

Code Scheme - Student Focus Groups and Prototype Validation

Code	Description	Related Work	Inductive / Deductive	Example
Feedback Characteristics	Describes the features that students believe to be useful for accepting and enacting feedback		Deductive and Inductive	
Effective Elements	Describes the components to be included in the feedback to be useful for the students		Deductive and Inductive	
Actionable Information	<p>The feedback should include information that helps students to:</p> <ul style="list-style-type: none"> - improve aspects of similar tasks - achieve the learning outcomes for the subject - develop learning skills, processes or strategies that could be useful across and beyond their degree 	[1]	Deductive	<ul style="list-style-type: none"> - I want, so for example, if I lose a mark for a criteria in the rubric, I want them to give an example where I lost a mark. - So when the feedback that the teacher give, they say this, it means they understand by themselves, but we really need to see the example so that we can follow and learn better.
Highlighting Strengths and Weaknesses	The feedback should include information that emphasise on the positive and negative aspects of the students submissions	[1]	Deductive	<ul style="list-style-type: none"> - “Maybe teachers can provide more, like, resources to students to let them to improve their areas or something else and to point out some specific, the way that the student need to improve and how to improve.” - “she also gave me some suggestions about what to do and how to do it, for example, she discovers some linguistic errors in my assessment so she, and then she advised me to use some language improvement software like Grammarly,”
Reflectivity	The information in the feedback should reflect the mark student received		Inductive	<ul style="list-style-type: none"> - I like to think that I’m a pretty high-achieving student and I get quite a few high grades, like, and I do notice the pattern that if I get over an HD, whatever the faculty is, I will just get that positive

				feedback about the task without any description back where I lost that extra 20%
Feedback Levels	Describes about the feedback level that students expects to receive feedback		Deductive	
Task Level	The feedback contains information focusing on the task that the students completed (Ex: clarifies whether information in the completed task is correct or incorrect, Offers directions to source correct information for the specific task, Direct text level edits without explanation, etc)	[2], [3]	Deductive	<ul style="list-style-type: none"> - “I think mostly feedback about the task and feedback about the self as a person.”
Process Level	The feedback contains information focusing the way student executed the task and suggestions in the feedback (Ex: learning processes required for successfully/ thoroughly complete the current/similar/future task, etc)	[2], [3]	Deductive	<ul style="list-style-type: none"> - “So for me in law I would say feedback about the processing of the task is the most important one because the, they’re always looking for something very specific but understanding what that is is really hard.” - “I do feel FP, feedback on the process of the task would be more useful because it explains why and how to solve a problem if you have done it indirectly. ”
Self-Regulation Level	The feedback contains information focusing to trigger self-regulation (Ex: reassurance on a successful previous procedure/process or students' relevant content knowledge to motivate their further expansion on the subject matter, providing a third party point of view and asking students to clarify and self-correct, etc)	[2], [3]	Deductive	<ul style="list-style-type: none"> - “I think the thing generally if you really wanna improve you need feedback about self regulation.” - “I do sometimes get that kind of thing which I quite like because it kind of links me in the direction that I should go, so that’s kind of my preferred feedback.”
Self Level	The feedback contains information focusing at the self level (Eg: Praise, Encouragement)	[2], [3]	Deductive	<ul style="list-style-type: none"> - “Sometimes feedback about the self as a person but that can very easily just become like, ‘oh but no you’re not a good student’. Like it’s not very helpful.” - “I think mostly feedback about the task and feedback about the self as a person.”

Feedback Style	Describes the qualities of the feedback that makes it more appealing to students		Deductive	
Concise	The feedback contains specific information that is not too lengthy and maintains a meaningful balanced structure	[1], [2]	Deductive	<ul style="list-style-type: none"> - “I think ensuring the feedback is concise,” - “vague terms of the entire essay, for example, like zoning in on half a paragraph and saying, like, okay, this thing here, you did this effectively, I wish you would’ve done that later on, and it’s been really specific to the place within the task or the writing which you’ve submitted, as well as specific in terms of how to improve that, ”
Detailed	The feedback contains detailed information that provides in-depth explanations on subject matter / approach / strengths and weaknesses	[4], [5]	Deductive	<ul style="list-style-type: none"> - “if you can get in-depth feedback about one point, it is a lot more beneficial than having an overall statement like, oh yeah, in general your essay was great.” - “I think detailed feedback about the task is very useful in doing better on the next task”
Clarity	The feedback contains information that is simple and easy to understand and the language / terminology used in the feedback is familiar / not too complex / Not too abstract	[1], [2]	Deductive	<ul style="list-style-type: none"> - “so often I think the feedback is quite vague” - “So most of the time the feedback from the academic subject is very abstract and this can be very difficult for us, especially the international student and those who don’t have the background of research or academic knowledge as well”
Personalised	The content of the feedback should be personalised or individualised	[5], [6], [8]	Deductive	<ul style="list-style-type: none"> - “it’s very general, it seems very copy and paste [laughs], like very similar feedback between students, so I think feedback that makes sense, it’s concise, and individualised,” - “so I think the advice, the feedback for me is more specific and is more useful for my, for my own.”
Feedback Tone	The tone is positive, sincere, encouraging,	[4], [7]	Deductive	

