
IMPLEMENTING PEER ASSESSMENT IN A UNIVERSITY CONTEXT THROUGH THE USE OF A VIRTUAL PLATFORM: A PILOT EXPERIENCE

Mara Valente, University of Roma Tre

Abstract

The present contribution aims to show the first results of a pilot activity carried out in the university context to explore the peer assessment process among students in teacher training through the use of an online platform. The goal is to analyze the influence of this process in supporting the students in the development of their soft and digital skills and to examine the benefit of peer review in terms of self-reflection and self-assessment on tasks performed. The research was undertaken within the workshop of educational measurement at the Faculty of Primary Education - University of Modena and Reggio Emilia and 46 students enrolled in the fourth academic year attended. In the first two meetings, the students were asked to work in small groups (in pairs) to realize an authentic task and the related evaluation rubric. The focus of the third meeting was on the peer review of the works and the related discussion on the feedback given by colleagues. Educational activities, learning and assessment tools, and the online platform to review and share feedback are described. The collected data analysis is in progress: the first results are shown and discussed in the present contribution.

Keywords:

Peer assessment; assessment for learning; Peergrade platform; peer evaluation.

Introduction

After the advent of the SARS Covid-19 pandemic, educational institutions have been called upon to redesign curricula and learning environments also using digital technologies (Secundo et al., 2021). Indeed, digital competence is one of the eight skills that European citizens should master by the end of compulsory schooling from a lifelong learning perspective (Gonzales Vazquez et al., 2019). The acquisition of digital skills does not only result from the ability to use digital tools: digital technologies evolve and change rapidly, so mastering digital skills mean above all being able to approach the use of new digital tools in a flexible way (Poce, 2015). Furthermore, the new teaching styles suggest an always greater focus on placing the student at the center of the teaching/learning process, aiming for strategies and methodologies that promote their engagement and active participation also using technology, thus creating new learning environments. In this regard, Peer Assessment is recognized as one of the most effective strategies. This kind of assessment is meant to support students in planning their learning, identifying their strengths and weaknesses, finding areas for corrective interventions, and developing metacognitive and other transferable skills on a personal and professional level (Boud, 1990; Brown et al., 1994; Topping 1998). Topping (1998) has defined peer assessment as «a system in which individuals consider the quantity, level, value, quality or success of the learning products or outcomes of peers of the same level». Kollar e Fischer (2010) argue that peer assessment is “an important element” of “a more participatory learning culture” that helps “the design of learning environments”, as well as being “basically a collaborative activity occurring between at least two peers” (Kollar et al., 2010).

Giving students the possibility to take an active part in their assessment alters the balance between teacher and learner and encourages appropriate control over their learning, since, as stated by Vickerman (2009), peer interaction of any kind engages students in developing their learning, not only from an academic point of view but also from a cognitive and emotional one (Vickerman 2009). In Bloxham and Boyd 2007's study, where the peer assessment in a university context is examined, a range of positive aspects regarding students taking part in the assessment process was identified. According to the authors, peer assessment supports learners in: realizing the academic standards of the course; understanding in detail the assessment criteria and how they are related to student's performance; realizing alternative approaches to academic tasks; developing the ability to express judgments and justify their point of view; promoting the ability to give constructive feedback to peers; bringing them closer to autonomous learning by encouraging their ability to monitor their own progress, rather than rely on others to do so (Bloxham and Boyd, 2007). Furthermore, Falchikov (1986) underlines how the importance to adopt peer

assessment strategies is inherent in their ability to encourage the stimulation of transversal skills. Despite the international educational research encourages and promotes the adoption of peer assessment strategies, the situation in Italy is still too oriented to the traditional assessment forms, especially if we consider the university context, where the assessment of individual learning seems to be an end in itself. University students are often only focused on obtaining the degree, disregarding the importance of the formative processes. Indeed, especially in the university context, the assessment aims to certify and quantify learning, often without emphasizing processes that should instead be aimed at guiding and supporting learning, triggering what in the Anglo-Saxon environment is referred to as *Assessment for Learning* (Sambell et al. 2013; Grion et al. 2017). Assessment “for learning” has a high formative character, since the collected information is also employed to shape teaching to the real educational needs of students and their learning styles, modifying activities according to what has been observed and from what can be enhanced (MIUR, 2020). Moreover, *Assessment for Learning* encourages self-reflection and self-assessment forms, that can be spent in various areas of everyday life, including *lifelong learning*. Assessing learning does not only verify mnemonically stored knowledge, but it is also essential to identify and promote the activated mechanisms that concern the stimulation of «critical thinking, problem-solving, metacognition, efficiency in testing, collaboration, reasoning, and lifelong learning competencies» (Arter and Bond, 1996). Only in such a way can assessment be intended as assigning and/or identifying the value of learning within a framework of meaning which contributes to a real improvement, growth, and integral development of the person (Tessaro, 2014).

