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Online peer assessment in Galenic Pharmacy: enhancing evaluative judgement in higher education

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ABSTRACT

Assessment influences how students define their priorities and their commitment to the learning process. Assessment strategies can empower students to actively engage in meta-cognitive processes, fostering cross-curricular competencies. Mastery of these competencies not only enhances deep and meaningful learning but also prepares learners for the challenges of the ever-evolving knowledge field. However, developing evaluative judgement, the ability to critically and autonomously judge the quality of one's own work and that of others, is essential but challenging. The purpose of this study was to design and assess an online educational experience for Galenic Pharmacy students ($N=339$) during the 2021–2022 academic year of the Degree of Pharmacy. Beyond content acquisition, the primary goal was to foster evaluative judgement as a pivotal component of the 'learning to learn' competence. A complex task with iterative deliverables was proposed, using peer assessment as the central tool for the development of evaluative judgement. Students were required to give presentations on methods of administering medicines and had iterative deliverables. They underwent multiple rounds of peer feedback. The task as well as peer assessment process were compulsory for all the students. The participating students voluntarily answered an ad hoc online questionnaire in relation to their perception of the overall experience of peer assessment. The outcomes showcased the positive impacts of peer assessment based on the roles of assessor and assessed. An improvement in feedback quality was observed from one iteration to another, and an enhancement of critical judgement was evident. Enhancing assessment literacy might be essential for both educators and students. For educators, this would allow them to set criteria more aligned with competencies, whereas students might place higher value on these practices and actively engage with the learning process. Such engagement is crucial for promoting lifelong autonomous and self-regulated learning.

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Introduction

The Spanish healthcare system guarantees universal coverage, ensuring that the entire population has access to healthcare services. Pharmacists play a fundamental role, both in clinical and technical aspects, working in community pharmacies, hospitals, and other related sectors such as the pharmaceutical industry, research, drug distribution, and healthcare regulation.

The Pharmacy degree at the University of Barcelona is a five-year program that provides students with both scientific and clinical knowledge. In the early years, the focus is on foundational subjects like chemistry, physical chemistry, biology and mathematic, including Galenic Pharmacy.

Galenic Pharmacy, also known as pharmaceutical technology, emphasizes the formulation and preparation of medicines, ensuring that active ingredients are delivered effectively to patients. Unlike modern

pharmacy education, which focuses on clinical care, Galenic Pharmacy concentrates on the physical and chemical properties of drugs and dosage form design. This discipline is essential for understanding drug formulation, manufacturing, and quality control, ensuring the safety and efficacy of medications. This knowledge is essential for both dispensing medications and compounding formulations, in community pharmacies or hospital pharmacies as well as in the pharmaceutical industry.

At the University of Barcelona, Galenic Pharmacy is taught through a series of courses, starting with *Introduction to Galenic Pharmacy* in the first year and continuing in the third, fourth, and fifth years. The introductory course provides foundational knowledge and specific terminology related to drugs and pharmaceutical products, which is critical for advancing in other core subjects within Pharmaceutical Technology.

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The course covers three main thematic blocks: 1) Key concepts of drugs, pharmacopeias, and the Sustainable Development Goals (SDGs) in the pharmaceutical sector; 2) Definition of drug administration, focusing on routes of administration, dosage forms, packaging, and concepts of efficacy, safety, and stability; and 3) The formulation and preparation of medicines, including prescription interpretation, numerical calculations, and basic compounding techniques. This comprehensive approach ensures students gain a well-rounded education in pharmaceutical technology.

Peer assessment experiences within Galenic Pharmacy also promote critical thinking and evaluative judgment – essential skills for healthcare professionals. This participatory approach to assessment enhances learning outcomes and prepares students to make informed, evidence-based decisions in their future clinical practice.

Peer assessment processes

Feedback is understood as ‘the action through which learners make sense of comments regarding their learning process and use them to self-improve’ [1,p. 1]. Peer assessment or peer review provides a structured learning process to critique and provide feedback to each other on their work [2]. These processes allow not only to improve the tasks under assessment but also to develop critical judgement [3–5]. Critical judgement is understood as ‘an intellectually disciplined process of actively and skilfully conceptualizing, applying, analysing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action’ [6,p. 40] and is therefore considered a key skill for the twenty-first century [7].

