



Learning to Learn: Developing feedback literacy in first-year undergraduate students

Faculty: Faculty of Engineering

Department: Bioengineering

Module name: Learning to Learn - Not a credit-bearing module; delivered as part of the personal tutoring structure

Programme name: Undergraduate Bioengineering programmes, including: Biomedical Engineering; Molecular Bioengineering; Biomedical Technology Venturing

Level: 4

Approximate number of students: Approximately 210 students in total - 120 Biomedical Engineering students; 60 Molecular Bioengineering students; 30 Biomedical Technology Venturing students

Module ECTS: Not a credit-bearing module; delivered as part of the personal tutoring structure

Module type: core/ elective etc

Context and rationale

Feedback literacy session is part of the bigger Learning to Learn module. The Learning to Learn intervention was introduced for first-year undergraduate students as part of a broader attempt to better prepare students for the demands of later study, particularly the transition into second year. It emerged from the interviewee's MEd work, which highlighted that students were often not sufficiently feedback literate and were not well prepared to understand, interpret, and use feedback effectively.

The rationale for introducing the intervention in first year was that this stage of the programme is comparatively lower risk and lower intensity than later years. This makes it a useful point at which students can begin developing learning habits, strategies, and reflective practices before moving into the much more demanding second year. Second year is the point at which students face the greatest academic pressure, with long days, multiple competing demands, and the highest levels of struggle and attrition. The intervention was therefore intended as an early investment in students' capacity to manage learning more independently and make better use of feedback before they reached that more intense stage of the programme.

The intervention addressed both a problem and an opportunity. The problem was that students were arriving at university without sufficiently developed strategies for independent learning, self-regulation, and feedback use. The opportunity was to use the first year to explicitly teach these skills and create a foundation that could be built on later in the programme.

The aims of the intervention were broad but connected. It was designed to help students:

- become more effective independent learners
- understand how learning at university differs from learning at school
- use feedback more effectively
- develop metacognitive awareness
- reflect on their own learning processes
- use practical tools for time management and planning
- engage appropriately and ethically with generative AI
- be better prepared for later study, especially second year

Feedback literacy sits within this broader teaching approach as one component of a wider effort to help students understand how learning works, why teaching is designed in particular ways, and how students can take greater ownership of their development. It was not treated as an isolated topic, but as part of a connected set of ideas including reflection, metacognition, independent learning, planning, and the ethical use of digital tools.

The sessions were also intended to work in tandem with the personal tutor system. One week students met with their personal tutor to discuss



linked topics, and the following week they attended a Learning to Learn session that developed related ideas in a more structured group-learning format. The intention was that these two strands would reinforce one another and create a more coherent developmental experience.

Intervention

The structure of learning to learn module

The overall intended learning outcomes for the Learning to Learn sequence were to help students:

- reflect critically on their learning processes and identify strengths and challenges
- apply evidence-based strategies to plan, monitor and adapt learning in a bioengineering context
- use time management, task planning and digital tools to support academic success and self-regulation
- engage constructively with feedback to improve learning outcomes
- use generative AI appropriately and ethically to support learning and skill development
- develop a personal learning plan that supports academic confidence, well-being and professional growth

These sessions were embedded in the first year and linked to tutoring because the skills being developed — self-regulation, reflection, feedback use, planning, and independent learning — are foundational for success in the programme. These skills are particularly important in bioengineering because students encounter a demanding curriculum, increasing complexity, and a need to act on feedback across multiple kinds of tasks and learning contexts. These were not standalone optional study skills workshops in the traditional sense; rather, they were designed to sit alongside and connect directly with personal tutor meetings. The structure alternated weekly between a personal tutor meeting and a Learning to Learn session, so that students encountered related themes in both settings.

The sessions were delivered to relatively large cohorts, with students working through a mixture of paired discussion, small-group discussion, whole-group interaction, Mentimeter activities, guided reflection, practical strategy-building exercises. The sessions covered the following themes:

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Workshop 1: Becoming an independent learner

This session focused on helping students reflect on who they are as learners, how learning at university differs from school, and what strategies had worked for them previously. Students were asked to examine their own learning histories and identify strengths, challenges, and patterns in past learning. This was also linked to discussion in tutor groups about expectations, learning backgrounds, and the relationship between student agency and institutional support.

Workshop 2: How learning works

This session introduced students to learning theories and strategies in order to help them understand why teaching and learning at university are structured in the ways they are. It also introduced practical tools to support study, such as institutional systems and planning tools including Trello and other task-management approaches.

Workshop 3: Metacognition, reflection and feedback

This was the session most explicitly focused on feedback literacy. It introduced students to the concept of feedback literacy and explored different forms and sources of feedback, how to judge the quality and usefulness of feedback, how to manage emotional responses to feedback, how to take action on feedback over time. More on this below.

Workshop 4: Using generative AI to learn effectively and ethically

This session focused on using generative AI as a support for learning rather than as a shortcut to answers. It encouraged students to use AI to bridge gaps in understanding by articulating what they already knew and what they needed to learn next.

Workshop 5: Applied learning

This session was intended to allow students to apply the techniques introduced in earlier sessions to discipline-specific problems from their degree programme.

Feedback literacy session

The intended learning outcomes for this session were:

- understanding the role of feedback literacy in your development as independent learners
- developing techniques for metacognition
- utilising frameworks for reflection



Students first discussed the different sources and forms of feedback they were aware of. Through pair and small-group discussion supported by Mentimeter, they identified feedback as coming not only from lecturers, but also from GTAs, peers, books, notes, online resources, their own internal responses and feelings. This was used to broaden students' understanding of feedback beyond written comments on assessment.

