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Research article

Evaluation of a formative peer assessment in research methods teaching using an online platform: A mixed methods pre-post study

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A B S T R A C T

Background: In higher education settings, there are increasing calls to shift away from traditional summative assessment practices, such end of term written tests, to explore methods of assessing learning in alternative ways. Peer assessment has been advocated as a means of formative assessment to enhance student engagement, empowering students to take responsibility for their own learning. While there is accumulating evidence for the value of peer assessment in higher education, one cannot assume peer feedback will translate appropriately to all settings and educational contexts.
Objectives: This study evaluated the implementation of formative online peer assessment in a nursing and midwifery research methods module. We explored students' expectations, experiences, and ultimately the acceptability of this approach.
Design: A quantitative descriptive study.
Setting: Ireland.
Methods: An online survey to collate expectations and experiences of engagement in peer assessment. Scales were drawn from previous research and non-parametric tests explored changes in perceptions over time. Qualitative content analysis explored patterns evident in open-text responses.
Results: The response rate was 28% (n = 74) at baseline and 31% at follow-up (n = 81). Peer assessment was a new experience for 95% of respondents. Students initially expressed apprehension, perceiving the task as daunting, and doubting their ability to provide feedback to peers. However, through providing instruction and tools to support students in the activity, high levels of satisfaction with the process and the experience were reported. Significant differences in perceptions of peer assessment were evident over time, including an enhanced belief that respondents had the requisite skills to appraise the work of their peers.
Conclusions: In sum, nursing and midwifery students agreed that peer assessment was a valuable learning experience as part of research methods training and critical skills development.

1. Introduction

In higher education settings, there are increasing calls to shift away from traditional summative assessment practices, such end of term written tests, to explore methods of assessing learning in alternative ways (Darling-Hammond, 2014). A review of assessment practices by Pereira et al. (2016) concluded that "research over the period indicates benefits for students' learning through assessment practices other than the conventional written test" (p. 1028). In recent years, European strategy for education and assessment has been developed to emphasise

the benefits of formative assessment, and more effectively differentiating between, and balancing, the use of assessment *as* learning and assessment *for* learning (National Forum on Teaching and Learning, 2017; O'Neill et al., 2020). The COVID-19 pandemic and the subsequent rapid shift to online learning as the only available option has created an additional impetus to explore novel means of assessment that go beyond traditional approaches.

Peer assessment has been advocated to give students a sense of connectedness and as a way to enhance student engagement (Nicol et al., 2014; Panadero and Alqassab, 2019; Planas Lladó et al., 2014). During

the COVID-19 pandemic, these factors have been even more relevant when teaching and learning must occur remotely. Peer assessment is a learner-focused approach where students evaluate and provide feedback on each other's work. Research demonstrates that peer assessment can empower students to take responsibility for their own learning, resulting in increased confidence with the content and a greater insight into the challenges of the assessment process (Bloxham and West, 2004; Planas Lladó et al., 2014). Consistent with the Bologna Declaration (Van der Wende, 2000), peer assessment offers a more student-centric approach that promotes assessment literacy. Assessment literacy has been described as a key aspect to support effective leaning and knowledge acquisition, as it can help to clarify expectations for assessment, enable students to participate in their own learning, and supports the development of critical thinking (O'Neill et al., 2020). A clear understanding of what is expected in assessment is vital to support learner's optimal performance (Deeley et al., 2019).

Students report finding the process of peer assessment motivating as it is considered an approach that empowers students to take control of and responsibility for their own learning (Planas Lladó et al., 2014). In previous research exploring student experiences of peer assessment of a written assignment, learners reported that the activity enhanced their confidence and subject knowledge (Planas Lladó et al., 2014). Learners tend to perceive more benefits when they provide feedback than when they receive it, as this process tends to be more cognitively engaging and motivating (Mercader et al., 2020; Nicol et al., 2014; Saeedi et al., 2021). The extant literature suggests the important role of peer assessment in enhancing assessment literacy. Additionally, peer assessment is recognised as supporting students' self-regulation of learning and helping students to self-evaluate their performance and quality of work in relation to others more accurately. Timely feedback is an inherent challenge in higher education, especially in large class sizes. Peer assessment may be a pragmatic means to provide students with actionable feedback and direction that they can consider implementing towards a subsequent assessment. Technology can help to deliver feedback (Deeley et al., 2019) and recently various platforms have emerged to support such work (Nicol et al., 2014; Paré and Joordens, 2008).

