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Peer Feedback: Its Quality and Students' Perceptions as a Peer Learning Tool in Asynchronous Discussion Forums

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ABSTRACT

The study examined two aspects, namely the quality of peer feedback in asynchronous discussion forum when such peer feedback is used as a formative learning tool, i.e. not for assigning grades; and students' perceptions about the process of peer feedback. Twenty four students enrolled in higher education were involved. They were assigned two tasks: in the first task, they contributed lessons learnt about the course on the learning management system, via the asynchronous discussion forum. Thereafter they read the comments posted by their colleagues and critiqued them. In the final task that was given at the end of the course, students wrote reflections about peer feedback process. Thus all data collected were in the form of posts. Using NVivo, the posts generated in the first task were used to examine the quality of peer feedback, while the posts generated from students' reflection about peer feedback were used to examine students' perceptions about peer feedback. Results indicate that peer feedback is a useful tool for formative learning as well as assessment purposes. Future research could involve a larger sample, a diverse population, and a range of other courses.

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1. INTRODUCTION

Online environments such as asynchronous discussion forums have shown to be effective for promoting peer feedback in higher learning institutions [1, 2]. Similarly, research indicates that peer feedback is significant for promoting student learning [3-7]. Many studies have examined the use of peer feedback for assessment where students get grades for participating in the peer feedback process [8-10]. The ultimate focus has been on getting products such as essays [1, 5, 8], oral presentations, portfolios, test performance, or other skilled behaviours [5]. In such studies, findings show that students have mixed feelings when peer feedback is associated with grades [8-10]. Though students have indicated positive attitude towards the use of peer feedback for getting grades [8, 11-13], there is ample evidence of negative attitude towards the use of peer feedback for grading purposes [6, 12, 14, 15].

Since students have shown resistance to peer feedback when it is associated with grades, there is need to use peer feedback as a learning tool, not meant for giving grades. Liu and Carless [6] caution: "If teaching and learning cultures emphasize individual achievement to the detriment of more collaborative approaches, the potential of peer feedback for learning may not be fully realized" [6]. They add that peer feedback needs to be used as a learning tool where the focus is on long term learning, not on the immediate products [6]. Moreover, peer feedback has to be used as a formative tool to improve the quality of peer feedback [3, 16]. Gielen et al. [17] stress that the use of quality criteria in peer feedback should be related to the goal of peer assessment.

Given the preference of peer feedback as a learning tool, rather than an assessment tool, this study examined two aspects: the quality of peer feedback as a learning tool where participation in the peer feedback process is not associated with grades, and students' perceptions about the process of using peer feedback. This was based on the assumption that when students use peer feedback as a learning tool, they will be relaxed, hence, come up with effective and critical peer feedback. To that end, the peer feedback posts were examined to ascertain their degree of quality; while posts given as reflections were used to examine students' perceptions about the process of peer feedback. The peer feedback posts and reflection posts were generated on the learning management system, Moodle.

The paper has four major sections. The first section reviews literature related to the role of asynchronous discussion forums and peer feedback. Materials and methods are described in the second section where the research questions, the sample, and the procedures for data collection and analysis have been described. The third section outlines findings related to the quality of peer feedback as well as students' perceptions about peer feedback. The final section discusses the results, followed by a concluding remark.

1.1 Role of asynchronous discussion forums

Students have indicated positive attitudes towards the use of asynchronous discussion forums as tools for promoting peer feedback [1, 2]. Through this environment, students work on their own pace [1]; they develop deep understanding as they have sufficient time to reflect when using asynchronous discussion forums compared to synchronous discussion forums [8]; they develop new ideas [18], and they collaborate with each other [19]. However, some negative attitudes towards this medium have been experienced as well [2, 19]. Overall, asynchronous discussion forums seem to have a higher potential for promoting effective peer feedback. The next section discusses the concept of peer feedback.

1.2 The concept of peer feedback

In literature, peer feedback is synonymous to *peer response* [8, 10], *peer assessment* [5, 8, 12], *peer evaluation* [8, 15], *peer review* [1, 7, 10], and *peer marking* [11, 20]. Topping [5] defines peer assessment as an arrangement for learners to consider and specify the level, value, or quality of a product or performance of other equal-status learners (p. 21).

