Peer Assessment as Learning Experience

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Abstract

This paper presents work related to the realization of the project Staying Connected Through Connecting: Peer Learning and Peer Assessment in Pharmacy Education. The project is supported by The Norwegian Directorate for Higher Education and Skills and aims at strengthening students' learning outcomes through active and collaborative methods of learning and parallelly, at advancing pedagogical competence of the teachers. Learning activities developed during project work are being implemented in the study program Bachelor of Pharmacy, Nord University, Norway. The objective of the paper is to document students' perceptions of peer assessment provided through feedback technique "Two Stars and a Wish". The activity was conducted with the first-year students as an introduction to student feedback strategies. Numerous studies conducted over the last three decades evidenced positive impact of peer assessment on learners' performance [1]. The goal of the presented enquiry was to find out how students respond to learning activity involving assessment of their co-students' work. Perceptual data collected through questionnaire indicate positive evaluation of peer assessment as a learning experience. The answers to both: close-ended questions (quantitative data), and open-ended questions (qualitative data) were prevailingly favorable and affirmative. These results encourage further work with peer feedback as a practice that can benefit not only students' engagement in learning but also teachers' professional development.

Keywords: *Active Learning, Peer Assessment, Pharmacy Education*

1. Introduction

Evolution of requirements in the pharmacists' profession entails the need for change in pharmacy education, with more focus on developing social skills such as communication, collaboration, and teamwork, as well as more emphasis on reflective and critical thinking. The traditional role of a pharmacist as a product-oriented expert in medicines has been evolving into that of being a person-oriented caregiver committed to ensuring high-quality use of medicines. Expanding patient management skills and realization of the pharmacists' significance on the health care team have become crucial needs [2]. These changes affect the educational process of pharmacists at Norwegian universities. The emphasis on pharmaceutical problem solving, teamwork and intensified social interactive activities require a change in the pedagogical approach in the study program to develop the necessary cognitive skills and interpersonal competences.

In response to evolving job requirements within the healthcare sector in general [3], as well as the increasing demand for knowledge and competencies specific to pharmaceutical personnel [4], Norwegian educational policies have undergone legislative amendments in recent years. The guidelines for education in health and social care education (RETHOS) have also been revised in accordance with these laws. The enacted regulations [2], [3] describe the requirements for pharmaceutical and generic competencies, aiming to better prepare graduates for their future professional tasks. Several projects have also been launched to support development and adaptation of didactic approaches to the emerging educational needs.

2. Background

Exploratory work presented in this paper was done as part of the project Staying Connected Through Connecting: Peer Learning and Peer Assessment in Pharmacy Education. The project is being realized with the support of *The Norwegian Directorate for Higher Education and Skills* in the years 2022-24, in the Faculty of Nursing and Health Sciences, Nord University, Norway. The project aims at developing a model for a three-year undergraduate study program in Pharmacy where active and collaborative learning forms will be in focus. Various student-active and collaborative learning forms

are being implemented into realization of the existing curriculum to strengthen students' ability to identify, evaluate and deal with complex pharmaceutical problems as well as enhance their social and metacognitive skills including reflective and critical thinking. The set of project goals also includes the development of the faculty's pedagogical competence.

The presented study discusses students' perceptions of peer feedback activity *Two Stars and a Wish* which was carried out with the first-year students as an introduction to peer assessment as a learning method and learning process.

2.1 Peer Assessment

Peer assessment is a practice defined as "an arrangement in which individuals consider the amount, level, value, worth, quality, or success of the products or outcomes of learning of peers of similar status" [5]. It has evolved as an outcome of a conceptual shift from a *testing culture* to an *assessment culture* [6] in which teacher-directed perspective opened for active student role in the assessment process. The main purpose of assessment in *testing culture* is to make evaluative decisions of summative character. This encompasses pedagogical and social functions; however, the shortcoming is that summative evaluation takes place only at the end of the course which makes it isolated from the learning process. It focuses predominantly on the cognitive dimensions of learning and applies a single performance score. Conversely, in an *assessment culture* assessment is oriented towards formative purposes. The key characteristic of formative assessment is emphasis on gathering evidence about students learning and using this evidence to guide students learning [7]. Formative assessment is a part of the learning process and provides a more comprehensive picture of a learner. It takes place several times during the course and focuses not only on cognitive aspects of learning but also on social, affective, and meta-cognitive facets. It has been shown that assessment involving students' participation, i.e., peer assessment, self-assessment, and co-assessment, helps students develop skills in the areas of communication, observation, and self-criticism [8]. Benefiting students with both domain-specific knowledge and soft skills, peer assessment has been conceptualized as a powerful learning methodology.

The practice of peer assessment includes the role of assessing fellow learners' work as well as the role of receiving assessment of one's own work. These two roles are rarely differentiated [9]. However, it is evidenced that benefits may differ depending on whether students give or receive assessment [10]. By performing both the role of assessor and being assessed themselves, students' learning can be positively impacted to a larger extent compared to the situation when they are only assessed [11].