A Workshop to experiment peer assessment: a pilot experience

Given the above theoretical premises, in order to promote and apply in the university context the practice of peer assessment and peer feedback, at the end of May 2022, educational practice strategies, aimed at fostering peer assessment as part of educational measurement Workshop, planned for the 4° year of the degree course in Primary Education at the University of Modena and Reggio Emilia, were put into place. The decision to create a workshop foreseeing peer assessment purposes and feedback comparing is related to several motivations:

1. to promote and implement assessment practices not yet widely used in an academic context, more justified by the fact that the workshop is aimed at future preschool and primary school teachers who will be engaged in assessment processes daily.
2. To test the impact that the adoption of such methodologies has in terms of self-reflection and self-assessment and the solicitation of cross competencies in students taking part in the workshop.

Peer assessment contributes to meaningful learning and the solicitation of soft skills (Lynch, et al. 2012; Sluijsmans et al. 2002; Poon et al. 2009; Foschi et al., 2019). To give students, future teachers now in training, the opportunity to experience such assessment strategies is address also to the opportunity of personally experiencing such educational practices and hopefully make their potential be appreciated for possible use in the classrooms they are going to teach in the future.

The research context

The overall main objectives of the educational measurement Workshop were to provide the participants with the fundamentals to be able to use the tools adequately and independently for the assessment and self-assessment of the learning acquired, to implement and improve their skills, develop metacognitive skills, especially regarding peer assessment.

The activities involved 46 students (44 females and 2 males). The workshop lasted twelve hours and was held entirely in person.

The activities took place over three different meetings and included:

- 4 hours dedicated to the theoretical framework of the concept of competence and its evaluation; paired implementation of an authentic task¹.
- 4 hours focused on the introduction of the new Italian assessment for primary school; pairwise design of an assessment rubric, which is an integral part of the authentic task¹.
- 4 hours dedicated to peer evaluation, giving feedback using the *Peergrade* platform; filling in the questionnaire¹.

¹ Students worked in pairs on the proposed activities; the pairs formed during the first phase were the same throughout the entire workshop.

After the first two meetings devoted to the development of an authentic task and its evaluation rubric, the third and final meeting was dedicated to the peer assessment process and the exchange of feedback after the peer review phase. Students were invited to upload their assignments onto the *Peergrade* platform²; the platform automatically and anonymously distributed two assignments to each pair of students; they read and reviewed their colleagues' assignments by filling in a specific assessment rubric, consisting of multiple-choice and open-ended questions. Once the revision process was completed, the platform sent the collected reviews to the students, allowing them to read the responses and, if necessary, send feedback to the reviewers on the assessments they had received. At the end of the peer review and feedback process, the students were asked to complete a questionnaire in order to express their perceptions of the peer review activity and the transversal competencies it solicited.

All the proposed activities were carried out in pairs; the pairs were formed spontaneously during the first meeting and continued to work together during the second and third meetings. Pair work was aimed at soliciting collaboration, communication, and critical thinking skills. From several studies in the field, it is evident how collaboration is increasingly understood as an important goal of education in general (Poce, 2018). Griffin et al. (2015) consider it as the «ability to work together towards a common goal» and Kuhn again in 2015 defines it as a process that leads to the effective realisation of desired individual and group outcomes. Vygotskij himself founded many of his well-known theories on collaborative learning by emphasising the fundamental significance of the social role of education: collaborative activities facilitate learning in the zone of proximal development, enabling the internalisation of theories and concepts, in the process in which the individual also assimilates and learns through the support of the other (Vygotskij, 1931).

The *Peergrade* platform

*Peergrade*¹ is an online platform that was created to improve peer-review, it has multiple functions, and it has a structure designed to encourage discussion and dialogue between evaluators and evaluated in order to guide learning profitably. The platform allows teachers to freely use different types of tasks according to the goals they set for the students; to select the digital format and the characteristic of the task they have to share; whether to create a customized evaluation rubric for the peer review or to use those available online already made accessible by other teachers; to choose whether to allow an individual or group review; to select the number of tasks to be assigned to each evaluator. Teachers also can constantly monitor the activities carried out by their students thanks to a general live overview.

