; Whitehouse et al, 2023).

To generate synthetic transcripts, a researcher simulated a student and responded to process mapping interview questions developed in a previous study. This initial transcript was then provided to GPT-4o1 (OpenAI, California, USA; hereafter referred to as the LLM) to generate synthetic transcripts. Three transcripts were generated, which aligns with prior methodological work using the same simulation assessment and number of transcripts. The research team then reviewed the transcripts and adjusted wording where needed to better reflect the clinical context – for example, changing *'measurement of refractive error'* to *'refraction'* (Kumar, 2024).

Next, the transcripts were annotated by both humans and the LLM using a structured codebook from a previous study (Edgar, Estaphan et al, 2024). Annotation work is typically an iterative coding process (Chun Tie et al, 2019; Glaser and Strauss, 2017). The LLM then used these annotations to generate Mermaid.js scripts, which were rendered in a compatible diagramming tool to produce visual process maps of the reasoning pathway. To support accurate AI-generated annotation and process mapping, the study followed published best practices, with the workflow summarised in Figures 1 and 2 (Birks et al, 2008; Edgar, Estaphan et al, 2024; Jiang et al, 2025; Törnberg, 2024).

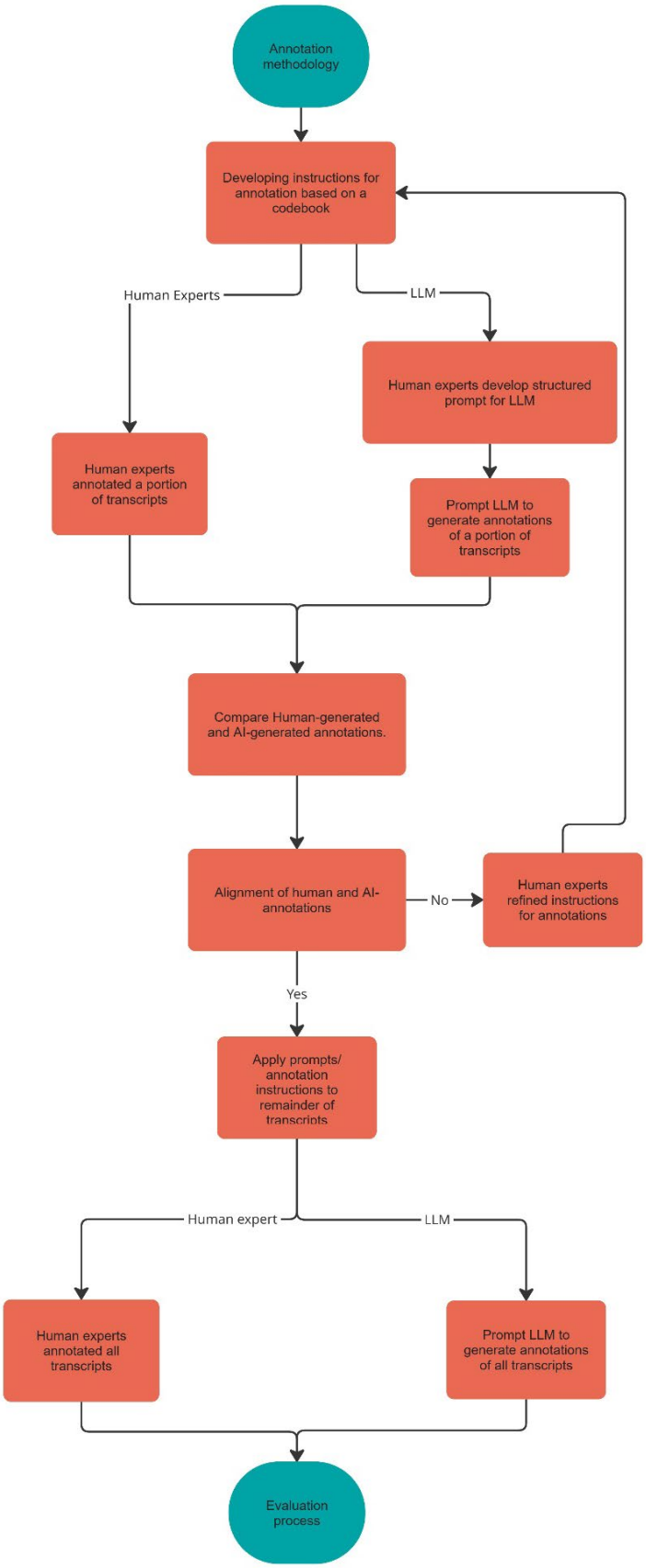

Figure 1. The steps for human and AI-generated annotations

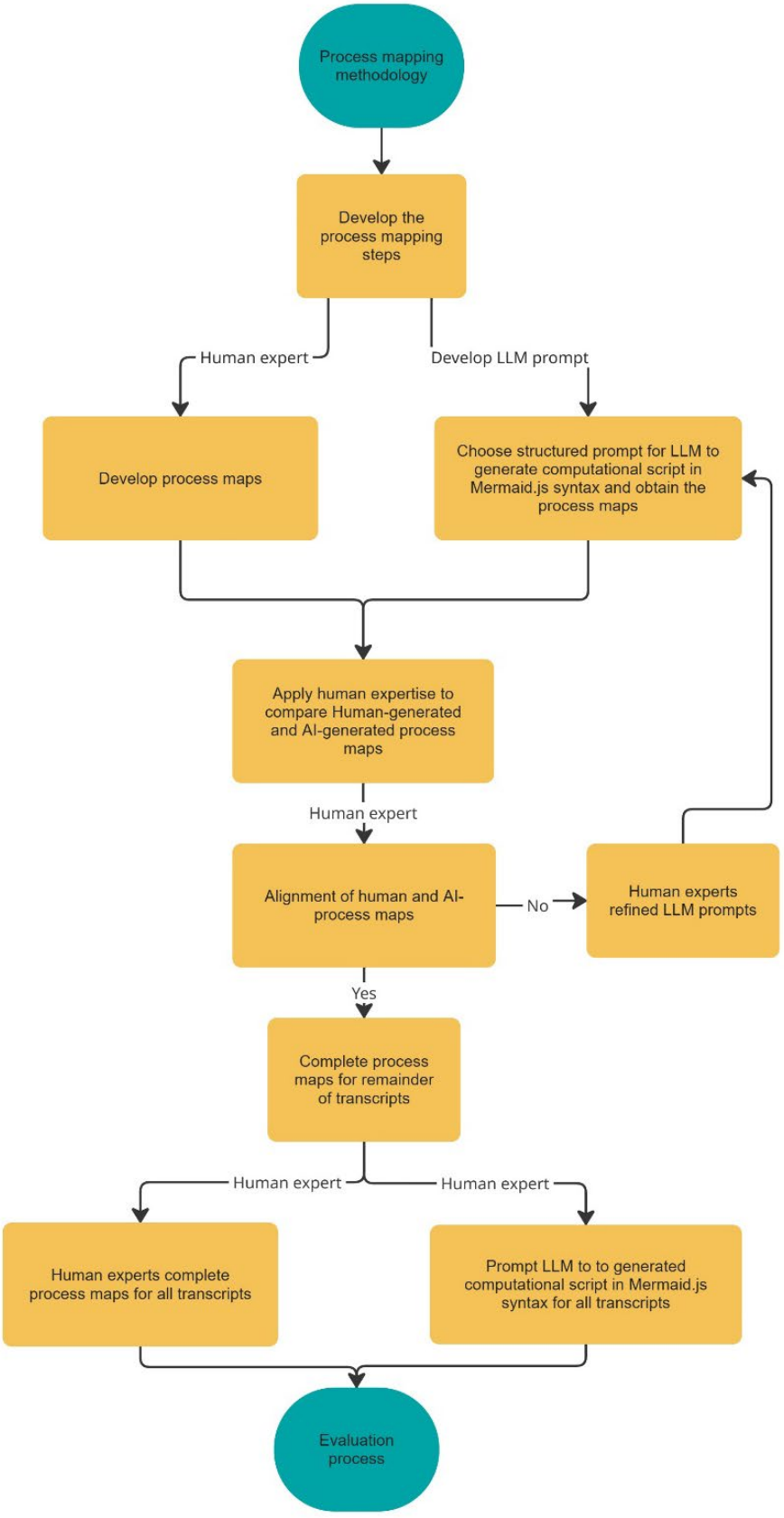

Figure 2. The steps for human and AI-generated process maps

