How does feedback formulation affect students' perceptions of peer feedback in higher education?

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Abstract
Peer feedback in higher education has been studied extensively. This research contributes to this literature by investigating how different types of feedback formulation (positive comments, negative comments, and suggestions) influence students' perceptions of feedback (in terms of fairness, usefulness, acceptance, willingness to improve, and affects), and by analysing whether these effects differ for students who directly receive feedback compared with others. The study focuses on a one-semester Bachelor course on educational assessment, with 64 students enrolled. It presents a Continuous Assessment for Learning design articulating diverse assignments, including an original production, peer feedback on this production, promotion of student reflection with a feedback perception questionnaire, and revision of the original production. The findings highlight the importance of providing positive comments and suggestions when writing peer feedback and that it is important to address emotions when facilitating peer feedback processes in higher education contexts.

Keywords
Continuous Assessment for Learning; peer feedback; feedback formulation; student perceptions; higher education.

Introduction

'Student perceptions provide unique insights into the literature relating to feedback' (Mandouit and Hattie, 2023, p.1). This study explores how feedback formulation (in terms of positive comments, negative comments, and suggestions for improvement) affects students' perceptions of peer feedback. These relationships are explored in the context of a Continuous Assessment for Learning (ECPA, *Evaluation Continue Pour Apprendre*) design (Mottier Lopez et al., 2021; Mottier Lopez and Girardet, 2022, 2024), implemented in a Bachelor-level course on educational assessment with 64 students, many of whom were pre-service teachers or aspiring education professionals. Peer feedback is increasingly integrated into university teaching as a formative assessment practice conducive to learning, but it plays a particularly important role in teacher education. Teachers themselves are responsible for providing meaningful, accurate, and motivating feedback to children. Therefore, developing feedback literacy is not a peripheral competence, it is central to becoming a teacher. Engaging in an extended and structured feedback process offers future educators the opportunity to experience both the challenges of delivering feedback and the emotional dynamics of receiving it, fostering both technical and interpersonal assessment skills.

Theoretical Framework

Peer Feedback in Higher Education

One key objective of the course studied was to develop students' assessment literacy through the structured practice of peer feedback. Peer feedback allows students to receive a large number of immediate feedback on their work (Topping, 2009), which is useful in the context of large university courses, as teachers are usually unable to provide individual feedback, having to follow hundreds of students from different courses. Research shows that peer assessment

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implies reflexive processes and comparisons, which can bring the assessor to deepen her or his own understanding (e.g., Nicol, 2020; Nicol and McCallum, 2021). Topping (1998) named this process "learning by assessing". In their meta-analysis about the impacts of formative peer feedback, Huisman and colleagues (2019) concluded that peer feedback resulted in larger improvements compared to control groups and compared to self-assessment, but in same improvements compared to teacher feedback.

A growing body of research (e.g., Boud, 2000; Boud and Molloy, 2013; Carless and Winstone, 2023; Liu and Carless, 2006; Rowe, 2017) argues for a reconceptualization of feedback in higher education, from an action produced at a specific time, to a process involving shared responsibilities, in which students are deeply involved, integrated in pedagogical and assessment designs. Sadler (2010) proposes a higher education teaching model using intensive peer feedback practices, not only to allow students to receive multiple feedback, but also to engage them in learning. However, peer feedback is not easily carried out effectively. According to Sadler (2010), for peer-feedback to benefit student learning, three elements need to be worked on with students: understanding of the assignment, understanding of what consists in quality assessment, and understanding of assessment criteria.

Feedback literacy is critical to the success of peer feedback activities. Carless and Boud (2018) defined student feedback literacy as:

> the understandings, capacities and dispositions needed to make sense of information and use it to enhance work on learning strategies. Students' feedback literacy involves an understanding of what feedback is and how it can be managed effectively; capacities and dispositions to make productive use of feedback; and appreciation of the roles of teachers and themselves in these processes. (p. 1316)

Teacher feedback literacy, in turn, has been defined as "the knowledge, expertise and dispositions to design feedback processes in ways which enable student uptake of feedback and seed the development of feedback literacy" (Carless and Winstone, 2023, p. 153), emphasising the interconnectedness of teacher and student feedback literacy and their shared responsibilities in feedback processes.