	motivating, and consulting			<ul style="list-style-type: none"> - “I think aiming for more constructive feedback irrespective of what grade you receive is the big thing I thought of before walking into this.” - ““Hey, I’m reading your work, this is good, you can read some other references about it,’ something that makes you feel that there is interest in your work.”
Affirmation	Teachers should affirm students achievement on the completed performance and/or encourage them in their future work	[1], [8], [9]	Deductive	<ul style="list-style-type: none"> - “your tutor acknowledge your work, it’s like, ‘Oh, you do a good job,’ or you do it great.” - ““I like your assignment,’ something about that, and... I think it’s really useful because it’s like encouragement for me, because before I submitted my assignment, I’m not sure if my assignment is good enough, but after receiving this feedback, it makes me feel good,”
Agent Characteristics	Describes the qualities, attitudes of the teachers and students that supports or hinders teacher student relationship affecting acceptance and enacting of feedback		Deductive	
Cultural Insensitivity	Teachers are providing feedback without an awareness about the students background and students do not understand the learning process is happening in a culturally diverse environments	[10]	Deductive	<ul style="list-style-type: none"> - “during the first semester and the learning system here is completely different from that of my country” - “I think because the most challenging thing is the language, because my, my first language is not English but my teacher said English to me”
Approachable	Teachers are generally friendly and reachable to students and they feel a positive connection with the teacher affecting the acceptance and enactment of the feedback	[11]	Deductive	<ul style="list-style-type: none"> - “like when the lecturer’s really friendly and they feel really approachable, it’s a lot easier to just sort of ask them after class or something, or even email them or physically go to their office or consultation” - “when they’re not very approachable or

				they just don't respond to your emails or the forum or whatever, yeah, that's really hard to get any more feedback"
Student attitude	Students should have a positive / negative attitude towards the teacher and learning to accept their feedback and act on it	[7]	Deductive	<ul style="list-style-type: none"> - "if the students don't have a lot of respect for the tutor, if there's a reputation that they're not maybe the best teacher, then perhaps that does honestly affect the way that students receive that feedback and their effort to implement that feedback," - "students who just don't show up and will just be sort of there in the shadows submitting the assignments and...for tutors who, many of whom do genuinely wanna help their students, it's a real challenge if the student themselves is not willing to engage" - "the student's relationship with the tutor is the real challenge if you're not willing to implement feedback."
Feedback Utilisation	Describes the strategies students using to execute the feedback they received		Inductive	
Annotating	Students making their own notes to make sense of the feedback received		Inductive	<ul style="list-style-type: none"> - "I might take bits of feedback and put it into my notes so I can revisit it later, and when I'm working on another assignment" - "I will try to write some key words in the feedback and write down on a piece of paper to compare with my online"
Revisit feedback	Students revisit previously received feedback when they engage with a new task		Inductive	<ul style="list-style-type: none"> - "I find it really helpful to revisit feedback when I'm doing other tasks" - "technical aspects of the assignment, if I, if in the future we get given an assignment that's very similar to something I've done in the past and I've got the feedback from that still on hand, I tend to refer back to it while I'm working on the assignment that I'm working on at the moment." - "I will always keep it, so yeah, so to make