To evaluate the reliability of AI-generated annotations, two types of comparison were conducted. R Studio was used to analyse agreement in the categorical data (RStudio Team, 2024). Intra-rater reliability was examined to determine whether the LLM produced consistent annotations when the same transcript was processed three times under identical conditions. This was assessed using percentage agreement (Ahmed and Ishtiaq, 2021; Munro, 2005). Inter-rater-reliability compared AI-generated annotations with human-generated annotations using Cohen's Kappa (κ) for alignment between AI and human-coded transcripts (Brennan and Prediger, 1981; Edgar et al, 2022).

Kappa values were interpreted as follows: near perfect (>0.81), substantial (0.61-0.80), moderate (0.41-0.60), fair (0.21-0.40), slight (0.00-0.20), and poor (<0.00) (Ranganathan et al, 2017). Discrepancies between annotations were analysed and discussed. For each transcript, Cohen's Kappa (κ) was calculated for every AI run, resulting in three κ values per transcript and a mean Kappa.

Because process mapping is still a new method in health professions education, the validity assessment was informed by related methodological guidance (Ahmed and Ishtiaq, 2021; Edgar, Estaphan et al., 2024; Markham et al, 1994). Process mapping and concept mapping both visually represent cognitive structures, although they are not identical methods. Given these similarities, the authors drew on approaches used in concept mapping research to assess validity in process mapping (Markham et al, 1994). Internal representational validity was assessed by a researcher with expertise in process mapping, who compared all AI-generated maps with the corresponding human-generated maps (Rosas and Kane, 2012). The aim was not to identify a single correct map, but to examine how closely the AI-generated maps matched the overall structure of the human-generated maps and whether they adequately represented participants' judgments.