Student-centred approaches such as peer assessment can promote deep learning (Brew et al., 2009) and the development of the skills needed outside of the classroom. Therefore, the approach supports the transferability of skills to practice (Segers and Dochy, 2001). This is particularly relevant for nursing students expected to adopt evidence-based practice as a core tenet of their role. However, the idea and process of peer assessment is often an unfamiliar concept, and there may be scepticism among students regarding their peers' ability to provide useful and valid feedback (Planas Lladó et al., 2014). While there is accumulating evidence for the value of peer assessment (Hwang et al., 2021) and strong academic belief in the positive impact of peer appraisal as formative assessment (Adachi et al., 2018), one cannot assume peer feedback will translate appropriately to all settings and educational contexts. Researchers have called for further research on peer assessment (Mercader et al., 2020) to understand the "effectiveness and relevance of these methods in different contexts and programmes" and to inform optimal application and adaptation (Pereira et al., 2016). Given there remains limited evidence to help understand the circumstances in which peer assessment has value for students (Gatfield, 1999; Panadero and Alqassab, 2019), we build on previous work to evaluate the expectations and perceived utility, acceptability, and satisfaction with peer assessment as part of a large research methods module for graduate nursing and midwifery students.

1.1. Context: peer assessment task and procedure

The formative module component represented 20% of the final module grade (10-credit ECTS module, approx. 250 hour student effort). Students submitted a 500-word research protocol (on a research

problem they had selected themselves) via the peerScholar online platform (Paré and Joordens, 2008), including a rationale for the study based on the extant literature, articulation of a research question using an appropriate framework, and identification of an appropriate research design and associated data collection instruments. An online tutorial and a step-by-step guide were provided to students to support them through the process. Students could also ask questions about the assessment through a dedicated online discussion board monitored by lecturers. A rubric was developed to support them to develop their own proposals and feedback guidelines were integrated into the rubric to support students to appraise the work of their peers critically and constructively (available upon request). The rubric addressed aspects including 1) the strength of the rationale for the identified research problem; 2) the clarity of the developed research question; 3) the appropriateness of the chosen research design; and 4) the accessibility of the language employed.

Following the submission phase, students were then randomly assigned to anonymously review and provide feedback to four of their peers. In addition to completing the rubric, students were also asked two open-ended questions to support additional feedback to their four peers. They were asked to describe a key strength of their peers work and one aspect of the draft that the student could focus on to greatly improve their work.

2. Methods

2.1. Design

A quantitative descriptive study was conducted to evaluate the expectations and perceived utility, acceptability, and satisfaction with peer assessment as part of a large research methods module for graduate nursing and midwifery students. Ethical exemption was obtained from University College Dublin's Human Research Ethics Committee (LS-E-20-205).

2.2. Recruitment and participants

The target population for this study was all students enrolled in two taught graduate research methods modules at a large urban university in Ireland (n = 264). Prospective participants were registered nurses and/or midwives. Participation was entirely voluntary and pseudo-anonymous (students created their own unique identifiers based on a series of question prompts).

2.3. Instruments

This research employed three scales and a series of open-ended questions to evaluate student expectations, experiences, and satisfaction with the peer assessment process. Information on these scales is included below. Demographic data were also captured pre- and post-engagement with the peer assessment activity.

2.3.1. Perceptions of peer assessment

Student perceptions of peer assessment were analysed before and after participating in the peer review process using an adapted version of the Perceptions of Peer Assessment Scale (Planas Lladó et al., 2014). This ten-item pre-engagement scale and fifteen item post-engagement scale evaluates students' perceived ability to participate in the peer review activity, the clarity of the assessment instructions, the responsibility peer assessment entails, the preparation required to participate, the level of learning achieved, and the subjectivity of peer assessment when compared with traditional lecturer assessments. Although items in Planas Lladó et al.'s (2014) original survey are analysed on a four-point Likert scale, aligned with best practice (Østerås et al., 2008), items in this research are rated using a five-point Likert scale where higher scores indicate higher levels of agreement ("strongly disagree" = 1, "strongly

agree" = 5). In the first 10-item version of the scale, internal consistency was good, with a Cronbach's alpha of 0.76. At the follow-up time point with the additional items making up a 15-point scale, the internal consistency was 0.89. Scores on the 10-items common across both timepoints were compared using non-parametric Mann-Whitney *U* tests to assess if there were group-level differences in responses over time (i.e., changes in perceptions of peer assessment following engagement in the task). The two open-ended questions included in the Perceptions of Peer Assessment Scale (Planas Lladó et al., 2014) were incorporated in both the pre- and post-task survey. These questions offered students the opportunity to indicate two benefits and two limitations of the peer review process.