Liu and Carless [6] distinguish between peer feedback and peer assessment. They define peer feedback as a communication process through which learners enter into dialogues related to performance and standards [6]; and peer assessment as students grading the work or performance of their peers using relevant criteria [6, as cited in Falchikov, 2001]. They state that the major distinction between the two terms is that the former is associated with rich detailed comments while the latter is associated with grades. Given the importance of peer feedback, the subsequent section reviews the role of peer feedback in the learning process.

1.3 The role of peer feedback in the learning process

Research indicates that peer feedback has the potential of promoting deeper learning that may result to development of critical thinking skills [3-5, 12]. Furthermore, peer feedback can be more immediate and individualized as the teacher may not be able to reach all the students at once [3, 5, 6]. Since the responsibilities are shared between teachers and students, it thus can decrease the teacher's workload that may be detrimental to students' learning outcome [3].

Moreover, peer feedback increases levels of time on task and practice and a greater sense of accountability [5]; consequently this is likely to lead to learner autonomy [6, 16, 21]. In addition, peer feedback can reduce errors, promote self-regulatory skills, increase reflection [5] and lead to self-correction amongst students [6, 21]. Finally, as a result of peer feedback, students learn from each other [7].

Understanding students' perceptions about the process of peer feedback is important. It is through students' perceptions that their attitudes towards peer feedback can be examined. This is the focus of the following section.

1.4 Students' perceptions about peer feedback

Findings related to students' perceptions about peer feedback when such feedback is associated with giving grades are inconsistent. Several studies indicate that students in higher learning institutions value and enjoy peer feedback [2, 8, 11-13]. In a study that examined student attitudes towards peer assessment, Stepanyan et al. [13] reported that the allocation of marks in peer feedback encouraged student involvement. On the contrary, McGarr and Clifford [12] reported that students felt that peer assessment was not a fair method of assessment, and they disliked peers to have a greater say in their overall grades.

Furthermore, in a study by Vu and Dall'Alba [14], while 50% of the students agreed that peer assessment promotes student interaction and provides useful feedback, the rest of the students were doubtful

about their peers' ability to assess fairly and accurately, and about the quality of peer feedback itself. Likewise, Ryan et al. [15] reported that 80% of the students thought that peer evaluation process was unfair; they disagreed with average grades given by peers, they thought that evaluating their peers was difficult; and they would not recommend its use in future courses.

Liu and Carless [6] reported that a significant number of both students and academics resisted peer assessment using grades, they reported that students never or rarely grade each other in assessment activities, and that peer feedback was time consuming compared to traditional assessment. Arnold et al. [20] revealed that peer marking led to higher or lower grades due to over-generous or mean making; students felt bad if they revealed a peer's unprofessional behaviour to the attention of a teacher as something bad might happen to the peer because of a negative report; students were reluctant to damage personal relationships with their peers; instead, students preferred informal peer-to-peer feedback for formative purposes.

Additionally, students felt that peers do not provide useful or accurate feedback, do not use properly the criteria or lack experience in marking [11]; consequently, it has been reported that some peer feedback tend to be surface in nature [21]. Finally, it has been revealed that students sometimes find it difficult to give or receive negative feedback [3].

The other students' perception about peer feedback is anonymity of peer feedback. It has been reported that students prefer anonymous peer feedback to a non-anonymous one as it makes them avoid peer pressure [1-3, 13]. Lu and Bol [1]compared the effects of anonymous and identifiable electronic peer review. The findings indicate that students involved in anonymous peer feedback performed better on the writing task; they provided more critical feedback compared to students in identifiable peer feedback; they provided more frequent feedback; and they gave lower peer ratings.

Finally, research indicates that peer feedback needs to be timely and should consist of quality rather than quantity [3]; the role of the tutor is paramount as a catalyst for online learning [3, 13]; and trust amongst peers is significant for promoting effective feedback [3, 10].

2. RESEARCH METHOD

This study employed an interpretive paradigm that, *inter alia*, advocates on multiple social reality [22, 23], and it focuses on deeper meanings from the research participants [24]. Ultimately, the researcher's role is that of providing interpretations of human actions and social practices within a given social setting [25]. This section describes the research questions, the sample, procedures, and methods of data collection and analysis.

2.1 Research questions

This study was guided by two major research questions:

a. What is the quality of students' peer feedback when such peer feedback is used as a learning tool in asynchronous discussion forums?
b. What are the students' perceptions about peer feedback as a learning tool in asynchronous discussion forums?