Outcomes

Main findings

The main finding was that the AI could generate annotations and process maps that were often similar to those produced by human experts, although performance varied across transcripts. Across repeated runs, AI agreement was stronger for Transcripts 1 and 3 and notably weaker for Transcript 2, the shortest transcript (Table 2). A similar pattern was seen when AI annotations were compared with expert annotations: overall agreement was moderate, with stronger agreement for Transcripts 1 and 3 and lower agreement for Transcript 2 (Table 3).

Transcript	Percentage of annotation agreement (SD)	Percentage of sub-annotation agreement (SD)
Transcript 1	86.90 (29.17)	78.57 (35.39)
Transcript 2	37.50 (20.41)	23.61 (28.62)
Transcript 3	90.48 (23.61)	72.22 (34.47)
Mean	71.63 (32.79)	58.13 (27.48)

Table 2. AI agreement across the three runs and transcripts

Transcript	Annotation Kappa Mean (SD)	Subannotation Kappa Mean (SD)
Transcript 1	0.65 (0.05)	0.67 (0.05)
Transcript 2	0.29 (0.14)	0.31 (0.15)
Transcript 3	0.79 (0.03)	0.56 (0.07)
Overall	0.58 (0.25)	0.51 (0.18)
Note: Cohen's Kappa is computed across three runs per transcript.		

Table 3. Mean Cohen's Kappa between three AI runs and expert annotations by transcript

This variation is important. It suggests that AI-generated annotation may work better when transcripts are more developed and clearly structured, and less well when responses are shorter or more uncertain. The lower performance for Transcript 2 therefore does not weaken the study; rather, it provides a more realistic picture of where this approach may be more or less reliable.