2.3.2. Digital literacy

Aspects of the Digital Literacy Scale were employed to examine student comfort with digital technology for learning (Ng, 2012). This seventeen-item scale assesses student attitudes towards technology (seven items), and three dimensions of digital literacy; technical, cognitive, and social-emotional. The technical dimension (six items) evaluates whether students possess the technical and operational skills to use technology for learning. The cognitive dimension (two items) assesses students' abilities to critically search and evaluate digital information. While the social-emotional dimension (two items) examines whether students can use the internet responsibly for communicating and learning. Due to the focus of this research, items relating to the student attitudes towards technology and the technical dimensions of the digital literacy were incorporated into the pre- and post-engagement surveys. All items were rated using a five-point Likert scale ("strongly disagree" = 1 to "strongly agree" = 5). Cronbach's alpha for the attitudes sub-scale was 0.92 at baseline and 0.91 at the second time point. The technical dimension sub-scale demonstrated similarly high levels of internal reliability of 0.94 and 0.95, respectively.

2.3.3. Student satisfaction with peer assessment process

Following their engagement with the peer assessment process, student satisfaction with the assignment activity was analysed using a six-item questionnaire exploring appropriateness of the peer assessment activity (Gatfield, 1999). All items were rated using a five-point Likert scale where higher scores indicate greater levels of agreement ("strongly disagree" = 1, "strongly agree" = 5). Students were also asked to rate their satisfaction with the peer assessment process on a five-point Likert scale ("extremely dissatisfied" = 1, "extremely satisfied" = 5). Cronbach's alpha for this scale was 0.89, indicating a high level of internal consistency among items. Two open-ended questions in the final survey allowed students to describe their feelings about the peer assessment process and identify areas for improvement (Gatfield, 1999).

2.3.4. General feedback and demographics

In addition to the three scales employed, additional questions were included in both surveys to gain greater insight into student experiences of the peer review process. Prior to engaging in the peer review activity, students were asked whether they had participated in peer assessment before and if applicable, were asked to provide further details. In both surveys, students recommended what percentage of the final module grade they felt was appropriate for peer assessment. Additionally, the final survey evaluated the time taken to complete the peer assessment, how much the peer review process influenced student work, and the ease of use of the peerScholar platform (Paré and Joordens, 2008). Demographic information relating to participant age, gender, clinical background/training, and time since previous qualification were also collected.

2.4. Procedure

A pre-post online survey hosted via GDPR-compliant Qualtrics.com was used to gather data. Data collection occurred in two phases:

baseline collection was conducted in February 2021 prior to engagement in a peer assessment task and phase 2 took place in March and April 2021, one week after the peer assessment and feedback cycle had been completed. Pseudo-anonymous identifiers were used to link participants across time points (though this was optional and anonymous completion was also possible) to evaluate if student perceptions of peer assessment changed following engagement in the process.

2.5. Data analysis

2.5.1. Survey data

Survey data were analysed in SPSS. Descriptive statistics summarised key demographic and variable results and non-parametric Mann Whitney *U* tests evaluated differences in group-level responses over time in student perceptions of the peer assessment task (baseline compared to post-engagement). The significance level was set at 0.05. Group level responses to items on the Digital Literacy scale were also compared across time points to explore if there were significant differences in the characteristics of respondents across time points.

2.5.2. Open ended questions

The open-ended questions included in this survey were analysed using qualitative content analytical approach (Forman and Damschroder, 2007; Miles et al., 2014). This process involved repeatedly reading the data, generating initial codes and developing, refining and naming broader patterns evident in responses. These data provided greater insight into the expectations and perceived utility, acceptability, and satisfaction with the peer assessment process among taught graduate nursing students.

3. Results

3.1. Sample characteristics

In total, all 264 students fully completed the peer assessment task as part of the module. Of these, 74 participated in this research at baseline (28% response rate) and 81 at follow-up (31%) and characteristics were highly similar in both samples. Most of the sample were white (73% baseline; 80% follow-up) and of Asian background (21%; 11%). The average age of respondents was 37 years (range: 25-55; SD = 8.01 at both time points). On average across time points, 39% of respondents had completed their last qualification in the previous five years, 24% had completed it between five and ten years previous and 37% had completed it more than ten years ago. 95% of the sample had no previous experience of any peer assessment and appraisal work in educational settings.