Girardet (2020) explored student learning resulting from providing and receiving peer feedback in a similar context (same course, another cohort). Results showed development in students' feedback literacy, expressed by students in terms of realizations about the difficulty to provide specific and helpful feedback, the emotional impact of feedback, and the heterogeneity of assessors' judgments about the same production. Producing feedback developed student assessment skills, such as interpretation, critical thinking, and evaluative judgement. Yu (2019) also showed a development of reflexive and critical skills among students involved in writing peer feedback. Receiving multiple feedback can also develop students' feedback literacy. Receiving various and sometimes contradictory feedback engage students in analytical and comparative procedures to choose which comments to follow or not (Girardet, 2020; Mottier Lopez et al., 2021). Overall, combining feedback production and reception seem to encourage different but complementary learning opportunities (Rowe, 2017), showing that peer feedback can be a powerful process to implement in higher education.

Links between Students' Feedback Perceptions, Emotions, and Learning

Studying students' feedback perceptions is important because perceptions mediate the relationship between peer feedback content and the revision of the original work (Strijbos et al., 2010). For example, "feedback which is perceived as fair and useful might be more attended to,

as compared to feedback that is perceived as unfair, and useless" (Strijbos et al., 2010, p. 380). Thus, feedback perception can affect students' willingness to improve their original work and subsequently impact learning.

An increasing number of studies also focused on emotions linked to peer feedback (e.g., Alqassab et al., 2018) and how these emotions impact learning. Girardet (2021) showed that positive emotions felt during peer feedback (appreciation, interest, confidence, sense of safety, sense of responsibility, feelings of success, sense of usefulness, pride) can positively affect student motivation and engagement in the subsequent assignments. Research has shown that positive emotions encourage learners to spend more time and effort on the task (Molloy et al., 2013), improve the number and quality of revisions (Zhu et al., 2023), positively influence motivation and engagement in learning (Rowe et al., 2014), improve academic performance (Audrin, 2020; Fredrickson and Cohn, 2008), and enhance students' sense of responsibility for their own learning (Rowe, 2017).

If some emotional discomfort (feeling of difficulty, lack of mastery, insecurity, some level of anxiety, doubts, unsettlement) can foster engagement and learning (Audrin, 2020; Girardet, 2021; Gabriel and Griffith, 2002), strong deactivating emotions (feeling hurt, attacked, diminished, betrayed) can negatively impact learning. Such feelings can create disengagement and lower motivation (Audrin, 2020; Pekrun, 2006; Pekrun et al., 2011). Strong feelings of being negatively judged by others can dramatically impact learning (Falchikov and Boud, 2007), particularly among students with lower self-efficacy (Eva et al., 2012). Thus, it is important to study students' perceptions and emotions when receiving peer feedback.

Links between Feedback Characteristics and Student Perceptions of Feedback

A large amount of research studied the characteristics of (peer) feedback that favourably impact student perceptions or student learning (for example, the well-known Hattie and Timperley (2007)'s meta-analysis of 12 meta-analyses, exploring evidence from 196 studies on feedback). Here is some empirical evidence from more recent studies on some of these characteristics:

- Levels of feedback: In a study by Mandouit and Hattie (2023), students' perceptions of feedback effectiveness varied depending on feedback level. Task-level feedback was perceived as useful but not particularly powerful; Process-level feedback as useful and conducive to improvement; Self-regulation level feedback as the most useful and effective for improvement. Self-level feedback did not support understanding or achievement but tended to stimulate positive emotions and increase self-efficacy.
- Feedback length: Longer comments were associated with a higher perception of peer feedback helpfulness, especially for feedback providers (Zong et al., 2021).
- Number of feedback occurrences: Multiplying sources of peer feedback (both as producer and receiver) is encouraged, leading to better improvement of original work (Cho and MacArthur, 2010), engaging students in multiple comparisons that foster learning (Mottier Lopez et al., 2021; Nicol 2013, 2020; Nicol and McCallum, 2021).
- Nature of feedback (qualitative versus quantitative): Huisman and colleagues (2019)'s meta-analysis concluded that peer feedback including comments in addition to grades (with no stakes) seems to be the most effective.
- Types of comments: Huisman and colleagues (2018) showed that explanatory comments (compared to analytical comments, evaluative comments, and revision comments) was the main predictor of perceived adequacy of feedback and of willingness to improve one's work.
- Valence of feedback: An extensive literature review by Lechermeier and Fassnacht (2018) showed that positive feedback (i.e., self-consistent, as opposed to negative