Figure 3a shows the human-generated process maps for Transcript 1, and Figure 3b shows the corresponding AI-generated maps. Although some differences were present, the overall structure of the maps was similar, and both represented a reasoning pathway leading to a clinical decision. This supports the potential of AI-generated process maps as a way to make learners' reasoning more visible.

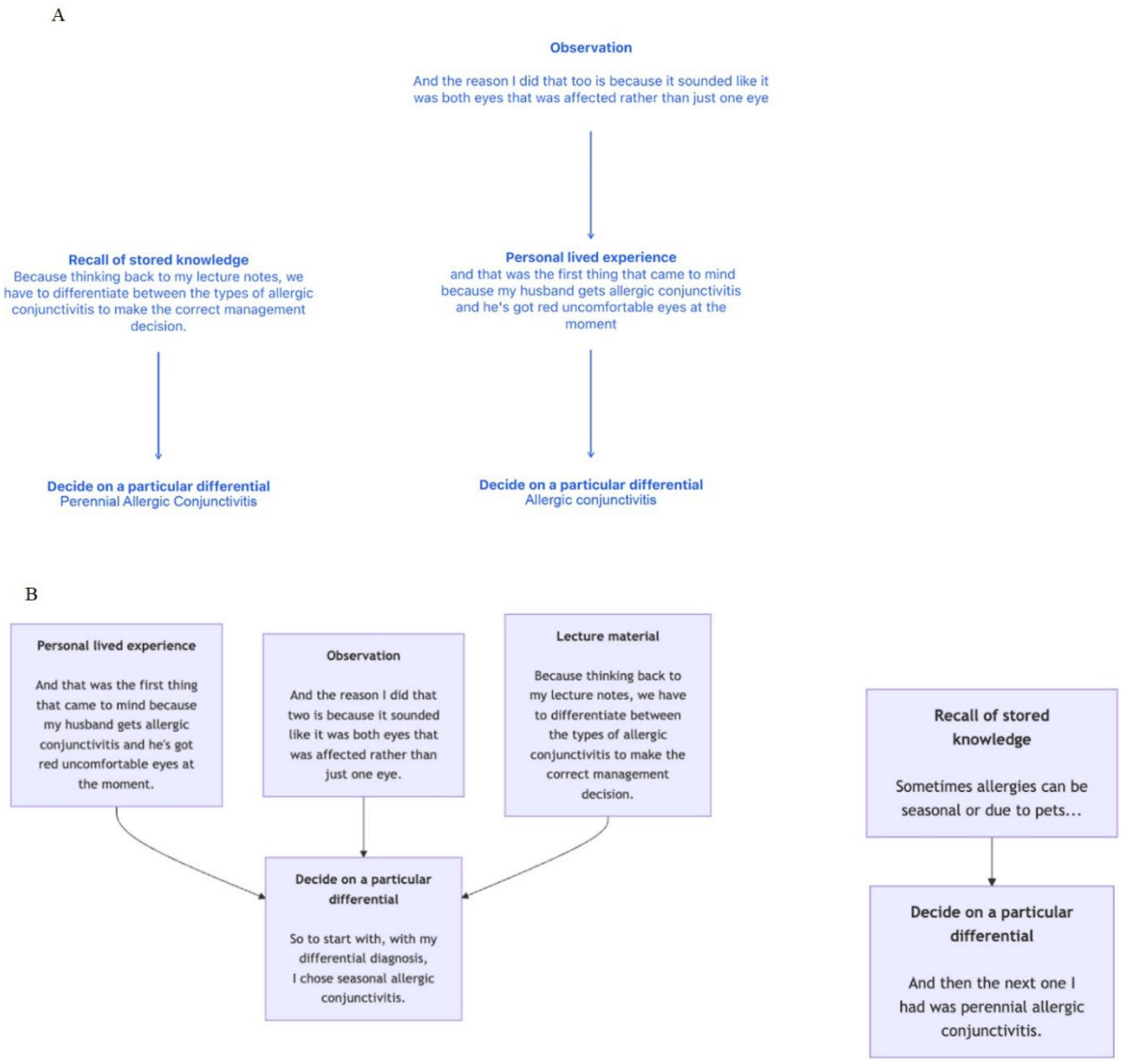

Figure 3a. Human-generated process mapping
Figure 3b. AI-generated process maps

Key messages and transferability

In conclusion, these results indicated moderate overall inter-rater reliability. Substantial agreement was achieved for Transcripts 1 and 3, whereas Transcript 2 showed only fair agreement. Of the three generated transcripts, the second, which was produced using a prompt specifying that the student had some level of uncertainty, was approximately half the length of the first and third transcripts. The short transcript had lower agreement in intra- and inter-rater analysis. This suggests that certain transcripts may inherently align better with AI processing, possibly due to the clarity and structure of the content or the cognitive process depicted in the transcript.

Future research could investigate optimal transcript length or structure, as well as explore whether variation in CR expertise among students influences AI performance. Regardless, as a first step, our results demonstrated that AI-generated annotations and visual mapping

were broadly comparable to those produced by experts confirming feasibility for further investigation of AI-generated process mapping integration into the SBE debriefing/feedback phase.

Institutions wishing to replicate this approach should also consider the time and expertise required. Although AI may reduce some manual work, implementation still depends on transcript preparation, prompt refinement and expert review of outputs. At this stage, the approach is best seen as supporting educator feedback rather than replacing it.

In practice, AI-generated maps could be integrated into the debriefing/feedback phase of SBE, to facilitate feedback that is detailed, timely and meaningful. Previous studies integrating AI with SBE have largely focused on assessing students' CR against a predefined framework, often classifying transmitted information (marks, comments, prompts) as feedback (Brügge et al, 2024; Furlan et al, 2022; Furlan et al. 2021). In contrast, process mapping makes explicit the student's own reasoning process, potentially enabling effective self-reflection, personalised learning and hence a deeper engagement with feedback. The aim is not to replace human judgement but to augment it by enhancing the visibility of the notoriously complex cognitive processes that underpin CR for both learners and educators. (Bearman and Luckin, 2020)