3.2. Survey results

Regarding student perceptions of peer assessment, scores were generally positive, with some important significant differences observed on some items following engagement in the task. Table 1 details the mean scores for each item and compares scores for items used at both time points. Results revealed several key changes in student perceptions following engagement with the peer assessment activity. Students had greater confidence in their skills to be able to complete the task following their experience. They reported that the task was explained clearly and they felt supported by lecturers making the appropriate tools and instruments available to support them in the peer appraisal task. There was a significant decrease in their perception of peer assessors as not demanding high standards of work compared to instructors. Following engagement in the exercise, there was significantly less agreement with the statement that peers would not be as demanding as lecturers (mean change from 3.72 to 3.26, p = 0.005). Finally, the items that were only included post-activity demonstrated strong support for the anonymous nature of the task, high level of agreement with the task

Table 1
Perceptions of peer assessment (baseline and post-engagement in peer assessment activity).

	Baseline (n = 74) Mean (SD)	Post-task (n = 81) Mean (SD)	Difference
I have/had the necessary skills to participate in a peer-assessment process	3.57 (1.11)	4.01 (0.99)	**.04**
The lecturers clearly explained the procedure for effective peer-assessment	3.97 (1.05)	4.46 (0.81)	**<.01**
The lecturers made the tools and instruments available to me to perform effective peer-assessment	4.09 (0.86)	4.46 (0.9)	**<.01**
Peer-assessment means/meant a lot of responsibility for the student	3.89 (1.03)	3.93 (1.01)	.86
Peer-assessment will make/made me prepare my work better	4.14 (1.01)	4.00 (0.98)	.26
Peer-assessment will force/forced me to look for more and broader information on the contents of the module or activity	4.03 (0.89)	4.11 (0.96)	.38
Peer-assessment will allow/allowed me to detect my own mistakes and learn from them	4.20 (0.80)	4.25 (0.87)	.53
Peer-assessment will allow/allowed me to view learning critically and constructively	4.12 (0.83)	4.23 (0.90)	.23
I think my peers will be/were more subjective in their assessment (not following predetermined and representative criteria for the activity being assessed) than the lecturers	3.55 (0.91)	3.26 (1.01)	.10
My peers will not be/were not as demanding as the lecturers in their assessment	3.72 (0.96)	3.26 (0.97)	**.005**

Scale items included post-engagement in task	Post-task (n = 81) Mean (SD)
This type of assessment has helped me develop skills that will be useful to me in my future career (evaluating CVs, projects, etc.)	3.99 (1.08)
Peer-assessment made me involve myself more in groupwork	3.54 (1.25)
The peer-assessment system has proved more motivating than the traditional system of lecturer assessment	3.42 (1.31)
The anonymous nature of the process allows you to make comments regarding the work done	4.49 (0.71)
I would recommend this method be continued for these and other subjects of the degree course	3.94 (1.23)

Note: Text in bold indicates significant differences.

Table 2
Digital literacy scale scores.

	Baseline (n = 73) Mean (SD)	Post-task (n = 78) Mean (SD)	Difference
Attitudes towards technology subscale			
I like using technology for learning	3.97 (1.08)	4.22 (0.88)	.21
I learn better with technology	3.56 (1.2)	3.81 (1.05)	.24
Technology makes learning more interesting	3.67 (1.12)	3.86 (0.97)	.40
I am more motivated to learn with technology	3.36 (1.2)	3.56 (1.05)	.32
Technology enables me to be a self-directed and independent learner	4.12 (0.96)	4.21 (0.90)	.63
There is a lot of potential in the use of mobile technologies (e.g. smartphones) for learning	4.22 (0.98)	4.28 (0.87)	.82
Lecturers should use more technology in their teaching of my classes	3.53 (1.24)	3.62 (1.12)	.77
Mean sub-scale score	3.86 (0.86)	3.94 (0.79)	
Digital literacy: technical dimension			
I know to solve my own technical problems	3.26 (1.28)	3.23 (1.23)	.86
I can learn new technologies easily	3.49 (1.14)	3.60 (1.21)	.48
I keep up with important new technologies	3.21 (1.12)	3.54 (1.24)	.06
I know about a lot of different technologies	2.93 (1.21)	3.09 (1.31)	.44
I have the technical skills I need to use technology for learning	3.79 (0.83)	3.77 (1.06)	.80
I have good technology skills	3.62 (0.94)	3.58 (1.18)	.79
Mean sub-scale score	3.43 (1.01)	3.47 (1.08)	

Table 3
Satisfaction with the peer assessment process (n = 78).