During the evaluation phase, in addition to filling in the rubric, students can use the “Flags” option to keep in mind specific feedback issued by colleagues and request more information on the matter.

Peergrade also encourages evaluators to express their impressions of the feedback received; they can express the usefulness of the feedback received through five descriptors and, finally, they are allowed to comment on final marks through a space reserved for free text.

The feedback release phase is certainly the one that makes students focus most on the assessments received and that gives motivated and accurate comments, triggering processes of reflection, self-reflection, and critical processing. The platform also provides the peer assessment process to be first oriented to evaluating the work of colleagues and only later to self-evaluate their own and release feedback. This process is in line with the indications coming from research in the field (Nicol et al., 2014) which highlights that: students learn more through giving feedback on peers' work, than by getting feedback from peers.

Data collection and data analysis

The structure of the peer assessment activity questionnaire

After the review of the papers and the feedback using the virtual platform, the students were asked to reflect on their experience by filling in a questionnaire. This opens with questions about age and gender. The first section focused on assessing the knowledge gained and learning methods on peer assessment. Students, using a Likert scale from 1 to 5, expressed their thoughts on the following points:

1. I learned what I expected from this activity.
2. The learning was progressive;
3. I immediately understood what I had to do.
4. Some information was taken for granted without appropriate explanations.
5. I needed more information about some points.
6. The activity aroused my curiosity, and I would like to explore some topics.

² <https://www.peergrade.io/>

Then, the students were asked to give a score from 1 to 10 on the peer assessment experience.

The next section was focused on the perceptions about technology and the *Peergrade* platform used in the activity. Thanks to a Likert scale from 1 to 5, the students gave their opinions on growing motivation and participation, cooperative and participatory education methods, confidence with digital tools, educational improvements, use of new e-learning tools and platforms, and easy sharing of materials.

The last section was reserved for reflection on the perception concerning the skills solicited by the peer review activity. By using a scale from 1 to 5, the students expressed their opinion on Creativity, Innovation, Communication, Critical Thinking, Problem-solving, Working memory, Attitude to research, and Collaboration. The questionnaire submitted to the students was created by the undersigned for the purposes of this research.

Some results: the evaluation questionnaire

In this section, the results from the questionnaire filled in by the students after their experience and the feedback about the benefit of peer-reviewing are presented and commented on.

45 students attended the questionnaire (43=F; 2=M): the students were enrolled in the fourth year of the Faculty of the Primary Education Science at the University of Modena and Reggio Emilia and their average age was 27 years old. The average of the results related to the perception of the knowledge gained by students shows that the student's expectations were almost completely expected ($M=4.33/5$; std. dev.=,564), learning was perceived as progressive ($M= 4.44/5$; std. dev.=,693) and the performance of the activity was understood easily. In fact, almost all students expressed an average score of 4 out of 5 based on the Likert scale ($M= 4.31/5$ std. dev.=,668).

By following a scale from 1 to 5 (1= nothing; 5= a lot of things), the students were asked if some information was taken for granted without appropriate explanations. The average score was 1.82 out of 5: this confirms a good understanding of the information given. By following the same assessment method, the students were asked if they would prefer more information and the score was $M= 2.27$ out of 5, which means that the explanations given on the activity were considered exhaustive by students and this represented support for the performance of it.

The positive results emerging from the analysis of the first section of the questionnaire are also confirmed in the last question in which the students state that they were so interested in the activity that they wanted to investigate further topics after the workshop ($M= 4.13$ out of 5; std. dev.=,968) (Fig. 1). This last result is encouraging both for any further progress and for the benefits arising from the study, which may be performed by the students in their classes.