feedback, i.e., self-discrepant) was related to higher feedback acceptance, satisfaction, usefulness, accuracy, fairness, self-efficacy and positive effects.
- Pragmatic functions of feedback comments: Neupane Bastola (2020) showed that outright criticism was perceived as unhelpful, demotivating, discouraging and decreased students' self-esteem. Brief instructions seemed to fail to provide guidance for students to improve. Directive feedback (i.e., feedback giving directions, instructions) formulated as instructions with no mark of mitigation was shown to offer little opportunity for negotiation.

The present study focuses on the proportions of positive comments, negative comments, and suggestions for improvement included in the feedback, and their impact on student perceptions and affect. Our feedback characteristics categories could be related to pragmatic functions of feedback comments (e.g., Hyland and Hyland, 2001; Neupane Bastola, 2020). Positive and negative comments could also be related to feedback valence (e.g., Lechermeier and Fassnacht, 2018). To facilitate reading, we simply refer to our characteristics' categories as "feedback formulation".

If studies have compared the effects of different sources of feedback (teacher versus peer) on diverse student outcomes (e.g., Cho and MacArthur, 2010; Ruegg, 2018), no study, to our knowledge, has compared peer feedback perceptions between students who directly received feedback and students who evaluated feedback addressed to others within the same course.

- How does feedback formulation affect student perceptions of peer feedback? *(H: positive comments and suggestions will positively affect perceptions; negative comments will negatively affect perceptions; feedback formulation would not affect acceptance/agreement with the feedback content).*
- Do these effects differ based on whether students are the direct recipients of the feedback? *(H: positive and negative comments will have stronger effects when students are direct recipients of feedback than when they are assessing feedback directed at others).*

Context

This study was conducted in the context of a Bachelor-level course on educational assessment in Fall 2019, involving 64 undergraduate students. The course ran weekly for thirteen 90-minute sessions from September 19 to December 18. It was designed under the assessment model known as Continuous Assessment for Learning (ECPA).

Unlike end-of-semester exams, ECPA emphasies continuous, formative, and integrated assessment activities embedded in authentic learning situations. This course was developed to challenge summative models and prepare future educators to implement sustainable assessment strategies in their professional practice, including navigating feedback processes, which is critical for classroom instruction.

While some institutions rely on peer feedback for logistical reasons (e.g. large class sizes), in this context peer feedback was pedagogically intentional: to foster the development of feedback literacy in future educators. Students preparing to teach children must develop the ability to assess student work and provide constructive feedback, skills directly relevant to the classroom.

The ECPA model aligns with and integrates several foundational frameworks:

- Assessment for Learning (AfL; Broadfoot et al., 1999), encompassing all forms of assessment that foster student engagement in learning.
- Authentic Assessment (Wiggins, 1990), which emphasizes real-world relevance and complex task engagement.
- Sustainable Assessment (Boud, 2000; Boud and Soler, 2016), referring to assessment aimed to answer students' learning needs for the longer term.

These conceptual strands informed a sequence of interconnected assignments designed to help students develop both academic and professional skills, with special focus on feedback literacy.

The course consisted of seven scaffolded assignments:

1. Creating assessment criteria and formative feedback on a child's work and proposing justified interventions to improve the child's work
2. Writing structured feedback on peer work
3. Reflecting on feedback through questionnaires
4. Interpreting feedback collaboratively
5. Revising initial work based on feedback
6. Analysing assessment theory and practice
7. Reflecting on the ECPA design and personal development.

Each stage was strategically positioned to deepen students' engagement with feedback as both process and product, and to simulate realistic teaching scenarios. Figure 1. presents the ECPA design, followed by a detailed description of the articulated assignments.