Scale items	Mean (SD)
I have understood the assessment process	4.53 (0.73)
Peer-assessment is an appropriate group assessment method	4.01 (1.09)
Students should assess their peers	3.88 (1.06)
Peer-assessment is a fair way to divide marks	3.72 (1.12)
Grades will be a fair reflection of the students' efforts	3.63 (1.07)
Peers can assess fairly	3.38 (1.16)
Scale mean	**3.86 (0.83)**

offering useful skills development and high levels of agreement with the statement regarding recommendation of use of this approach in other courses. In sum, these results strongly suggest a positive perception of the peer appraisal activity among this cohort.

Table 2 details the results on the digital literacy sub-scales across time points. No significant differences were observed indicating a similarly high level of digital literacy among respondents across the groups. This reduces the likelihood that individual levels of digital literacy and comfort with online learning may have confounded the findings. Additionally, most respondents reported that the online tool used for the peer assessment task was extremely easy or somewhat easy to use (n = 72; 92.3%).

Scores on the satisfaction with peer review process items (Table 3) were generally high, with particularly high scores on dimensions relating to understanding of the process (M = 4.53, SD = 0.73) and the appropriateness of peer assessment (M = 4.01, SD = 1.09). The lowest scoring item, and item with the highest standard deviation, was regarding whether peers can assess fairly (M = 3.38, SD = 1.16), suggesting mixed views. On average, students reported spending 1-2 h on the activity of providing feedback to others (n = 34; 43.6%), with 24.3% (n = 19) spending 30-59 min and 18% (n = 14) spending 3-4 h on the task. Most participants (75.6%; n = 59) reported that their engagement in the peer assessment process had at least a moderate influence on their own subsequent work on the module, with 37.2% (n = 29) reporting that it had 'a great deal' or 'a lot' of influence. Students' recommendations for the proportion of the final module grade determined by peer assessment were similar across timepoints; at baseline, students recommended a mean of 27% (SD = 12.42; range 5%-75%) and a mean of 26% (SD = 14.68; range 10%-80%) following engagement in the peer assessment activity.

3.3. Open-ended response findings

For most students, this assignment was their first experience of peer assessment. This created uncertainty and was evident by some participants describing their initial apprehension. The process was considered "initially daunting" (Student79), "overwhelm[ing]" and "intimidating"

(Student64). However, despite this uncertainty, for most students, peer assessment was portrayed as an enjoyable, "empower[ing]" (Student89), and a "new way of learning" (Student9), which revealed several benefits. Student expectations of these benefits and their experiences of peer assessment appeared to closely align. By receiving peer feedback students predicted that the peer review process would support their final assessment by facilitating early engagement in the module content, highlighting "mistakes" (Student50), and offering "fresh eyes and a different perspective" (Student15). In addition to these perceived benefits, after receiving their feedback, some participants reflected on how the process was "confidence building" (Student79) and "motivating" (Student25) and reassuring that they were "on the right track" (Student10).

Prior to the peer assessment process, many described their apprehension about giving appropriate feedback: "I am not trained or qualified to mark someone else's work" (Student5). Following their engagement with peer review, some students remained unsure about their feedback, due to feeling "inexperienced" (Student10). For some of these participants, their apprehension was heightened when assessing weaker appraisals, with one student stating that they felt they were "letting the struggling student down" due to feeling "out of [their] depth" (Student4) as an assessor. In addition to student hesitancy in providing feedback, some participants were also apprehensive about receiving feedback. Prior to engaging in the peer assessment process, some participants expressed concern regarding the potential for "peers missing things" (Student40). For a few participants, the peer appraisal process remained a concern after receiving their feedback with students describing some peer suggestions as "inappropriate" (Student7) or "generic" (Student8). Overwhelmingly however, the activity was viewed positively and prompted critical engagement with the work of peers and in self-refection on their own work as a result:

> "Viewing your peers' work is interesting to see how they perceived the information taught, how they presented it, and this then makes you reflect on your own work. This was very beneficial"
>
> (Student40)

Students also suggested that the process of providing peer feedback offered a deeper level of learning as students could "put critical thinking into action" (Student16). Prior to engaging in the peer assessment, students recognised that by reviewing their peers' work, they would "have to understand other types of research methods, not just [their] own" (Student10). This expectation was confirmed in many student experiences with many revealing how the process enabled more extensive learning of module content; "it encouraged me to understand other methodologies" (Student7).