				sure for the next assignments, I will always achieve the goal which I already achieved.”
Action Plans	Students making action plans / checklists based on the feedback they received		Inductive	<ul style="list-style-type: none"> - “if my lecturer picked up some linguistic errors in my assessment, so I add it to my checklist for the next assessment, so this can help me make sure I don’t make the same mistake.” - I kind of have like a document where I’ve written, like, notes on how to construct a lab report, so I’ll probably just chuck some stuff into that document, just like so that when I’m writing up my next lab report, I can refer to that and see, like, what sort of thing I need to include.
Learning Design	Describes the aspects of the learning design that makes students accept and enact the feedback		Inductive and Deductive	
Dialogic Feedback Process	The feedback process is designed to ensure students have the opportunity to seek further clarification or they can provide feedback to the teacher on the received feedback	[7], [12]	Deductive	<ul style="list-style-type: none"> - “every time the teachers give me the feedback and they tell me what’s wrong, what’s correct, but they didn’t collect the re-feedback from me.” - “I think maybe teacher can give the feedback and then receive the feedback from students and they can know whether this feedback is, it was useful or not useful or effective or not effective.” - “feedback is really important because there needs to be that two-way communication, that two-way engagement,”
Marking Criteria / Rubric	The feedback is designed aligning to a certain marking criteria / rubric/Ambiguity in grading criteria or rubrics		Inductive	<ul style="list-style-type: none"> - “I think it’s because the teachers themselves have their own marking guide, right, so they have to be very strict with some things but they can take some leeway with others” - “even though it works and they’ve followed the question, they’ve technically done it wrong because they haven’t done

				<p>it the right exact way according to the, what the teacher wants, but it's not on the rubric, so it's this weird, like, you should've done it this way but you didn't know you had to, so you lose the mark."</p>
Inconsistent Feedback	<p>Students receiving marks from a teachers / tutor other than the one they consulted during the semester leading to confusion of accepting and enacting the feedback/Lack of consistency in feedback across markers.</p>		Inductive	<ul style="list-style-type: none"> - "I studied with my class tutor, and you know my assignment back then was not graded by my tutor because all assignments were divided and some parts were graded by my tutor, the other by the chief examiner" - "when we propose a topic and the, this problem statement of the, the writing, the teacher also say this is good, and yes, everything is right on track so you can go with all this, so all of us were confident, but at the end, the paper was graded by another tutor, which this tutor provide the feedback which is completely different from what we've learned" - "the expectations are different for, like, everyone who corrects the papers, so because of that, like, our grades vary as well, so it's hard to, like, keep up with what's expected of you to do in assignments. So yeah, some kind of consistency would be, would be good."
Assessment Design	<p>The design of assessment/s enabling students to apply feedback in future scenarios</p>		Inductive	<ul style="list-style-type: none"> - "Just giving, being given a platform to apply the feedback." - "I feel like some of my, some of my assignments, they can feel quite meaningless in the sense that they're not really, they don't really test your skill, it's more just like a test of your knowledge, so the feedback you get on that, it does probably help you." - "we usually never get second chance, like do it again, so like it's usually specific to a task and rarely, like, rarely, like, applicable to, like, other things."

Exemplars or Samples	The design of the activity is detailed and equipped with examples or samples that students can use as a reference		Inductive	<ul style="list-style-type: none"> - “including an example, like [X] was saying earlier, it would be really helpful because when assignments are too complex to understand, it would be good to see what’s expected of the specific criteria,” - “We believe that yeah, sample do help us a lot, even though, like, sometimes we, they are just afraid that we follow the sample and forget our creativity,” - Providing like annotated samples of what works and what doesn’t work and that sort of thing.
Feedback Timing	The opportune timing of providing feedback, e.g., live, within timeframe, late, immediately after the task, etc.		Inductive	
Student feedback literacy	Describes students' capability to understand and manage feedback effectively; develop capacities and dispositions to make use of the feedback productively; and appreciate feedback.		Deductive	
Appreciating and Committing to Feedback	<ul style="list-style-type: none"> - Appreciating feedback as a valuable source of information and learning - Understanding feedback as an interactive and reciprocal process - Embracing feedback as a means for personal growth - Demonstrating a proactive attitude towards feedback utilisation 	[13], [14]	Deductive	<ul style="list-style-type: none"> - It’s a real challenge if the student themselves is not willing to engage, and I guess that’s, feedback is really important because there needs to be that two-way communication, that two-way engagement. - I think the other thing is that often with feedback, I’m being provided suggestions and advice on, so for me specifically, I’m doing a law degree, about skills that I’ll need as a lawyer, whether that’s researching or writing skills, whether that’s content related feedback, that’s feedback that I’ll likely need to take on when I go practice in that profession, so I think it’s also just about