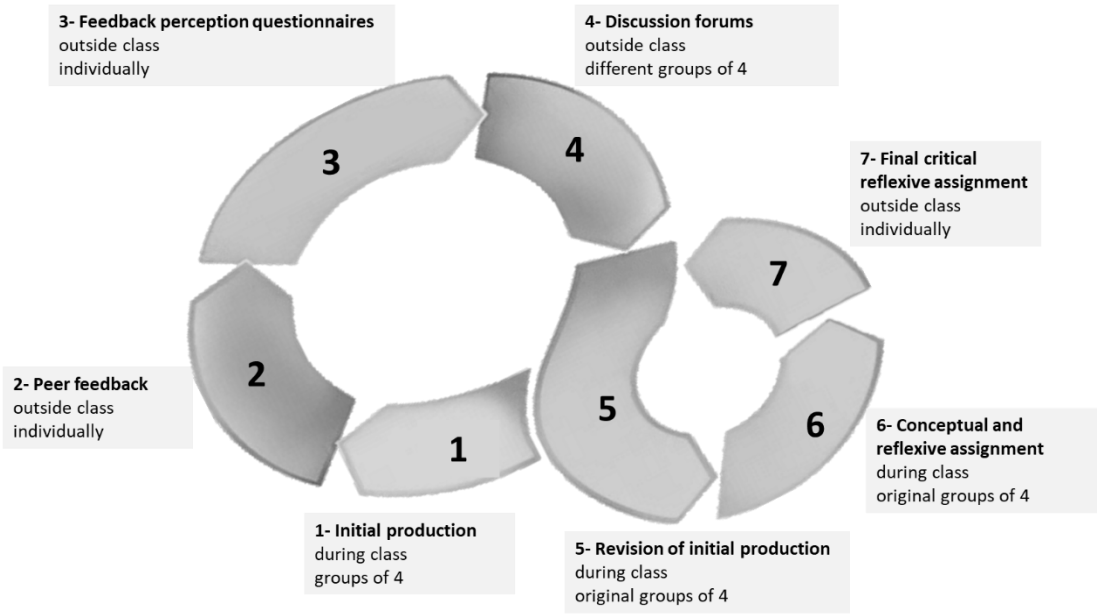

Figure 1. ECPA design experimented in the course (source : Author).

Assignment 1 – Initial Production (October 23)
Students, in 16 groups of four, received a handwritten essay by a 10-year-old child. Their task was to create assessment criteria, write a formative comment to the child, and propose interventions to improve the child's work using the course concepts to describe and justify their propositions.

Assignment 2 – Peer Feedback (October 20-November 6)
Each student individually reviewed one other group's *Assignment 1* output, providing 1,200+ word feedback. Instructions emphasized theoretical accuracy, specific, actionable suggestions for improvement, and prosocial tone[1]. One session was fully dedicated to peer feedback training. Peer comments were assessed by instructors.

Assignment 3 – Feedback Perception Questionnaires (November 6-20)
Each student received:

- 4 peer feedback on their own group's *Assignment 1*: type 1 feedback (received)
- 3 feedback on another group's *Assignment 1* (reviewed by the student themselves): type 2 feedback (observed)
- Their own authored feedback (to allow meta-reflection)

Figure 2. clarifies what is meant by type 1 and type 2 feedback.

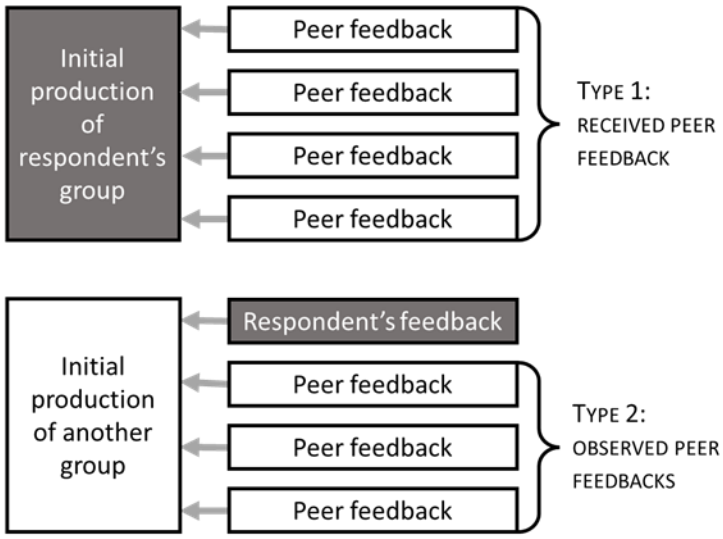

Figure 2. Illustration of type 1 and type 2 peer feedback (source: Author).