On the one hand, these processes must be planned under certain conditions, such as those indicated by [8]. On the other hand, the peer assessment process requires initial training (preparatory activities) and supports (instructional scaffolding) to ensure its success [9].

It is also necessary for students to take on an engaged and active role [1,10] in the assessment process. Moreover, it seems highly beneficial that the student adopts the role of assessor, and not just the recipient of feedback from the teachers or peers. Studies by [11,12] or [13] certify its benefits.

This, in turn, is affected by the perceptions that are experienced. Students’ perceptions of feedback have been systematically analysed [14–16] and appear to diverge from teachers’ perceptions. However, [17] challenge this idea by concluding that students not only access and read the feedback but use it to improve themselves and what they value is the same

as what teachers value: that it is detailed, encouraging, constructive and shareable.

Students’ perceptions of peer feedback processes are varied. The systematic literature review by [18] categories both positive perceptions, especially if the feedback is accompanied by dialogues to understand its meaning, as well as the negative ones. Several authors have previously warned of the difficulties associated with a low perceived usefulness of feedback and its effects on motivation and performance. For instance, [19] found that because it was not perceived as useful, it was not applied to subsequent tasks. This lack of usefulness can be attributed to it not being sufficiently detailed, not being personalised, being delivered in an authoritative tone or using terminology that students do not fully understand. Likewise [20], confirmed student dissatisfaction and frustration with feedback and [21] once again, considered that this may be due to the lack of clarity of the feedback or its overly negative tone. Also, it should be considered that perception of feedback could be influenced by its type and its purpose [22]. Therefore, there is a set of conditioning or mediating factors, and so it is worth exploring students’ perceptions and what they attribute to the value (or lack) of feedback.

If the conditions of peer assessment are considered along the lines suggested by [8] and scaffolds are provided for its implementation [23], the learning derived from it can be really useful not only for students’ academic development but also for their future professional life [24].

The benefits of peer-assessment include strengthening critical judgement [25] and evaluative judgement [26,27]. As students train their skills as assessors, a progression that is noticeable from one loop to the next [28,29], their comments are less superficial and show greater development of critical thinking.

Despite the reported benefits, [30] found that students state that they prefer feedback from teachers, so there is a need for studies that empirically demonstrate to students that Peer-Assisted Learning has benefits for a greater level of performance and/or collecting feedback from graduates who remarked that they found it useful in their professional lives. In addition, they indicate that, without prior training, dysfunctions such as overrating can occur. But it is particularly the lack of evaluative literacy that produces these situations, as multiple studies have affirmed [31].

Evaluative judgement

Evaluative judgement can be defined as ‘the capability to make decisions about the quality of work of self and others’ [27,p. 472]. It implies understanding what

constitutes the quality of an action or a product and applying this understanding in the assessment of a task, whether one's own or that of others. This means comparing one's own or others' creations with pre-established standards, exemplary work from other courses, indicators from a rubric, among others, and having to assess them by applying quality criteria, and justifying these assessments. This process fosters cross-curricular competencies in students, specially learn to learn competence, which becomes crucial for their professional future [32] in the sense that it enables them to judge the quality of their work without being dependant on external approval, thus stimulating autonomy and reflective thinking. Being competent requires having the reflective capacity to adjust the knowledge that needs to be activated to respond to an authentic and complex situation [33] and it is essential to develop evaluative judgement to know whether the proposed solution is optimal or whether it could be improved and with what resources and strategies.

Tai et al. [30] studied the contribution of Peer-Assisted Learning (PAL) to the development of evaluative judgement and found that it improved the ability to make comparisons and led to a deeper insight of the notions of quality of work.

Regarding evaluative judgement, [34] suggest that, when faced with an assessment, students start from their knowledge of the content of the task, but also from their understanding of how to fulfil the requirements of it. Some students with higher levels of self-regulation have a more accurate evaluative judgement. However, those who do not have the capacity to make evaluative judgements cannot be left out given that they will reach a less precise definition of the task and will plan their execution with a lower level of quality [35]. Therefore, they call for specific opportunities for everyone to gain knowledge of the criteria, for everyone to have the chance to apply them and to obtain feedback on the quality of their work so that they can improve their learning processes and/or products by applying the information that has been given to them [36,37].