The structure of the peer assessment appeared to support a positive learning environment for most students. Many suggested that the anonymity associated with the assignment was critical in ensuring "unbiased" feedback (Student78). However, a minority associated this anonymity with the reduced effort of some of their peers.

> "Anonymity can be negative as some of my feedback had no effort or comments made."
>
> (Student7)

The "user-friendly" (Student4) online platform and integrated rubric were also identified as factors facilitating the appraisal process with the open-ended questions described as particularly useful. While a few students criticised the expected time associated with completing four peer reviews prior to engaging in the peer assessment, following their participation, some emphasised that acquiring feedback from multiple peers was necessary to attain a "balanced view" of their work (Student60).

To improve their experience of peer assessment, students suggested greater lecturer engagement throughout the peer review process. Due to the novelty of peer assessment, some participants advised that greater training in peer appraisal was needed. Suggestions included completing example assessments during lectures, providing more structured guidelines on the peer review process, and conducting a "class on giving constructive feedback" (Student2). For future peer assessments, many students stressed the need for lecturers to "evaluate the feedback people get" (Student32) to reassure students that the "feedback is correct" (Student77).

4. Discussion

Compounded and accelerated by the COVID-19 pandemic and its impact on in-person assessment, over time, scholars in higher education assessment have increasingly recognised the need to move away from traditional end of term written tests to assess learning in novel ways (Pereira et al., 2016). Our study outlined the implementation and evaluation of an online peer assessment component as a formative assessment of nursing students in a research methods module. We explored students' expectations, experiences, and acceptability of this approach as a component of their grading.

A core component and central learning outcome of research methods teaching is the development of critical appraisal skills. Engagement in peer assessment provides students with the opportunity to gauge the standard of their own work in comparison with peers, but also to deploy skills regarding critical review of research protocols. Resonating with previous research (Bloxham and West, 2004; Planas Lladó et al., 2014), respondents reported feeling empowered, motivated and believing the process developed their confidence and knowledge in the subject matter. Analysis of open-ended responses found that students recognised that the task provided them the opportunity to practice critical thinking and prompted additional independent learning which supported them in providing more detailed and accurate feedback to peers. This is indicative of the responsibility that students adopted to support their own learning and that of their peers (Planas Lladó et al., 2014). Previous work has demonstrated that peer appraisal is an effective teaching method that leads to enhanced student motivation (Saeedi et al., 2021).

One aspect of the process that students believed to be positive was the anonymous nature of the process. The majority felt that this made them more comfortable providing feedback and helped to remove any potential bias. Previous research indicates that anonymity enhances the quality of peer reviews (Li, 2017), supporting students to deliver more critical feedback (Lu and Bol, 2007; Panadero and Alqassab, 2019), and can enhance students' perceptions regarding the learning value of the activity (Panadero and Alqassab, 2019).

Student confidence and trust in the process, and in their ability to provide useful feedback, is key to engagement and the effectiveness of the process. Results indicated that students believed they had the appropriate tools to effectively engage in the peer assessment task. Incorporating exemplars, rubrics, explicit scoring, and feedback criteria can facilitate the provision of constructive feedback which, alongside the anonymous nature of the task, will likely further enhance the accuracy and validity of peer assessment (Carless and Boud, 2018).

Timely feedback in large classes is an on-going challenge in higher education. Peer assessment may be a pragmatic means to provide students with actionable feedback and direction that they can then consider implementing towards a subsequent assessment. In support of students' formative learning, assessment using peer appraisal mid-way through the module ensured students received feedback that they could learn from and apply to their own work in preparation of their summative assessment. Most respondents reported that the peer assessment activity had impacted on their subsequent work as part of the module, with 75.6% reporting it had a least a moderate influence on their final assignment, with 37.2% reporting that it had a great deal or a lot of influence on their subsequent work. This helps to confirm that the activity is operating as intended to provide students with actionable feedback and enhancing their understanding of the subject.