Students responded to questionnaires for seven feedback items, all but their own (the questionnaire is presented in the methodology section).

Assignment 4 – Discussion Forums (November 20-December 3)
Students joined two online forums (one per role: feedback receiver and feedback provider), each with four threads. Objectives included interpreting feedback collaboratively and identifying actionable insights.

Assignment 5 – Revision of initial production (December 4)
Returning to their original groups, students revised their *Assignment 1* outputs using received feedback and forum discussions. This task tested their ability to integrate feedback and apply it constructively. Revised work was assessed by instructors.

[1] Closest translation of the widely used French word "*bienveillance*", which refers to a favourable disposition towards others and their emancipation (Jellab, 2018).

Assignments 6 and 7 – Conceptual and reflexive assignments (end of semester)
These final assignments involved short-responses questions linking assessment theory and students' own experience, and a critical reflection on the entire ECPA design. Both assignments were individually submitted and assessed deeper learning and personal growth in assessment literacy.

Methodology
Participants
Sixty-four students (52 women, 12 men) participated in this study. Fifty-three were enrolled in a Bachelor program in educational sciences (including pre-service teacher education), and 11 were Master's students taking the course as a complement. The course aimed to develop assessment and feedback knowledge and skills essential for future teachers, positioning peer feedback as a pedagogical tool for preparing students to assess children's work and manage learner responses. While the sample reflects the course's target population, it is limited in size and context (one course, one semester, one institution), and results should be interpreted accordingly. Students gave written consent for their anonymized coursework to be used in this research.

Data collection
Data were collected from two sources. The first consists of 64 individual peer feedback texts written by students in *Assignment 2*. The second source includes 441[2] completed feedback perception questionnaires from *Assignment 3*, comprising four questionnaires per student for type 1 feedback (received) and three for type 2 feedback (observed). All data were collected during the course as part of scheduled activities and analysed after the course was completed.

Instrument
Students' perceptions of feedback were measured using a validated French version (following a translation and back-translation procedure) of the Feedback Perception Questionnaire (FPQ; Strijbos et al., 2010), whose structural validity and invariance have been further supported in more recent validation work (Strijbos et al., 2021). The FPQ includes five dimensions: fairness (3 items; e.g., 'I consider this feedback fair'), usefulness (3 items; e.g. 'I consider this feedback useful'), acceptance (4 items; e.g. 'I agree with this feedback' / 'I accept this feedback[3]'), willingness to improve (3 items; e.g. 'I am willing to invest a lot of effort to improve my production'), and affect (6 items; 'As I read this feedback, I felt satisfied / confident / successful / offended / angry / frustrated'). Each item was rated on a 6-point Likert scale (1 = fully disagree, 6 = fully agree). Negatively worded items were reverse-coded prior to analysis. To account for psychological distance, an active phrasing version of the questionnaire was used for type 1 feedback (received), while a passive phrasing version was used for type 2 feedback (observed). This distinction aimed to capture more personal reactions to direct feedback and more detached evaluations of others' feedback.

Analyses
This study employed a mixed-method design. The 64 peer feedback texts were analysed qualitatively to generate feedback formulation coverage scores, which were then used as predictors in quantitative regression models to examine their relationship with students' feedback perceptions.

[2] One student's questionnaires were removed from the data because of invalid answers.
[3] The acceptance factor originally included 3 items: "I accept this feedback" (AC1), "I dispute this feedback" (AC2), and "I reject this feedback" (AC3). We added a fourth item "I agree with this feedback" (AC4) to balance the number of positively versus negatively worded items and offer a counterpart to AC2.