In fact, [38] warned of some limiting factors in the development of evaluative judgement, such as lack of competence trust; tensions in feedback communication; competition or lack of readiness for peer learning, but at the same times they mainly reported the benefits of peer assessment, since it enriches the understanding of quality, refining subjective judgement and deepening self-reflection.

In view of this, it is clear that there is a need to further strengthen evaluative literacy, which is understood as 'the processes of understanding the grading process and of applying this understanding to make academic judgements of one's work and performance' [39,p. 25]. Strategies that can contribute to

developing this evaluative judgement and evaluative literacy include peer and self-assessment processes [31].

These arguments formed the foundation for the development of a didactic sequence based on peer assessment, with the aim of testing whether there were improvements in the tasks, but also in evaluative literacy and evaluative judgement as competencies for professional development. The following research questions (RQ) will serve as a guide to reflect on how a peer assessment experience can contribute to the development of evaluative judgement in higher education students:

RQ1: What is the students' perception and assessment of the feedback given and received in a peer-feedback process?

RQ2: What competencies do students perceive they develop from a peer-feedback experience?

Methods

Intervention design

Didactic sequence design

Following the contributions of the theory of self-regulation of learning [40], a didactic sequence of a complex peer feedback task supported by technology (Moodle) was designed and developed to promote the self-regulation of learning of higher education students. The different actions that the students had to carry out to progress step by step through the sequence were established (Figure 1).

Task design

The intervention was applied to 'Introduction to Galenic Pharmacy' subject student's, divided into teams of 4 members each. All the working teams had to first prepare the PPT with the text to be narrated at the bottom of each slide and upload it as version 1 to be peer-reviewed. In a second phase, they had to improve the PPT format, considering the constructive criticism received, and then to design the resulting video and submit the version 2 for peer assessment (using the same assessors/assessed peers).

All members of the same working group uploaded their collaboratively created PPT to the designated Workshop. To ensure that a group of four students evaluated another group of four, we manually formed four pairs of assessor/assessed within the Workshop, allowing for individual assessments. Subsequently, each group was required to gather the four individual evaluations they received and discuss them collectively to improve their work based on the combined

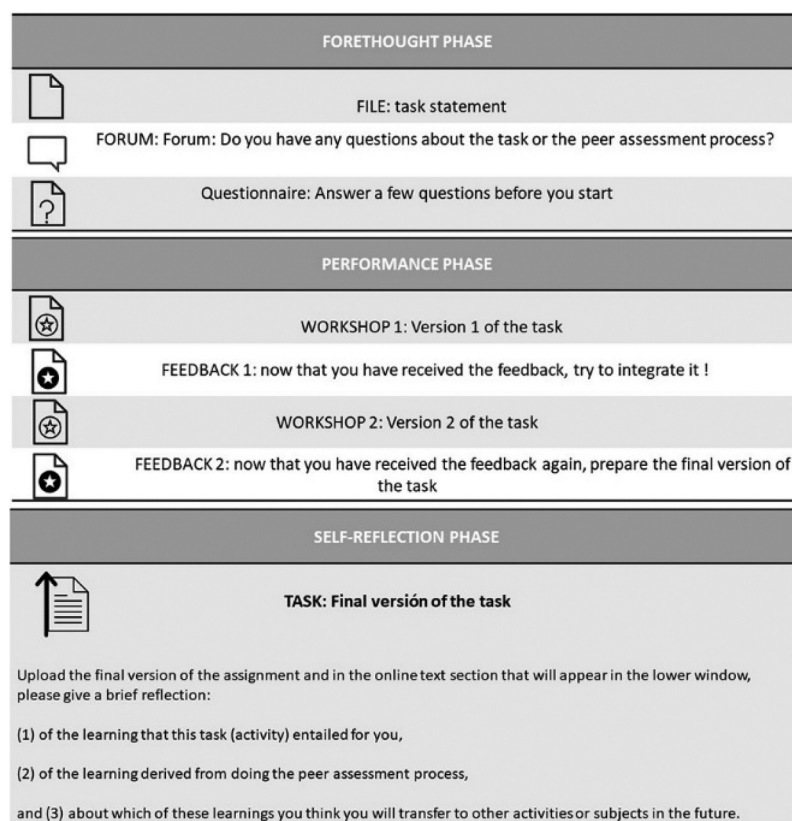


Figure 1. Representation of the didactic sequence set up in Moodle. This figure is a representation of the didactic sequence visualization in the Virtual Campus.

feedback. This approach ensured that while the feedback was initially provided individually, it was later integrated and discussed as a team, thereby addressing both individual and group dynamics in peer feedback.