There was little discernible shift in students' perceptions of what constitutes an acceptable level of the module grade for the peer assessment process. The mean suggestion remained consistent at approximately 26-27% of the module grade. This could have been due to the anchoring effects provided with the proportion already set for the module at 20% weighting. In this assignment, student did not score each other's work. Adding a student scoring component to the module grade may alter this view and this impact should be addressed in future work. However, while this change could alter student perceptions of peer review, evidence suggests that over-marking typically tends to occur when students did not have anonymity (Vickerman, 2009). Furthermore, the aggregate rating of at least four peers can demonstrate similar levels of reliability and validity to lecturer ratings (Cho et al., 2006).

While there is accumulating evidence for the benefits of peer assessment in higher education, it should not be assumed that the approach will translate to all contexts and subjects. This research sought to explore the perceptions of nursing and midwifery students regarding the use of peer assessment as a formative assessment and feedback mechanism in a large research methods module. While the results were highly favourable and supported the approach, the response rate did not allow us to link the data provided by respondents over time and as such, only group-level analysis was feasible. While this is not as powerful an analytical approach, the results did, nonetheless, demonstrate highly significant changes in perceptions before and after exposure to the task. Given there were no significant differences in digital literacy observed across data collection time points, it is unlikely that individual levels of digital literacy impacted on perceptions of the online peer assessment activity. Finally, by including open-ended fields to the survey, we could gather richer and more nuanced insights into the emotions underpinning students' expectations and reactions to the process. This served to further clarify and contextualise the survey results.

Student-centred approaches such as peer assessment can promote deep learning (Brew et al., 2009) and the development of important transferable skills, such as critical appraisal, to promote personal and professional development (Nelwati et al., 2018; Segers and Dochy, 2001). To support nurses and midwives in adopting evidence-based practice, critical appraisal must constitute a key competency. This study has emphasised the benefits to this cohort and demonstrated the effectiveness of peer assessment in research methods teaching and in the promotion of critical skills. However, crucial to the success of peer assessment is spending time supporting and preparing students to effectively engage in peer assessment process. Provision of formal training in how to do peer reviews, on-going support throughout the process and rubrics to enable students to provide actionable feedback were all key to the success of this assessment strategy. Respondents made suggestions for further support mechanisms including exemplar critical appraisals and more dedicated time on providing feedback. Many students also reported that they would feel more reassured if lecturers also reviewed feedback before it was shared.

While this work supports the use of peer appraisal in research teaching for nursing and midwifery students, it is apparent that more robust research designs are needed to fully understand the individual-level beliefs and experiences, and to explore if the task is more challenging for certain cohorts of students. This could inform future training and task planning. There is also a need for stronger and more complex research designs (Panadero and Alqassab, 2019) and some consistency in how researchers evaluate student perceptions. While this study adopted existing scales, these scales have not yet been psychometrically validated. This offers a valuable future avenue for research as greater standardisation of evaluation tools will promote useful comparisons across various peer assessment methods across different cohorts and settings. Aligned with this, elucidation of a model of standardised principles for student induction to peer assessment would be beneficial to those incorporating this novel approach in future assessment strategies. Further applications of peer-to-peer learning, such as peer tutoring (Im Kang et al., 2021), also warrant further examination in this context.

5. Conclusions

This study found that as peer assessment was new to most respondents, students initially expressed apprehension, perceiving the task as daunting, citing a lack of self-confidence and familiarity with peer review, and doubting their ability to provide valuable and accurate feedback. However, through providing instruction on how to complete peer review, the on-going availability of a discussion board to address questions, and a bespoke rubric to support constructive peer to peer feedback, students reported high levels of satisfaction with the experience. Significant differences in perceptions of the peer review process were evident pre- and post-engagement in the task, including enhanced belief that respondents had the requisite skills to appraise work of their peers, clarity regarding the process, greater recognition that students had the tools and instruments available to support them in the task, and peers were acknowledged to be more demanding (compared to lectures) than initially expected. A majority were satisfied with the learning experience and would recommend its application more widely in nursing and midwifery academic assessment practices.

Ethical approval

LS-E-20-205.

CRediT authorship contribution statement

ADB, BG - Conceptualization; ADB, LR - Data curation; ADB, LR -Formal analysis; ADB, LR, AD, BG - Methodology; ADB, LR - Project administration; ADB - Writing - original draft; ADB, LR, AD, BG - Writing - review & editing.

Declaration of competing interest

None.

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