The session then introduced the four key aspects of feedback literacy: appreciating feedback processes, making judgments, managing affect, taking action. Of these, particular emphasis was placed on appreciating feedback as a process rather than a one-off event, making judgments about quality, managing emotional reactions, acting on feedback in future work. These areas were prioritised because students often received feedback without knowing how to interpret it, judge its relevance, regulate their emotional response, or translate it into future action.

To support making judgments, students discussed how to determine whether something is “good” and how criteria, exemplars, and prior feedback can help them evaluate their own work. This also included discussion of the fact that effort is not the same as quality.

To support managing affect, the session drew on the Chimp Paradox model as a way of helping students understand their emotional responses to criticism or challenge. This was used to explain that immediate defensive reactions are normal, but that students need strategies to move beyond those reactions in order to use feedback productively.

To support taking action, students worked in small groups to order a set of actions within a framework for responding to feedback. This framework included reviewing feedback, asking for clarification, categorising comments into themes, reflecting on patterns, determining validity, acknowledging strengths and weaknesses, creating an action plan, setting goals and timelines, applying feedback in future tasks, tracking feedback over time. Students were also introduced to the idea of keeping a feedback log, potentially using digital tools such as Trello, in order to track recurring themes and monitor whether changes in practice were improving their

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work.

The latter part of the session focused on reflection, including use of the Gibbs reflective cycle, and linked this to previous practical experiences such as labs. Students were encouraged to reflect on what had gone well, what had not, how they had felt, and what they would do differently in future. This was then connected back to metacognition, understood as awareness of one's own strengths, weaknesses, strategies, and learning processes.

The teaching approach prioritised discussion, reflection, and active participation because the aim was not only to tell students about feedback literacy, but to help them practise recognising, discussing, and planning how to use feedback. Particularly impactful activities included:

- identifying multiple forms and sources of feedback
- small-group work ordering steps in a feedback-action framework
- reflecting on prior lab experiences using reflective models
- discussing emotional responses to feedback through the Chimp Paradox lens
- using practical planning tools like feedback logs and Trello

The intervention was designed specifically for first-year students. However, elements of it were later revisited informally in second-year modules, particularly in design and professional practice contexts, where students were reminded of the earlier learning and encouraged to apply it in more authentic disciplinary tasks.

Impact and Evaluation

Among the students who attended, the intervention appears to have been valuable. Anecdotal feedback suggests that students could see how the ideas and tools could be applied to their work. Students who attended the feedback-related sessions were described as engaging positively in discussions and beginning to understand how feedback could be used more purposefully.

There was also indirect evidence from colleagues, particularly personal tutors, that some students had



responded positively and had discussions with tutors that built on the session content.

The most significant challenge affecting impact was poor attendance. After the first session, attendance dropped sharply in several groups, especially where sessions were scheduled at less convenient times or separated from other teaching by long gaps. Some sessions that were expected to have around 80 students were attended by as few as 10. This clearly limited the reach and overall impact of the intervention. This is due to the fact that the first session may have unintentionally overemphasised student agency in a way that led some students to interpret attendance as optional and non-essential. This undermined the intervention from the outset. In response, the approach is being revised to place stronger emphasis on why attendance matters, not only in terms of learning, but also belonging, community, well-being, and, where relevant, visa compliance.

In terms of outcomes, the available data did not show that attending students necessarily achieved better grades because of attendance alone. Rather, it suggested that students who achieved better grades were more likely to be those who attended. This was interpreted cautiously: attendance may be associated with stronger academic engagement, but cannot be assumed to be the sole cause of better performance.

Strengths, limitations, advice for the future

Strengths included:

- the approach treated feedback literacy as part of a broader developmental model of learning, rather than as a narrow issue confined to assessment comments. The intervention helped students connect feedback with metacognition, reflection, self-regulation, planning, independent learning, digital tools and disciplinary study practices.
- the explicit teaching of feedback literacy concepts that students would not necessarily already know. The session broadened students' understanding of what counts as feedback and gave them practical frameworks for responding to it.
- the use of discussion, Mentimeter, reflection, and action-planning activities appears to have worked well for those who attended.
- The intervention was well timed conceptually: first year is an appropriate point to establish habits

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and strategies that students can draw on later in more demanding parts of the programme.

The main limitations were structural and relational rather than conceptual:

- low attendance, which drastically reduced the overall effectiveness of the intervention. The fact that the sessions were not formally tied to a credit-bearing module or assessed element meant that some students did not perceive them as necessary. Timing and timetable structure also negatively affected participation.
- the need for stronger staff buy-in, particularly among personal tutors. Because the sessions were designed to align with tutor discussions, inconsistent uptake by tutors weakened the intervention. A more directive or structured approach to staff engagement may be needed.
- the design of the fifth session, which the interviewee identified as underdeveloped. Because materials were being created while the intervention was already running, some sessions were not as fully thought through as they could have been.

Advice for the future:

Anyone introducing a similar intervention should:

- secure buy-in from colleagues early
- ensure messages are reinforced from multiple angles
- link the intervention more clearly to a module or required programme structure
- make the value and rationale for participation explicit from the outset
- help students understand not just that they have agency, but how to use that agency wisely
- provide stronger framing around attendance and engagement
- ensure students can clearly see the relevance of the intervention to later success

A possible future direction mentioned was linking this type of activity to a skills passport model, so that engagement is more clearly embedded within progression requirements. This would make participation more meaningful and reduce the risk of students opting out of support they do not yet understand they need.