2.2 Sample

Sampling was purposive. Purposive sampling involves selecting a relatively small sample that is rich in data the researcher needs [26-28]. A total of 24 (10 females and 14 males) first year students enrolled in a course, *Computer Literacy for Teachers*, part of the degree of Bachelor of Education at Dar es Salaam University College of Education, Tanzania, were involved in the study. Their age ranged from 21 to 25, with an average age of 22.6.

2.3 Procedures

The students were given three major tasks to do as a supplement to face- to- face sessions. In the first task, each student was supposed to contribute at least once about what they have learned about any topic in the course. The contributions were to be posted on the asynchronous discussion forum, part of the learning management system, Moodle. In the second task, they were asked to carefully read posts contributed by their colleagues and give critical feedback about the posts. Though every student received feedback from at least one student, some students got more peer feedback than others. To that end, students' posts given as peer feedback were assessed for quality. The final task was given at the end of the course, where students were asked to write their reflections about the process of peer feedback. Their reflections were also posted on the same learning management system. This helped to get their perceptions about the process of peer feedback. All the posts contributed were made public to all the students. Since the course was taught by the researcher,

all the above tasks were assigned by the researcher. To give more opportunities to students, the instructor's role in the asynchronous discussion forums was minimal.

2.4 Methods of data collection

Data collected were in the form of posts generated from the asynchronous discussion forums. The first data came from the posts given as peer feedback to colleagues, and the second data came from the students' reflections about the process of peer feedback.

2.5 Data analysis

Data were qualitative in nature; hence, making it easy to analyse them using NVivo, qualitative data analysis software developed by QSR International. Before data analysis, the posts from the learning management system, Moodle, were saved as text files. Thereafter, all the details such as dates were erased, while students' names were replaced with pseudonyms to ensure anonymity in coding. The instructor's comments were also excluded as the focus was on the quality of students' posts. As each post appeared on its own paragraph, each paragraph was numbered to simplify identification. Finally, each post was classified according to the framework given by Riel, Rhoads and Ellis [10] that is used to assess the quality of peer feedback [see Table 1]. Furthermore, suggestions given by Keshan and Qing [8] who also tested the framework were incorporated. The framework by Riel et al. [10] consists of four element: Affirmation, Editorial, Extension and Critique. Adapting suggestions given by Keshan and Qing [8], Off-task posts were considered, but were given a new category, Socialisation, as they seemed to be social in nature. However, some modifications were made. Thus, the adapted framework had five elements, namely: Socialisation, Affirmation, Editorial, Extension and Critique based on the level of criticality, that is, Socialisation reflecting less or no critical component, while Critique representing the most critical level. Each element has its descriptor as indicated in Table 1.

Table 1. A Rubric Used to Grade the Quality of Peer Feedback

Grading Scale	Category	Descriptors
1	Socialization	Feedback does not relate to the task, but social in nature and seems to have the potential of sustaining the discussion.
2	Affirmation	Feedback is supportive, appreciative about the work, but without information that would lead the work to be revised.
3	Editorial	Feedback suggests for mechanical advice, but does not suggest major conceptual changes to the student's work. E.g. use of correct grammar.
4	Extension	Feedback is intended to give more consideration or new directions to explore, but contains no implied critique or attempts to question, reorient, or challenge ideas of the author.
5	Critique	Feedback has constructive critique that challenges any aspect of what the student has written or presented, and offers a different direction for the student to consider.

Source: Adapted from Riel et al. [10] with some modification from Keshan and Qing [8].

When assessing the quality of discussion in asynchronous discussion forums, some previous studies have tended to omit those posts with social elements for the reason that they are not part of the analysis [10, 29, 30]. However, in this study even those posts with social elements were examined. Though such posts were not related to the task, but seemed to help sustain the discussion. Furthermore, research indicates that off-task posts help in building online community [8], as well as social presence [31].

Each post was coded as a unit of analysis. Thus, if a post contained more than one category, it was coded to a category that fully described that post. To ensure interrater reliability of the coding, the posts were coded by two researchers using NVivo; thereafter using a coding comparison query in NVivo, the Kappa Coefficient and interrater agreement were established. The Kappa Coefficient was 0.75 while percentage agreement was 96.52. This indicates that there was substantial agreement between the two coders as the scale of the interpretation of Kappa Coefficient indicates: 0.01–0.20 Slight agreement, 0.21– 0.40 Fair agreement, 0.41–0.60 Moderate agreement, 0.61–0.80 Substantial agreement, and 0.81–0.99 Almost perfect agreement [32].