Regarding content analysis, feedback texts were coded using NVivo following the framework of Hyland and Hyland (2001). Three categories were identified:

- Positive comments (e.g., encouragement, agreement, validation, praise)
- Negative comments (e.g., invalidation, disagreement, criticism)
- Suggestions for improvement (e.g., proposals for improvement or revision, materials to refer to)

Overlap between categories was allowed, particularly when suggestions were embedded within criticism. If an explanation followed either a negative comment, a positive comment, or a suggestion, it was coded along in the same category. Only little text remained uncoded, which typically consisted in sentences rephrasing the content of the original production. To ensure interpretability across feedback of varying lengths (1,200–2,000 words), proportions of each comment type were calculated relative to the total text length. These proportional scores (positive, negative, suggestions) were computed for each feedback and served as continuous variables for statistical analysis. Due to resource limitations, only one coder conducted the content analysis. While the coding scheme was straightforward, the absence of inter-coder reliability is acknowledged as a limitation and should be addressed in future research.

Linear regressions were conducted using SPSS to test whether the proportions of positive, negative, and suggestion-based comments predicted students' feedback perceptions (measured via FPQ dimensions). A simultaneous (forced entry) approach was used given the exploratory nature of the model and absence of strong theoretical guidance for predictor ordering (Field, 2018). However, the data structure involved nested responses (multiple questionnaires per student), and this non-independence may affect estimates. Future studies should consider hierarchical or multilevel models to account for this nesting.

Results

Descriptive Statistics

Students generally responded positively to the peer feedback they received or observed, across all five perception dimensions. Mean scores were high, with negative skewness indicating a ceiling effect in some areas, such as perceived usefulness and fairness. No statistically significant differences were found between type 1 (received) and type 2 (observed) feedback conditions. Descriptive statistics were the following (N = 441):

- Usefulness: *M* = 5.13, *SD* = .82, *Min* = 2; *Max* = *6*.
- Fairness: *M* = 4.99, *SD* = .80, *Min* = 2.67, *Max* = 6.
- Positive affect: *M* = 4.95, *SD* = .82, *Min* = 1, *Max* = 6.
- Willingness to improve: *M* = 4.82, *SD* = .99, *Min* = 1, *Max* = 6.
- Acceptance: *M* = 3.35, *SD* = .35, *Min* = 2.5, *Max* = 6.

These high scores may reflect both the training provided in the course and the assessment criteria used to guide feedback construction. Nevertheless, the variance that remained allowed for regression analyses to identify predictors of perception outcomes based on feedback formulation.

Regression Analyses

To address the first research question (how does feedback formulation affect student perceptions of peer feedback?) we conducted multiple regressions with the proportions of positive comments, negative comments, and suggestions as predictors for each perception factor regarding type 1 peer feedback (received):

- Fairness: Negative comments significantly reduced perceived fairness (β = –0.184, p = .003; R^2 = 3.4%). This indicates that even in a context with structured training, criticism can lower students' sense of fairness when directed at their own work.
- Usefulness: Both suggestions (β = 0.255, p < .001) and positive comments (β = 0.167, p = .018) were significant positive predictors (R^2 = 5.3%), supporting the importance of both encouragement and actionable guidance.
- Acceptance: Only negative comments had a significant effect (β = –0.163, p = .009; R^2 = 2.7%), suggesting a potential "clouding" effect of criticism on students' willingness to accept the feedback's message.
- Willingness to improve: Negatively affected by a higher proportion of negative comments (β = –0.159, p = .011; R^2 = 2.5%).
- Positive affect: The most affected dimension, with negative comments showing a strong negative association (β = –0.298, p < .001; R^2 = 8.9%), underscoring the emotional sensitivity to tone in feedback received directly.

In the second research question (do these effects differ based on whether students are the direct recipients of the feedback?) results showed both convergence and divergence comparing type 2 with type 1 peer feedback.

- Usefulness: Suggestions again emerged as significant predictors (β = 0.177, p = .015; R^2 = 3.1%), confirming that action-oriented feedback is broadly valued, regardless of emotional proximity.
- Willingness to improve: Interestingly, negative comments had an even stronger negative impact (β = –0.264, p < .001; R^2 = 6.9%), indicating that even when students were not direct targets, they reacted negatively to unconstructive tone.
- Positive affect: Only positive comments predicted this dimension (β = 0.320, p < .001; R^2 = 10.3%), showing that students may project themselves into the role of receiver even when observing others' feedback.
- Fairness and Acceptance: No significant predictors were identified in type 2 feedback, suggesting emotional distance may allow students to evaluate fairness and agreement more independently of tone or style.