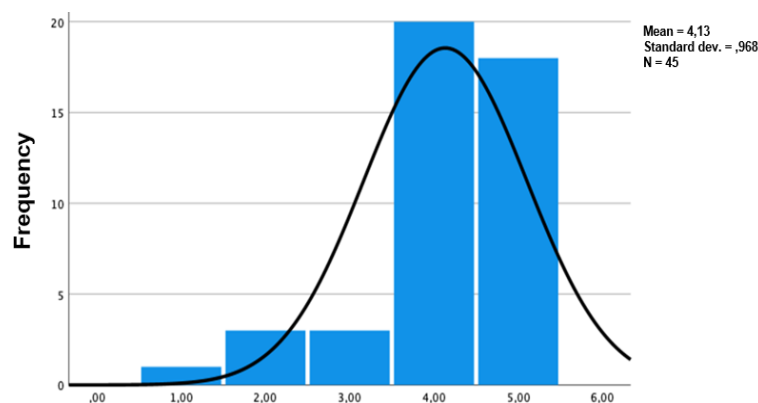


Figure 1. The activity aroused my curiosity, and I would like to explore some topics. (Likert scale from 1= nothing to 5= a lot of things)

The average score resulting from the peer assessment experience keeps confirming the positive tendency reported in the first part of the questionnaire. In fact, the average score was 8.33 out of 10.

By analyzing the second section on the *Peergrade* platform use and its influence on certain aspects related to the collaborative education methods associated with technology, it is possible to notice, by taking into consideration the Likert scale (1: no incentive – 5: highest incentive), that the average score of the growing motivation and participation of the students is 4.09 out of 5 (Fig. 2). This is a significant result that confirms what specialist scientific research underline. Peer assessment combined with critical use of technological tools increases motivation in learning and tends to create high levels of participation.

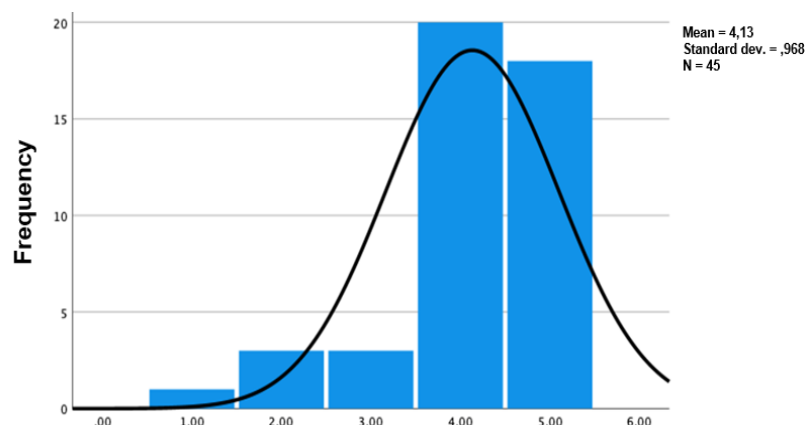


Figure 2. Growth in motivation due to students' use of the *Peergrade* platform for peer assessment activities

The data on the solicitations triggered by the peer review activity on the *Peergrade* platform show that it encouraged forms of collaborative learning by obtaining an average of 4.47 out of 5 points. The online activity also recorded a perceived improvement in the quality of didactics by scoring 4.11 out of 5. The student's familiarity with these technological tools confirmed positive values with an average of 3.96 on 5 as well as the prompting in using new

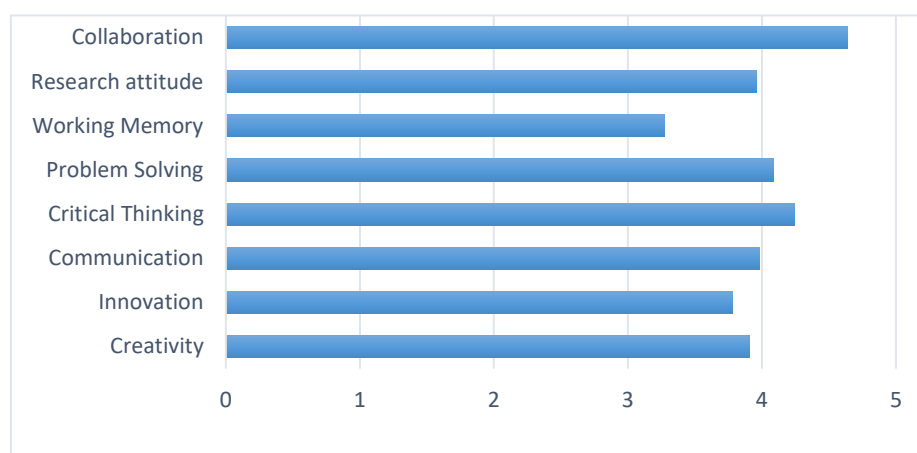


Figure 3. Competencies solicited by the peer assessment activity

tools for e-learning ($M = 4.11/5$ std. dev. = .885). Furthermore, the activity performed on *Peergrade* supported the sharing of materials among students gaining an average of 4.33 out of 5.