The students' reflections were read verbatim to identify themes related to the research question in order to get students' perceptions about their experience of peer feedback.

3. RESULTS AND ANALYSIS

a. The quality of peer feedback for each category

With reference to the first question that examined the quality of students' peer feedback when such feedback is used as a learning tool in asynchronous discussion forums, the analysis of the posts showed the following results: more than half of the posts [50.5%] were related to Affirmation, 37.1% to Extension, 6.2% to Editorial, 4.1% to Critique, and 2.1% to Socialization as indicated in Figure 1.

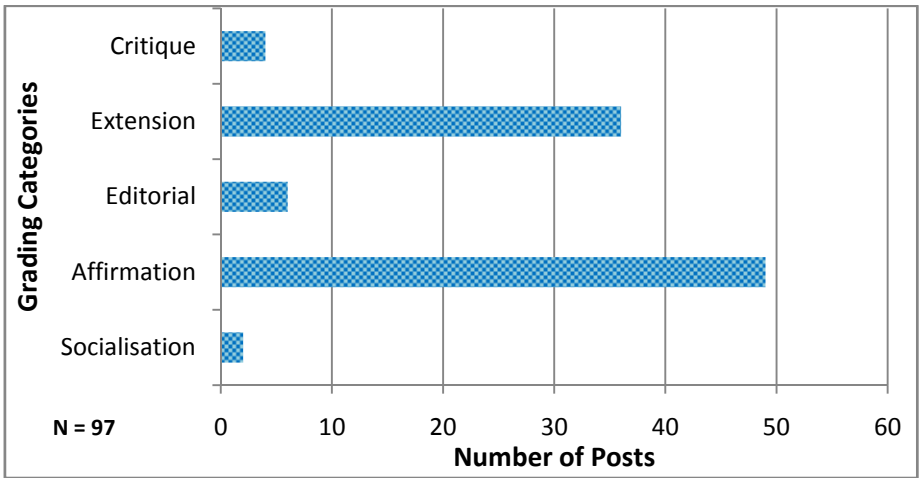


Figure 1. *Peer feedback grading quality per category*

Though, in general, there was a moderate level of quality of peer feedback, the percentage of posts in Extension is promising, though such posts were surpassed by those in Affirmation. This indicates that students engaged in some level of critical thinking. The fact that there were very few posts related to Socialization further indicates that most of the students focused on the task. However, the level of peer feedback quality could have increased if the instructor's role was more active in the discussion forums. In this study, the instructor's role was very minimal. Stepanyan et al. [13] reported that students expected more explanatory and supportive tutor intervention to encourage greater student participation. Similarly, Ertmer et al. [3] revealed that students seemed to place more importance on the instructor's feedback than on peer feedback.

Furthermore, Lu and Bol [1] reported that students assigned in the anonymous group gave more critical feedback than those in the identifiable group. However, in this study, anonymity was not an issue at all as it was raised by only one student, the rest of the students were comfortable to be identified. Therefore, the instructor's active involvement in the discussion forum is significant for promoting higher quality discussions.

3.2 Students' perceptions about peer feedback process

This section reports results related to the second research question that examined students' perceptions about peer feedback. The students' reflection indicated that students were very positive about the use of peer feedback for assessment purposes, they learnt about the assessment process itself, they indicated the issue of bias, peer feedback promoted collaboration, it made them autonomous learners, and promoted their critical thinking. Representative quotes have been given to illustrate the points under discussion.

3.2.1 The use of peer feedback for assessment purposes

Though the focus of peer feedback in this study was on learning, not associated with grades, still all students indicated that peer feedback can be used by tutors as a formative tool for assessing students as well as for grading purposes.

Peer assessment can be improved by incorporating it into various courses, assignments and tasks. This helps the instructor to evaluate the ability and level of understanding of their students. The teacher can easily evaluate the competence and confidence of the students about what he has been teaching them. Being motivated by the use of peer feedback, students suggested that it should be incorporated in other courses as

well. Other teacher on their subjects should use this kind of assessment too. It should be conducted to all courses so as to increase the confidence of the assessors [who are students] when assessing.