In the peer assessment process, students were required to provide comments to their peers based on each of the established quality criteria. For the final evaluation of the last version of the work by the teachers, a specific weighting was assigned to each quality criterion.

During each peer assessment, student assessors were asked to provide an overall score for the work presented by their peers. While they took into account the specific weighting of each criterion, they were not required to break down the scores for each individual criterion. Instead, they provided a holistic numeric grade alongside their verbal comments.

Seven quality requirements were identified, which were also the final assessment criteria used by the teaching team: i) Criterion 1 (15% of the mark): grade of production and technical quality of the product with respect to the general format (in particular of the first slide), sharpness of images and quality of texts, colours, format of bibliographical references and, in the case of the video, sound/voice-over quality; ii) Criterion 2 (15%): attractiveness, interest and structuring of the information;

dynamic presentation with a good synthesis of the required information (organised and balanced) for a video lasting between 5 and 8 minutes; iii) Criterion 3 (15%): academic style (no spelling, grammatical or typographical errors) and use of specific terminology; and, iv) Criteria 4, 5, 6 and 7 (55%): accuracy, thoroughness and relevance of the information on the characteristics of the route of administration (4-Content A), the advantages and disadvantages of this route (5-Content B), the classification of the dosage forms for this route (6-Content C) and the characteristics of the specific pharmaceutical dosage under study (7-Content D). Students were asked to highlight the positive points for each criterion and to indicate the aspects to be improved, corrected, or added. In this way, they provided constructive feedback and an overall rating of the product on a six-level scale from A to D corresponding to the following ranges on the 0-to-10-point scale (10 being the highest quality): A (≥ 9.0 Excellent); B+ (8.5–8.9 Rather High); B (7.5–8.4 Good), B- (6.5–7.4 Rather Low), C (5.0–6.4 Sufficient) and D (< 5.0 Insufficient). The timetable of the programmed work with its individual activities during the course is shown in the following (Figure 2).

As already indicated, two peer review loops were designed using two Moodle Workshops (which is the tool for this purpose) so that each team could give

Month 1			
Week 1	Week 2	Week 3	Week 4
Start of the course and presentation of the task.	Creation of the team and registration of spokespersons. Reading of the statement of the task. Start of the participation in the campus forum.	Answer the planning questionnaire after the group meeting. Create the PPT document.	
Month 2			
Week 1	Week 2	Week 3	Week 4
Upload the PPT document in Workshop 1.		View the PPT designed by the peer group, attend the face-to-face peer feedback sessions and provide the written assessment in workshop 1.	
Month 3			
Week 1	Week 2	Week 3	Week 4
Read the feedback received on your PPT document and provide a reflection on the comments received. Modify the PPT, create video 1 from the PPT and with audio and upload it to YouTube to get a link.	Upload the link to video 1 in Workshop 2.		Watch the video created by the peer group and provide feedback in Workshop 2.
Month 4			
Week 1	Week 2	Week 3	Week 4
Read the feedback received on video 1 and submit a written reflection on the process. Modify the video and upload the new version to YouTube to get a link.		Submit (only the spokesperson) the link of video 2 of the task for the evaluation of this final version by the teachers. Answer the questionnaire on satisfaction and perception of learning.	

Figure 2. Timetable of work during the course.

and receive constructive criticism, first after uploading the PPT and then after uploading the link to the corresponding video.

How to correctly perform the peer assessment in the Moodle Workshop tool was explained and some sessions to communicate verbally the feedback were planned.

Participants

This educational study was carried out within the framework of the R+D project Analysis of the effects of providing feedback supported by digital monitoring technologies on transversal competences, reference number PID2019-104285GB-I00. This project proposes the implementation of a didactic sequence in which students participated in peer feedback activities in various subjects of different degrees at the University of Barcelona. This project and its implementation were approved by the Bioethics Commission of the University of Barcelona. All the students of the subject 'Introduction to Galenic Pharmacy' were invited to participate. Of the 373 students enrolled for the 2021–2022 academic year, 339 completed the tasks proposed for the continuous assessment process. The students ($N = 339$) were divided into three morning class-groups ($N_m = 182$) and three afternoon class-groups ($N_t = 157$). The student groups are assigned by the Student Secretariat during their enrollment in the pharmacy program. Each lecture group has a different classroom and class schedule. The working groups, as well as the pairs of assessor/assessed, must be formed with students from the same lecture group to encourage in-person exchanges of opinions and discussions.