In the last section of the questionnaire, which was aimed at measuring the level of the student's perception of the soft skills stimulated by the peer review activity (Fig.3) it is possible to notice that the most triggered competencies were Collaboration ($M = 4.64/5$; std. dev. = .609) and Critical Thinking ($M = 4.24/5$; std. dev. = .857). The work, which was performed in pairs, solicited collaboration among students, triggering comparisons, different points of view, teamwork to reach shared goals, respect, active participation, and support among colleagues. Critical Thinking skill is also encouraged by the peer assessment activity which involved the students in the processes of inferences, links among several information, self-correction, conceptualization, good speaking, and skill in objective reasoning and assessments.

The remaining competencies analyzed are all prompt enough; the Working Memory was the only one to have gained an average value lower than the others ($M = 3.27/5$).

By examining the correlations among the benchmarks in the questionnaire, some interesting results are reported in the correlation between the growing personal motivation related to the collaborative education methods by using *Peergrade* and the peer review activity ($r = .427$; $p = .001$). The use of new tools in e-learning activities appears to be correlated also to the solicitation of Creativity ($r = .461$; $p = .001$) and Collaboration ($r = .413$; $p = .005$) and thus confirms the results from the research in the field.

Another interesting result to focus on is Collaboration skill which is correlated to the improvement of the quality of the education methods related to the peer review activity on the *Peergrade* platform ($r = .600$; $p < .001$).

Furthermore, the results show that Critical Thinking competence appears connected to the Peergrade platform ($r=.563$; $p < .001$). The abilities to reason critically, make inferences, and connect information are correlated with the use of a new digital tool for peer assessment, leading to a positive stimulation of both Critical Thinking and digital skills in the students.

Concerning the opinions that have been expressed on the usefulness of the feedback received from the classmates after the peer review activity, 42 students answered the question extremely positively. Out of a maximum of 5 attributable points, the average of the responses recorded a score of 4.43 ($dv=.831$), confirming the positive trend found in general regarding the peer assessment experience.

Conclusions

The pilot activity illustrated in this contribution aims to describe the adoption of peer assessment, conceived as an educational strategy to foster the development of transversal and digital skills and processes of self-reflection and self-evaluation, in a university context in order to disseminate good practices that are still not widespread in Italy, especially in the university context.

The Educational measurement Workshop at the degree course in Primary Education held in May 2022 involved 46 learners who took part in three meetings aimed at creating an authentic task and its evaluation rubric, which were then peer-reviewed and compared through feedback from the evaluated. At the end of the experience, a questionnaire was administered to survey participants' perceptions of the peer assessment activity, the soft skills it solicited, and to register impressions regarding the conduct of the peer review on the *Peergrade* platform and the release of feedback.

The data show a positive reaction of the students to the proposed activity, which, as revealed in classroom discussions, was being experienced by them for the first time. Expectations were broadly respected ($M= 4.33/5$), learning was gradual ($M= 4.44/5$) and the information received about the activity was considered comprehensive ($M= 4.31/5$), students were very interested in what was done in the classroom with the intention of pursuing the strategy further ($M= 4.13$ out of 5). The data on the solicitations triggered by the peer review activity on the Peergrade platform show that it solicited forms of collaborative learning, scoring an average of 4.47 out of five points; the conduct of the online activity also registered a perceived improvement in the quality of teaching by obtaining 4.11 out of five points. Encouraging results also come from the questions regarding perceptions of the skills solicited by the activity: among all of them, Collaboration ($M= 4.64/5$) and Critical Thinking ($M= 4.24/5$) scored highest; the least stimulated, according to the students' opinion, turns out to be Working Memory ($M= 3.27/5$). Positive feedback is also evident from the summaries of opinions expressed regarding the usefulness of peer review and the release of feedback from the evaluated.

These findings, which are preliminary in nature and not generalisable, provide an initial methodological and pedagogical overview regarding the application of peer assessment in a university context using a digital tool. Compared to what has been put in place, the study has room for improvement. Students attending different course years, for example, could be involved in the activities to facilitate objective evaluations and extend the number of participants. A larger number of students involved and over a longer period, in fact, could be useful in order to more specifically analyze the data regarding the actual effectiveness of peer assessment in the university context and ascertain its relative impact in terms of soliciting soft and digital skills.

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