Students were positive about the use of peer feedback both as a formative learning tool as well as a tool for grading purposes. They further recommended that it should be incorporated in other courses. These findings contradict those of Ryan et al. [15] where students reported that peer evaluation was unfair, it was difficult to evaluate peers, and students would not recommend for its use in future courses. For effective use of peer feedback as a formative learning tool and as an assessment tool the following recommendations by Vu and Dall'Alba [14] need to be taken into account: adequate and appropriate preparation for the use of peer assessment, relate peer assessment to the purpose of the course, active involvement of the instructor throughout the course, and a constructive and sensitively handled discussion by the instructor after peer feedback [p. 551].

3.2.2 Learning about assessment

All students reported that by being involved in peer feedback, they learn about the assessment process itself. The following are representative quotes from different students about this view.

It gives us [learners] an experience on how to assess. This is because, when doing peer assessment, we practice the real act of assessment, thus improving our knowledge on assessment. This kind of assessment is good because a student learns how to assess others; hence it helps me to understand better about the assessment. Students will be good teachers in condition that they will experience how to assess others. I got ideas on how to assess my students.

As a result of learning by doing, peer feedback helped to prepare students for their future teaching career. It helps students to learn on how to assess. This is very helpful to us teachers-to-be because it makes us exercise assessment that is, marking students' works accordingly. It is the best way to prepare us to become good assessors in the course of our career. Peer assessment prepares student teacher to be a good teacher in block teaching practice and also in his/her entire professional development.

However, for effective peer feedback to take place, students reported that they need to be prepared prior to engaging in the process because this is likely to reduce negative attitudes towards peer feedback as well as increase its effectiveness as students will be more responsible. Students feel ill equipped to undertake the assessment. Students may be reluctant to make judgments regarding their peer some students take less care; thus doing it irresponsibly.

Students reported that peer feedback helped them learn about the assessment process itself and indicated that they will apply such knowledge and skills in their future teaching career. The findings support the views that students learn best by doing and that meaningful learning leads to transfer of knowledge. Both learning by doing [33-36] and transfer of learning [37, 38] are well established in pedagogy. However, it should be noted that meaningful transfer of learning occurs when authentic tasks are used [39, 40]. Thus, during the teaching-learning process, instructors have to ensure that students are actively and productively involved in authentic tasks so as to make learning lifelong.

3.2.3 Bias in peer feedback

The issue of bias in peer feedback had contradictory results. While more than half of the students reported that it eliminates bias in assessment, other students indicated that it promotes bias. They reported that it eliminates bias because the decision made about the assessed item is based on consideration of different points of view as elaborated in the following extracts:

Peer assessment brings justice in grading the students' assignment due to the fact that it doesn't base on a single person's opinions for providing marks. In this mode there is no biases, hence the assessment is consistent to all learners. Peer assessment produces consistent and reliable marks/data as it follows the decision made by the majority hence avoids an individual bias in awarding marks.

Some students were worried about peer feedback when it is used for assessment purposes as it leads to bias especially when students have personal conflicting interests. This kind of assessment can be good or bad according to how students feel toward each other, some students are competitive minded, they can give low marks due to selfish [selfishness], may be they don't want their fellow students to get high marks or can give high marks to their most lovely friends. I think it can lead to unfair assessment results due to personal interest of the ranker and individual differences such as jealousy. It is not suitable in the class whose students are not in good terms.

To eliminate personal bias, students suggested that peer feedback must be done fairly where bias is not entertained and a high degree of freedom of expression is promoted. The following quotes demonstrate this view.

The interpersonal misunderstanding should not play part on this [peer feedback]. The students to be fair in assessing their fellow students. Student should not be biased during the assessment. Bias in peer

feedback had contradicting results. Though more than half of the students agreed that peer feedback eliminates bias in assessment, some students reported that it is a source of bias. The issue of bias in feedback is also reported by Ryan et al. [15] where some students gave higher marks to their friends.In practice, instructors need to ensure that students are aware of the importance of peer feedback for their learning.

3.2.4 Peer feedback facilitates collaboration

Peer feedback facilitates collaboration amongst students through sharing ideas and experiences as indicated in the following quotes.