With the considered alignment to organisational policies and the ethical use of AI, exploring these threads further may uncover how to support learning CR with SBE. While relying solely on AI with the entirety of the feedback/debriefing phase presents ethical, pedagogical and technical challenges (Corbin et al, 2025), the value of AI may lie in "augmentation", rather than substitution, helping students to improve their capacity to learn.

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were broadly comparable to those produced by experts confirming feasibility for further investigation of AI-generated process mapping integration into the SBE debriefing/feedback phase.

Institutions wishing to replicate this approach should also consider the time and expertise required. Although AI may reduce some manual work, implementation still depends on transcript preparation, prompt refinement and expert review of outputs. At this stage, the approach is best seen as supporting educator feedback rather than replacing it.

In practice, AI-generated maps could be integrated into the debriefing/feedback phase of SBE, to facilitate feedback that is detailed, timely and meaningful. Previous studies integrating AI with SBE have largely focused on assessing students' CR against a predefined framework, often classifying transmitted information (marks, comments, prompts) as feedback (Brügge et al, 2024; Furlan et al, 2022; Furlan et al. 2021). In contrast, process mapping makes explicit the student's own reasoning process, potentially enabling effective self-reflection, personalised learning and hence a deeper engagement with feedback. The aim is not to replace human judgement but to augment it by enhancing the visibility of the notoriously complex cognitive processes that underpin CR for both learners and educators. (Bearman and Luckin, 2020)

With the considered alignment to organisational policies and the ethical use of AI, exploring these threads further may uncover how to support learning CR with SBE. While relying solely on AI with the entirety of the feedback/debriefing phase presents ethical, pedagogical and technical challenges (Corbin et al, 2025), the value of AI may lie in "augmentation", rather than substitution, helping students to improve their capacity to learn.

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