				<p>preparing myself for the job and kind of taking it on as a skill that I'll need when I go out to practice.</p> <ul style="list-style-type: none"> - I think assessment is there for you to get the clear idea of what you're good at and what you're not good at, so if like by reading the feedback you can make yourself better and, you know, achieve those things you need to achieve to, to actually be capable of doing what you want to do in the future, like your job, so I don't feel like there's a reason why not to, you know, read the feedback.
Processing Feedback	<ul style="list-style-type: none"> - Assessing the quality and relevance of feedback received - Distinguishing between constructive and unhelpful feedback - Making evaluative judgments on their own works and others' works - Analysing and interpreting feedback effectively 	[13], [14]	Deductive	<ul style="list-style-type: none"> - Often if I get some constructive feedback on that first essay what I'll do is I'll sort of look at that for later, I'll save it, copy and paste it on the brainstorming document I might have open for that next essay, so it's just there on top of the page, and just think about, yeah, I guess applying it a second time. - Most of my marks that I lose come from missing out on a certain key point, so I kind of have like a document where I've written, like, notes on how to construct a lab report, so I'll probably just chuck some stuff into that document, just like so that when I'm writing up my next lab report, I can refer to that and see, like, what sort of thing I need to include.
Eliciting Feedback	<ul style="list-style-type: none"> - Seeking feedback from various sources and perspectives - Requesting specific feedback on areas of interest or improvement - Clarifying confusions 	[13], [14]	Deductive	<ul style="list-style-type: none"> - My two main, I guess, routes of engagement, are to either email my tutor and be like, 'Could you specify this and explain this?' And usually they're more than happy from there, once they've pulled up my document, have a look. Sometimes I will ask in class as well, but I just generally prefer the textual

				feedback, just so it is a bit more constant, and I can just bring it up over and over again.
Managing Emotions	<ul style="list-style-type: none"> - Recognizing and managing emotional responses to feedback - Coping with feedback-related stress or disappointment - Using emotional cues to guide reflection and action 	[13], [14]	Deductive	<ul style="list-style-type: none"> - For me, I think if I receive the negative feedback, I will feel frustrated, yeah, because I, I am, I will reflect on my assignment or my performance and I will, actually I will judge myself, you know, so when, when the teacher gives the negative feedback to me and without any positive comments, I will be more frustrated and tend to, I think I will...it discourage me to improve or to complete the next assignment or task. (This is the example of lacking of ability to manage emotions)
Taking Action and Enacting Outcomes	<ul style="list-style-type: none"> - Applying feedback to enhance work and learning strategies - Integrating feedback into future assignments or tasks - Using feedback to set goals and plan for improvement - Implementing changes or improvements based on feedback - Monitoring progress and evaluating the effectiveness of feedback utilisation - Reflecting on the impact of feedback on personal development and growth 	[13], [14]	Deductive	<ul style="list-style-type: none"> - Often if I get some constructive feedback on that first essay what I'll do is I'll sort of look at that for later, I'll save it, copy and paste it on the brainstorming document I might have open for that next essay, so it's just there on top of the page, and just think about, yeah, I guess applying it a second time. - Most of my marks that I lose come from missing out on a certain key point, so I kind of have like a document where I've written, like, notes on how to construct a lab report, so I'll probably just chuck some stuff into that document, just like so that when I'm writing up my next lab report, I can refer to that and see, like, what sort of thing I need to include. - For example, if my lecturer picked up some linguistic errors in my assessment, so I add it to my checklist for the next assessment, so this can help me make sure I don't make the same mistake.