This division ensures that the peer assessment process is relevant and manageable within the constraints of their class schedules, allowing for meaningful interactions and

feedback among students who share the same theoretical framework and classroom environment.

The 339 students organised themselves within a few days to form 86 working teams, mostly of four members. All students had access to information on the tasks to be carried out and to the planning questionnaire. Each group had to work on preparing the content of the two theoretical topics divided into 22 knowledge pills (V01 to V22) to be presented in a video screen recording with voice over, using a PowerPoint (PPT hereinafter) to convey the information. Each team was responsible for studying two knowledge pills in-depth; one to create their video and the other to evaluate the peer group.

After submitting the first version of their PPT work, students were required to attend two interactive, in-person feedback sessions. The first session was dedicated to receiving constructive criticism from the teachers on each group's work and clarifying specific points. The second session allowed the paired assessor/assessed from the different paired groups to exchange and debate perspectives on their work, with the teachers facilitating the discussion.

There were 318 students (91.4%) attending the first face-to-face feedback session. After explaining to the students how to perform quality feedback and how to evaluate the PPT documents correctly, each student performed the peer review, checking compliance with the more formal aspects, namely those related to the first three quality criteria. In this way, the students were able to get to know each other personally and establish a dialogue for an exchange of views on these format requirements.

During the second face-to-face feedback session attended by 314 students (90.2%), peer review was focused on information content A, B, C and D. An

exchange of opinions and sources of information was established between the assessing students, the assessed students and the teachers to check the depth and completeness of the PPT content, in accordance with quality criteria 4, 5, 6 and 7.

Following these two in-person sessions, each student assessor provided individual feedback on the PPT version of the work. This individual feedback was then communicated by the evaluated student to their group, ensuring that all group members could incorporate the assessor's comments.

This triangulation process was assessed based on the improvements made from the first to the second version of the PPT in video format, incorporating feedback from both teachers and peer discussions, as well as individual evaluations.

Instruments and materials

The participating students voluntarily answered an ad hoc online questionnaire, created using the tool provided and approved by the University (Microsoft Forms), available on the Virtual Campus at the end of the course. The questionnaire includes blocks of questions to be answered on a Likert scale from 1 to 5. It also includes a series of open questions. The data presented in the following table (Table 1) was used to address the objectives of the work presented here.

Answering the questionnaires was a voluntary activity of the students and as identification (student ID number) was required, they gave their consent and accepted the data protection and data processing policy before answering the questions.

To collect information on the quality of the feedback given and received during the peer review workshops, some activities from the didactic sequence were used. Specifically, the Moodle questionnaires that were called Feedback 1 and Feedback 2. In both, the statement was: 'Now that you have received the feedback, try to integrate it!', the students had to answer three questions. For the purposes of this study, the first two selection response questions were analyzed. The statement of the first question indicated: Rate (1–5) the quality of the feedback you have received and that of the second question: Rate (1–5) the quality of the feedback you have given (1 being of very low quality and 5 of high quality).

Data analysis

The descriptive exploration of the quantitative data collected was undertaken with the GraphPad Prism software package, to see the behaviour of the data (sampling distribution) and how the results are displayed (min., max., M, Me, σ). A mean comparison analysis was conducted for unpaired data by parametric treatment (Student's t-test), once the normal distribution had been checked, so as to detect possible significant differences between perceptions across groups of students. Cohen's d was calculated to measure effect size.

Results

As for RQ1 (*What is the students' perception and assessment of the evaluations given and received in a peer-feedback process?*) 326 students provided the

Table 1. Blocks of data used to respond to the objectives of the study.