It helps to foster relationship among peers hence, discourage isolated students. It enables the sharing of ideas in which through questions and answers students reach agreement. It increases socialization as the students feel comfortable when they assess themselves and helping one another.

As a result of collaboration, students indicated that they learn a lot from each other during the process because they develop new knowledge, they treat mistakes as opportunities for learning, and they understand difficult concepts through discussing with peers. The following responses illustrate this view:

It helps me to know the contributions of others, and to build more knowledge than I had before. Treating assessment as a part of learning, so that mistakes are opportunities rather than failure. It provides an opportunity to other students to learn from their fellows, this is most probably in terms of explaining a certain topic after which your fellow students will have the chance to judge you and of course make amendments in certain ways. It is easy to understand the difficult concept when discussing with my fellow students.

The other consequence of collaboration was self-evaluation. Thus, the students get the opportunity of self-correction. It helps learners to make self-evaluation as they may identify their mistakes and learn from others hence improve their work through comments and questions posed to them. Helps me to air my views to others and be corrected if I'm wrong. It helps to understand the weakness of someone because when someone's views are criticized about something it helps him/her to know how he/she can improve his/her views.

A typical example on self-correction was the indication that peer feedback helped students improve on various language aspects. Most of the students engage in peer assessment come up to develop the use of proper language in a sense that they care about grammar and other components of language in order to be well understood. It enables us as teachers to improve our language use in terms of grammar, vocabulary, etc

The data provide further indication that peer feedback facilitates collaboration amongst learners where students share ideas and experiences; consequently, they learn from each other and are able to evaluate themselves. This finding supports the view of constructivism that advocates that learning is socially constructed [41]. Similar findings have been reported by Liu and Carless [6], Ting and Qian [21] and Yang [7]. In teaching, the use of collaborative tasks such as peer feedback, pair work, and group work should be encouraged as they have the potential of helping students learn from each other.

3.2.5 Peer feedback promotes autonomous learning

It was reported that peer feedback promotes students' autonomy in learning because the process is learner-centred and students own the process of assessment. In such cases, students become motivated and more responsible for their own learning. The following extracts illustrate this view.

It is learners-centred that is learners are major source of knowledge and the teacher as the facilitator of the content. Encouraging students to take responsibility for their own learning, developing them as autonomous learners. Giving a sense of ownership of assessment process, improving motivation. Also can reduce the "free rider" problem as students are aware that their contribution will be graded by their peers.

It is autonomous learning that promotes their self-confident, among other things, due to the mastery of the subject matter and self-expression. The following quotes illustrate this point.

It encourages the learners to become more familiar about the concept that they deal with. It enhances confidence to the learners as learner can face many challenges from his/her fellow learners. It helps students themselves to build enough confidence among others on expressing their views.

The results extend our knowledge of learner autonomy in the learning process through the use of peer feedback. Autonomy in learning further promotes students' self-confidence. Several studies have reported the role of peer feedback in promoting learner autonomy [6, 16, 21]. Since, meaningful learning occurs when learners take control of the learning process, during teaching, one of the roles of the tutor is to ensure that the learning tasks given to learners intrinsically motivate them and encourage them to be self-regulated.

3.2.6 Peer feedback promotes critical thinking

Finally, students reported that peer feedback promotes critical thinking because learners become deeply involved in the process as indicated in the following extracts:

Makes class interactive, learners to be able to think critically and logically on the topic concerned. Lastly, peer assessment is client based [learner based], it makes learners involved in the process, thus leading to deep learning. It can encourage deep leaning to student when discussing among themselves.

The results provide further evidence that peer feedback promotes critical thinking as students are deeply involved in the process and discuss with each other. This finding has also been reported in previous studies [3-5, 12]. This implies that learning tasks need to be engaging and thought provoking so that learners develop critical thinking.

4 CONCLUSION

The findings from this study have demonstrated that asynchronous discussion forums are useful in promoting peer feedback. The forums can be used as formative learning tools as well as for assessment purposes. However, for peer feedback to be effective, *inter alia*, factors such as the instructor's active role, students' preparation and attitudes towards peer feedback, and the use of authentic and collaborative tasks need to be taken into account. The findings from this study are limited as a small sample was used, and the learning context was narrowly focused on critiquing online peer feedback. Thus, future research could use a larger sample, a more diverse population, and a range of other courses.

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