Suggestions for Improvements	Describes the categories of proposed improvements for the prototype validated by students		Inductive	
Improvements for the interface	Students are proposing improvements for the presented interface (Ex: add or remove buttons, hide side panel, etc.)		Inductive	<ul style="list-style-type: none"> - It was just like I said, creating the additional to do list. I just didn't see the button, okay? I was sort of expecting it to be either like a bar, like these create another to-do list. - maybe or make it like a bit smaller and then you have like an arrow to pop it out when you're doing and making notes and stuff.
Improvements for the workflow	Students are proposing improvements for the presented workflow (Ex: make the add deadline optional, switch between notes and to-do lists, etc.)		Inductive	<ul style="list-style-type: none"> - I know there are people like who prefer just having a note. There. You still have nothing to rate things. So it's more likely to be an optional, but I that I would like to see. - I mean I said that I would struggle with the like calendar thing. But actually, if I think about it, I don't actually need to meet that deadline. It's just there as a suggestion. So that's actually probably quite useful. So no, I don't really have any.
Improvements for the visualisations	Students are proposing improvements for the graphs / textual contents presented in the dashboard (Ex: CDV friendly colour scheme, split common strength weakness graph into two, etc.)		Inductive	<ul style="list-style-type: none"> - I think I could sort of see it from the legend, but the legends sort of like tucked all the way in the corner. I don't think if I didn't have the legends of the common or unique, I don't think it would jump out. - I think, showing maybe a bar chart or histogram can actually show the difference like.
Concern	Students are raising concerns about different features presented in the tool		Inductive	<ul style="list-style-type: none"> - I guess the with ChatGPT, you cannot, there are two concerns. First, you cannot ensure producing the hundred percent of information. Second, you are disclosing a personal information to them. So it's definitely necessary to have a like a

				<p>warning message. They say you're disclosing your information to a third party software, ChatGPT. And also, but like with the functionality, it is indeed useful if we can ensure that the information is like correct and like, I guess, precise, because there will be variance in the feedback accuracy if there is a difference in the choice of wording. Especially with technical terms.</p> <ul style="list-style-type: none"> - normally they won't change and they also still, they have their work and teaching. It's the like at their workload. And in most of case, sometimes professor they never take the feedback or survey seriously. So i'm not sure about this part.
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References:

1. Tracii Ryan, Michael Henderson, Kris Ryan & Gregor Kennedy (2021): Identifying the components of effective learner-centred feedback information, Teaching in Higher Education,
2. John Hattie, & Helen Timperley. (2007, 3). The Power of Feedback. Review of Educational Research, 77 (1), 81–112.
3. Van Boekel, M., Hufnagle, A. S., Weisen, S., & Troy, A. (2023). The feedback I want versus the feedback I need: Investigating students' perceptions of feedback. Psychology in the Schools, 1–14.
4. Emma Mulliner & Matthew Tucker (2017) Feedback on feedback practice: perceptions of students and academics, Assessment & Evaluation in Higher Education, 42:2, 266-288
5. Kirsten Zimbardi, Kay Colthorpe, Andrew Dekker, Craig Engstrom, Andrea Bugarcic, Peter Worthy, Ruban Victor, Prasad Chunduri, Lesley Lluka & Phil Long (2017) Are they using my feedback? The extent of students' feedback use has a large impact on subsequent academic performance, Assessment & Evaluation in Higher Education, 42:4,
6. Pardo, A., Jovanovic, J., Dawson, S., Gašević, D. and Mirriahi, N. (2019), Using learning analytics to scale the provision of personalised feedback. Br J Educ Technol, 50: 128-138.
7. Jin, H., Martinez-Maldonado, R., Li, T., & Tsai, Y.S. (2022). Towards Supporting Dialogic Feedback Processes Using Learning Analytics: the Educators' Views on Effective Feedback.
8. Lisa-Angelique Lim, Shane Dawson, Dragan Gašević, Srečko Joksimović, Abelardo Pardo, Anthea Fudge & Sheridan Gentili (2020): Students' perceptions of, and emotional responses to, personalised learning analytics-based feedback: an exploratory study of four courses, Assessment & Evaluation in Higher Education,
9. Tracii Ryan, Michael Henderson, Kris Ryan & Gregor Kennedy (2022): Feedback in higher education: aligning academic intent and student sensemaking, Teaching in Higher Education,

10. Deardorff, Darla K. 2015. "A 21st Century Imperative: Integrating Intercultural Competence in Tuning". *Tuning Journal for Higher Education* 3 (1), 137-47.
11. David Carless & Naomi Winstone (2023) Teacher feedback literacy and its interplay with student feedback literacy, *Teaching in Higher Education*, 28:1, 150-163,
12. Carless, David (2016). *Feedback as Dialogue*
13. David Carless and David Boud. 2018. The development of student feedback literacy: enabling uptake of feedback. *Assessment & Evaluation in Higher Education* 43, 8 (11 2018), 1315–1325.
14. Elizabeth Molloy, David Boud, and Michael Henderson. 2020. Developing a learning-centred framework for feedback literacy. *Assessment & Evaluation in Higher Education* 45, 4 (5 2020), 527–540.