Table 1. presents the regression models predicting each perception dimension from the proportions of positive comments, negative comments, and suggestions.

Table 1. Regression analyses: Effects of feedback formulation on feedback perceptions for type 1 and type 2 feedback.

	Type 1 feedback						Type 2 feedback					
	R^2	*p*	*b*	*SE B*	*β*	*p*	R^2	*p*	*b*	*SE B*	*β*	*p*
Fairness												
Constant	3.4%	.003	5.272	.092		.000	*No predictors were identified*					
Negative comments			-.015	.005	-.184	.003						
Usefulness												
Constant	5.3%	.001	4.130	.305		.000	3.1%	.015	4.712	.161		.000
Suggestions			.020	.005	.255	.000			.013	.005	.177	.015
Positive comments			.012	.005	.167	.018	*Not a predictor*					
Acceptance												
Constant	2.7%	.009	3.429	.039		.000	*No predictors were identified*					
Negative comments			-.006	.002	-.163	.009						
Willingness to improve												
Constant	2.5%	.011	5.094	.113		.000	6.9%	.000	5.178	.129		.000
Negative comments			-.016	.006	-.159	.011			-.027	.007	-.264	.000
Positive affects												
Constant	8.9%	.000	5.318	.091		.000	*Not a predictor*					
Negative comments			-.025	.005	-.298	.000						
Constant	*Not a predictor*						10.3%	.000	4.088	.198		.000
Positive comments									.023	.005	.320	.000

Overall, the results support our hypotheses that:

- Suggestions for improvement consistently enhance perceptions across conditions.
- A high proportion of negative comments can erode affect, fairness, and willingness to improve, particularly when the student is the recipient.
- Positive comments have greater impact on emotional dimensions than on cognitive agreement (acceptance).

The hypothesis that type 1 feedback perceptions would be more strongly affected by feedback formulation, was also confirmed. In nearly all dimensions where effects were observed, the beta coefficients for type 1 feedback were stronger than or comparable to those for type 2. This reinforces the idea that emotional immediacy matters in how feedback is interpreted.

While many of the effects observed align with expectations in the literature – and, one could argue, common sense – (e.g., positive feedback increasing positive affect), the results add nuance by showing how the context of reception (type 1 vs. type 2) shapes perceptions differently. For example, emotional reactions (affect, willingness) were more sensitive to feedback valence than acceptance or fairness, especially when students were the direct recipients. However, explained variance was modest across models ($R^2 < 11\%$), highlighting that

feedback formulation only partially accounts for perception differences. This suggests additional factors, such as student traits or feedback quality, may also be influential and should be examined in future research.

Discussion and Conclusion

This study investigated how the formulation of peer feedback (specifically, the relative proportion of positive comments, negative comments, and suggestions for improvement) affects students' perceptions of peer feedback across five dimensions: fairness, usefulness, acceptance, willingness to improve, and affect. The analysis was embedded within a Continuous Assessment for Learning (ECPA) design, in which students took part in a structured sequence of interrelated assignments, including feedback production and reflection upon feedback. Although students received explicit instruction on how to provide constructive feedback, including criteria stressing specificity, theoretical correctness, prosocial tone, and the inclusion of suggestions, our results indicate that feedback formulation still significantly influenced how students perceived peer feedback. These findings illustrate the persistent emotional and cognitive impact of language choices in assessment contexts, even when feedback is constructed in pedagogically optimised conditions.