Block	Objective	No of items	Items content
Block A	Perception of participation as an assessor	8 items	Rethink the objectives of the assessed task. Have a more critical view of the work I have done. Involve myself more in my learning process. Realize the processes that I need to improve in my learning process. Realize the processes that I must maintain and enhance in my learning process. Contribute to the development of the competence learn to learn. Learn how to give feedback.
Block B	Perception of participation as assessed.	8 items	Understand the evaluation criteria of the assessed task. Rethink the objectives of the assessed task Have a more critical view of the work I have done Improve my own work based on the opinions/assessments and advice of my colleagues Realize the processes that I need to improve in my learning process Realize the processes that I must maintain and enhance in my learning process Contribute to the development of the competence learn to learn Learn how to give feedback Involve myself more in the learning process
Block C	Perceptions related to the peer assessment experience.	4 items	I discovered strategies, competencies or skills that I could apply in other contexts I have become aware of the actions and processes that can allow me to improve learning with more autonomy, efficiency and understanding in future task I am able to represent the objectives, the evaluation criteria and the processes to plan and carry out a quality task I am able to self-assess the quality of my work
Block D	Overall satisfaction with the peer assessment experience.	1 item	Overall satisfaction with the peer assessment experience.



Figure 3. Rating of the quality of the feedback given and received during the first peer assessment workshop. NS = not scored.

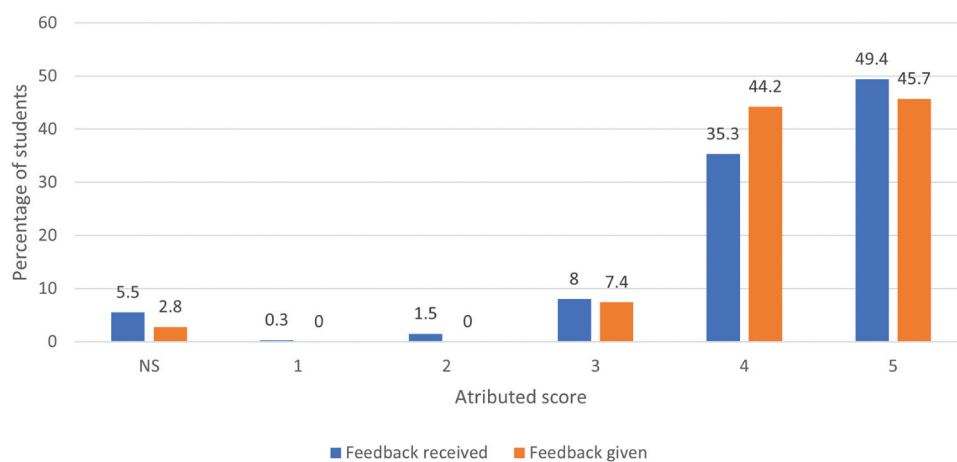


Figure 4. Rating of the quality of the feedback given and received during the second peer assessment workshop. NS = not scored.

two feedbacks. Figures 3 and 4 show the rating of the quality of these feedbacks, ranking from 1 to 5.

It can be noted that, in general, the comments on the PPT revision were very well rated, with 85% to 90% of students rating both the feedback received and the feedback given with a 4 or 5. Furthermore, in the first peer assessment (Figure 3), the difference in the frequency of scores of 4 between feedback received and feedback given was 17.8% in favor of feedback given, while for scores of 5, the difference was 16.0% in favor of feedback received. However, in the second peer assessment (Figure 4), these differences were notably reduced, being only 8.9% for scores of 4 and 3.7% for scores of 5. These observations indicate that students perceived the quality of feedback to be high and that the feedback process became more consistent and precise over time.

On the other hand, the difference between the mark of the feedback given and the feedback received was determined separately for each student (Figure 5). For both peer assessments, around 60%

of the students thought that the quality of the feedback given and received was similar. In contrast, 26.0% thought they provided poorer quality feedback than their peers in the first assessment, and this fact was acknowledged by only 14.3% of the peers; whereas in the second assessment there was a strong agreement of opinion in this respect, ranging from around 18.6% –18.9% of the cases.

In relation to the RQ2 (*What competencies do students feel they develop from a peer assessment experience?*), a total of 138 students responded to the survey available on the Virtual Campus at the end of the activities provided by the didactic sequence. The mean and the standard deviation of the scores assigned by the students were determined based on the responses obtained. The following tables show the values obtained for the scores from the role of assessor (Table 2) and from the role of the assessed (Table 3).

The responses of the participating students were also analysed in relation to their perception of the overall experience of peer assessment. In this sense, and as shown in Table 4, the global mean was of the

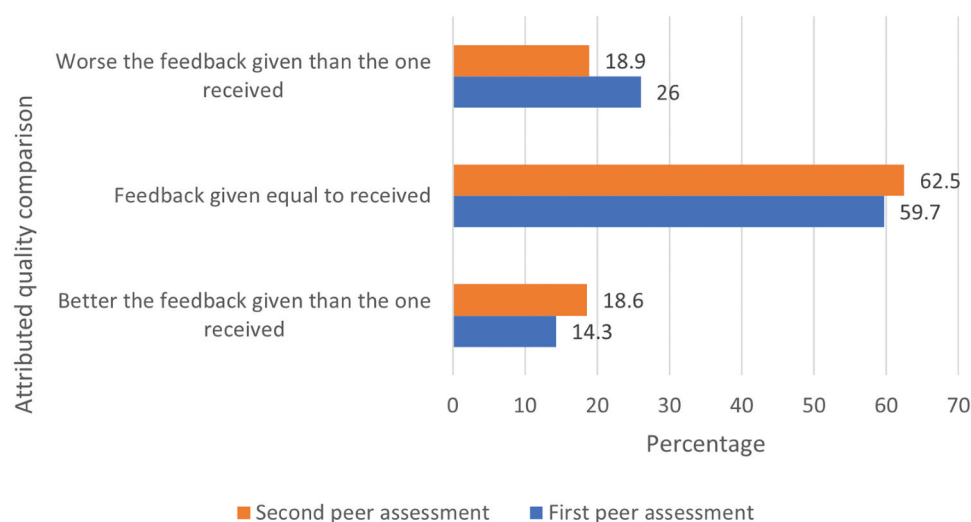


Figure 5. Comparison of perceptions about the quality of the feedback given and the feedback received.

Table 2. Scores attributed to the experience from the role of assessor.

The assessment of the tasks of my colleagues (being an assessor) has allowed me to...	Mean	SD
Rethink the objectives of the assessed task	4.07	0.91
Have a more critical view of the work I have done	4.24	0.71
Involve myself more in my learning process	4.01	0.94
Realize the processes that I need to improve in my learning process	4.23	0.88
Realize the processes that I must maintain and enhance in my learning process	4.17	0.97
Contribute to the development of the competence learn to learn	3.99	0.95
Learn how to give feedback	4.21	0.84
Understand the evaluation criteria of the assessed task	4.27	0.79
Global rate	4.15	0.88

The rating scale was from 1 to 5, where 1 = do not agree and 5 = very agree.

Table 3. Scores attributed to the experience from the role of assessed.

Receiving the opinions, evaluations and advice of my colleagues (being the one assessed) has allowed me to...	Mean	SD
Rethink the objectives of the assessed task	4.21	0.87
Have a more critical view of the work I have done	4.30	0.86
Improve my own work based on the opinions/assessments and advice of my colleagues	4.42	0.78
Realize the processes that I need to improve in my learning process	4.12	0.90
Realize the processes that I must maintain and enhance in my learning process	4.12	0.98
Contribute to the development of the competence learn to learn	4.04	0.93
Learn how to give feedback	4.08	0.94
Involve myself more in the learning process	4.14	0.92
Global rate	4.18	0.90

The rating scale was from 1 to 5, where 1 = do not agree and 5 = very agree.

Table 4. Scores attributed to the peer assessment experience.

Through the peer assessment experience...	Mean	SD
I discovered strategies, competencies or skills that I could apply in other contexts	3.74	1.30
I have become aware of the actions and processes that can allow me to improve learning with more autonomy, efficiency and understanding in future task	4.00	1.25
I am able to represent the objectives, the evaluation criteria and the processes to plan and carry out a quality task	4.26	1.06
I am able to self-assess the quality of my work	4.50	0.87
Global rate	4.16	1.07

same order as in the results according to the assessor/assessed role (4.16 ± 1.07).

Nevertheless, better scores stand out for the item '*I am able to self-assess the quality of my task*' (4.50 ± 0.87) and lower scores (3.74 ± 1.30) for the item '*I have discovered strategies, competencies or skills that I could apply to other contexts*'.

Discussion

The results allow us to have a positive view of the peer assessment process for the development of critical thinking and evaluative judgement. In this case, the results shown respond to an action in which a sequence has been designed to promote self-regulation of learning. This sequence also aimed,

based on peer assessment in two loops, to strengthen the development of evaluative judgement, as this becomes a particularly relevant element for the self-regulation of learning [34].