One of the most salient findings was the strong predictive value of suggestions for improvement, for both perceived usefulness and students' willingness to revise their work. This effect was particularly evident in the type 1 condition, when students were direct recipients of feedback. Given that feedback in this design was followed by a revision task (*Assignment 5*), it is unsurprising that actionable suggestions were perceived as helpful. Yet, the quantitative evidence reinforces the pedagogical necessity of training students not only to assess, but to communicate suggestions for improvement in ways that support the recipient's agency and competence. The study also confirmed that a higher proportion of positive comments was associated with greater positive affect and perceived fairness, again, more strongly in the type 1 condition. This supports the sustained relevance of recommendations found in earlier literature (e.g., Lechermeier and Fassnacht, 2018), which encourage instructors to help students frame praise constructively and specifically, rather than relying on vague and short positive affirmations. While this finding may appear predictable, its persistence among today's learners reaffirms that feedback literacy, particularly the nuanced articulation of specific positive comments, is a skill that requires explicit development, not assumption. Conversely, a higher proportion of negative comments negatively impacted several perception dimensions, including acceptance and willingness to improve. This effect was not merely triggered by the presence of criticism, but by its dominance relative to other feedback elements. This supports earlier work by Neupane Bastola (2020), suggesting that unmitigated criticism can be demotivating and perceived as unfair or diminishing. In our study, this effect was most acute when students received feedback on their own work, as opposed to reading feedback written for others. The distinction highlights the emotional immediacy involved in self-relevant feedback and reinforces the importance of not only *what* is said, but *how much* of it is said in a given tone. These findings collectively suggest that student feedback perception is shaped by both emotional proximity (whether the feedback is about their own work) and discursive proportion (how different comment types are balanced). The emotional responses elicited by negative or positive feedback appear to mediate how students interpret fairness and usefulness, even in contexts where they are trained to be reflective and discerning.

Some conclusions, such as the idea that negative feedback is poorly received, may seem obvious. However, the pedagogical insight here is not the mere confirmation that "criticism can hurt," but the empirical demonstration that feedback composition matters even in high-awareness, well-trained populations. More importantly, the study provides evidence that future educators,

even with training, must learn to control not only the accuracy of their assessments but also the tone, balance, and relational dimension of their feedback.

This speaks directly to the study's relevance for teacher education. While students were assessing each other's work, the goal was not peer assessment for efficiency, but to simulate the practice of giving feedback to learners, particularly children. Teachers must regularly deliver feedback that encourages improvement without diminishing self-efficacy. Practicing this skill with peers, who may be equally sensitive, critical, or unsure, provides a rich learning environment to reflect on how feedback is received, not just how it is constructed. The horizontal relationship among peers in this context may amplify emotional reactions and reduce perceived authority, but it also offers a formative space for feedback literacy development before students face similar dynamics in professional classrooms. Thus, the value of this research lies not in uncovering novel psychological mechanisms, but in reinforcing the practical imperative to develop feedback formulation skills in teacher education programs. By foregrounding the social and emotional aspects of feedback, teacher educators can better prepare students to provide assessment comments that are both pedagogically constructive and emotionally adapted.

Crafting feedback in a way that promotes engagement, reduces defensiveness, and preserves motivation is a *teachable skill*. Our findings support the integration of structured peer feedback activities into teacher preparation programs as a scaffold for professional communication, reflection, and relational pedagogy.

Limitations and Further Studies

This study offers preliminary evidence on how feedback formulation influences student perceptions in a structured peer-feedback context. However, it should be considered a pilot study, as it was conducted with a small, single-cohort sample (N = 64) within one course and institution. Broader claims must be tested through larger, more diverse samples across institutions and disciplines.

The modest R^2 values indicate that other factors, such as student characteristics (for example, self-efficacy is known to particularly impact feedback perception; Eva et al., 2012), may better explain perception outcomes. Future research should incorporate these variables to build more comprehensive models.

The current coding framework (positive, negative, and suggestions for improvement) could be refined to distinguish tone and intent (e.g., expressions of doubt vs. blunt criticism; praise with vs. without justification). This would clarify how linguistic nuance shapes perception.

Only two assignments were analysed, though they were embedded in a broader ECPA design. Future studies could examine how feedback resonates across interconnected tasks and affects learning outcomes like revision quality.

Finally, affect may mediate the impact of feedback tone on other perceptions. Path analyses or structural models could help identify these underlying mechanisms. Pekrun et al. (2023)'s most recent three-dimensional taxonomy of achievement emotions may also provide a useful framework for future studies seeking to refine the emotional dimensions involved in peer feedback processes.

Declarations and Ethics Statements

Ethical Approval

As confirmed by the university ethics' committee, ethical approval was not required because the data consisted of course-related materials (assignments and questionnaires) that were produced as part of regular pedagogical activities and were analysed only after the course had concluded, ensuring no influence on students' participation, assessment, or outcomes.

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