From the analyses carried out in this work, it was found that overall, students' perception of their ability to assess increases, and the reported benefits are similar for being assessors as well as for being assessed. However, there are also some differences: understanding the criteria is what scores higher in the case of being an assessor, whereas, when in the role of being assessed and receiving feedback from a peer, improving one's work, and having a more critical eye are more valued [29]. As it has been highlighted, when students' skills as assessors are trained, an improvement on comment's quality and critical thinking can be stated [28].

Finally, the results show two particularly relevant data. The items that best informs on the disposition and skills linked to the development of critical judgement for role of assessed are *'Have a more critical view of the work I have done'* and *'Improve my own work based on the opinions/assessments and advice of my colleagues'* which obtains the highest score, which reinforces our hypothesis regarding the relevance of the peer assessment process. This would allow us to account for how evaluative judgement is developed and shaped [27,30,32].

Considering that evaluative judgement implies understanding what constitutes the quality of an action or a product and applying this understanding in the assessment of a task, whether one's own or that of others [30]. Another notable result is that the highest mean value for the peer evaluation experience is the item *'I am able to self-assess the quality of my work'*. This would also indicate that providing the possibility of carrying out the proposed experience has contributed to the development of this competence.

However, another notable result is that the item referring to the competence of 'learning to learn' has obtained a lower score. One possible explanation for this is the students' lack of understanding of the construct itself because other items, which score higher, are closely linked to learning to learn.

Regarding the design of the implementation in this subject, the participant students in this experience seem to high value the face-to face interaction suggested by the teacher in order a deeper understanding of comments to be achieved. This finding is consistent with the contributions from the systematic literature review by [18].

In summary, all our findings reinforce what has been previously indicated by the literature, consolidating the importance of designing actions for the development of evaluative judgment for be fostered through assessment processes participated by students, in this case also in health sciences studies, specifically pharmacy.

Conclusion

The development of competencies throughout initial and ongoing education and professional experience is what shapes a person's identity in becoming a successful professional. The development of the competence of learning to learn, which needs to be exercised with specific learning proposals, is essential for a person to remain competent throughout life.

The study has shown the strengthening of critical judgement and evaluative judgement in a peer assessment intervention, which offers hope for the potential of such sequences if they are maintained and consolidated over time. However, some challenges were faced: the type of task on which the intervention was applied, the assessment criteria used, that it was an isolated proposal in the whole syllabus or the lack of specific training (despite the initial session) of the student body and even the teachers. These limitations could be overcome in the future: the assessment process should be applied to complex, challenging and productive tasks; more effort should be put into training by making examples and materials available to students to help them develop their feedback literacy; and assessment criteria should focus on both content and process.

As the pharmacy program prepares for a curriculum overhaul, a new curriculum is being designed with the expectation that the insights from our study will inform its development. The findings suggest that embedding peer assessment throughout the program and focusing on challenging, real-world tasks will significantly benefit students' critical thinking and evaluative judgment. The new curriculum will also incorporate enhanced feedback literacy training, ensuring that both students and faculty can engage effectively with the assessment process.

As a conclusion from the previous theory and the findings of this work, it can be said that it is necessary to design authentic and complex tasks [41] that allow students to develop their critical judgement and focus the assessment criteria not only on the product but also on the processes that lead them to create a quality product [42]. The relevance of the criteria, their transparency, and their understanding on the part of students are key to good peer feedback [43].

A certain amount of evaluative literacy [44] and feedback [1] is essential for this understanding and application. Part of the results found could be attributed to a lack of literacy [31]. However, this literacy can be trained by scaffolding the process of participatory assessment along the course of study so that graduates do indeed attain the critical judgement and evaluative judgement that will enable them to continue learning throughout their lives.

Achieving this is a challenge for institutional decision-makers, who must provide the opportunities for this to happen [45]. Coordinating various formal and informal sources of feedback at different times and instances [5], contemplating the specificity of the assessment processes of the different areas of knowledge [46] or creating a curricular architecture that enables the longitudinal development of participatory assessment processes (beyond the specific experience in a particular subject and/or task) [47] is essential for the development of evaluative judgement, which, at the same time, is an essential part of lifelong learning.

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Ethical review and approval from IRB of the University of Barcelona is available. Informed Consent was obtained from all subjects involved in the study as well as Data Protection signature.

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