The evidence of peer assessment having impact on both actual and perceived learning is well documented [12]. However it has been also noted that students responses to peer assessment vary. For some students it is a positive experience whereas others are not enthusiastic about it. These diverging reactions were investigated as for the impact of gender [13], culture [14] and nationality [15] among others. The evidence has been also found of an impact of self-assesed knowledge and trust on receiving peer assessment, with individuals low on self-assessed knowledge and high on trust having more negative experience [16]. Individual characteristics of students undoubtly affect how they experience the practice of peer assessment, which points to the importance of teachers' awareness of factors underlying students preception of peer feedback when planning to incorporate it into the earning process.

2.2 Practical Realisation of 'Two Stars and A Wish' Technoque in the Course Social Pharmacy

Two Stars and a Wish is a structured format for providing students with feedback on their work. Feedback is provided by writing two observations noting a positive quality of the work (the "two stars") and one suggestion for improvement (the "wish"). *Two Stars and a Wish* is referred to as a formative assessment technique [17]. It can be used by both teachers and students. Due to the simplicity and affability of the procedure, it is suitable for use as an activity introducing learners to peer feedback. With such purpose, it was carried out in the course Social Pharmacy.

The activity was conducted twice. Prior to the first round, students were familiarized with formulas for giving constructive feedback. Students were providing feedback to their co-students work anonymously in a written format by filling in prepared templates which were subsequently collected by a teacher. In the first round of peer feedback the objects of assessment were role play group presentations of possible communication situations in pharmaceutical care settings. A few weeks later, the second round of peer feedback was conducted. Before the second round, students were given the opportunity to reflect on and discuss perceived learning benefits of the feedback received in the first

round. The objects of assessment in the second round of peer feedback were oral group presentations on the role of pharmacies in Norway. The written forms with the feedback were given to the presenting students immediately after their presentations.

3. Data Collection and Analysis

Undergraduate students in their first year of the bachelor study program in Pharmacy (N = 25) participated in the 'Two Stars and a Wish' peer feedback activity. Perception data from students were gathered immediately after the second round of peer feedback iteration through a self-administered questionnaire containing one close-ended question with seven-point semantic differential scale and three open-ended questions that required respondents to elaborate on their opinions in their own words. Distribution of responses to the close-ended question uncovered degrees of opinions on the level of perceived usefulness of the peer feedback activity. Open ended questions allowed to obtain qualitative data about students' affective reaction to the peer feedback learning experience as well as suggestions for possible improvements. Textual analysis applied to the written responses was approached both quantitatively, where the features of text were measured numerically, and qualitatively, where the content analysis aimed at identifying recurrent opinions. For content analysis students' responses were transferred to a text document (separate documents for each question) and analyzed with support of a computer assisted qualitative data analysis software NVivo14. Data analysis was conducted inductively. The process of coding occurred without a pre-existing model. Assumptions were data-driven, i.e., codes were constructed by naming the data. It was crucial to understand participants' views from their perspective and therefore follow grounded theory mandate [18]. The investigation undertaken had an exploratory character and aimed at forming the basis of more conclusive research.

4. Results

4.1 Quantitative Part of the Survey

The opening closed-ended question asked about students' opinions on the usefulness of the peer assessment activity, differentiating between the phase of giving feedback and the phase of receiving feedback. Neither of the phases had been assigned values below the neutral point on the semantic deferential scale. However, receiving feedback was evaluated as more useful than giving feedback considering the number of values with the highest positive connotations, i.e. the third value above the neutral point (Fig. 1). Conversely, the phase of giving feedback scored higher on the first and second value above the neutral point.

Fig. 1. Students' perceptions of peer feedback usefulness. The horizontal number line represents values on a seven-point semantic differential scale.

4.2 Qualitative Part of the Survey

Open-ended questions provided information on students' affective reaction to the giving feedback phase in peer assessment activity as well as students' suggestions for possible improvements in the realization of peer assessment. Measured by the quantity, the most numerous answers were given to the question "What did you like about writing peer feedback?". The number of answers to this question was equal to the number of students participating in the survey, which indicates that 100% of the participants expressed positive opinions about writing feedback for fellow students' work. 56% of survey participants wrote a comment in the response to the question "What did you not like about Two Stars and a Wish?" and only 20% of participants had a suggestion for possible improvement (Fig. 2.).

Question	Number of comments
What did you **like** about writing peer feedback?	25 comments
What did you **not like** about writing peer feedback?	14 comments
What would you **change** to make peer feedback activity better?	5 comments

Fig. 2. Numerical comparison of students' responses to open-ended questions.

The analysis of the responses to the question "What did you like about Two Stars and a Wish?" resulted in identifying four descriptive codes and one in vivo code. Most recurrent opinions in favor of writing peer feedback pointed to constructive and instructive character of the activity (Fig.3). The perceived instructive dimension was interpreted based on affirmative statements regarding receiving in the feedback both praise and a suggestion for improvement. Opinions summarized by the code label *Constructive* emphasized the positivity which the procedure encouraged. Responses grouped under the code labels *Constructive* and *Instructive* are not mutually exclusive.
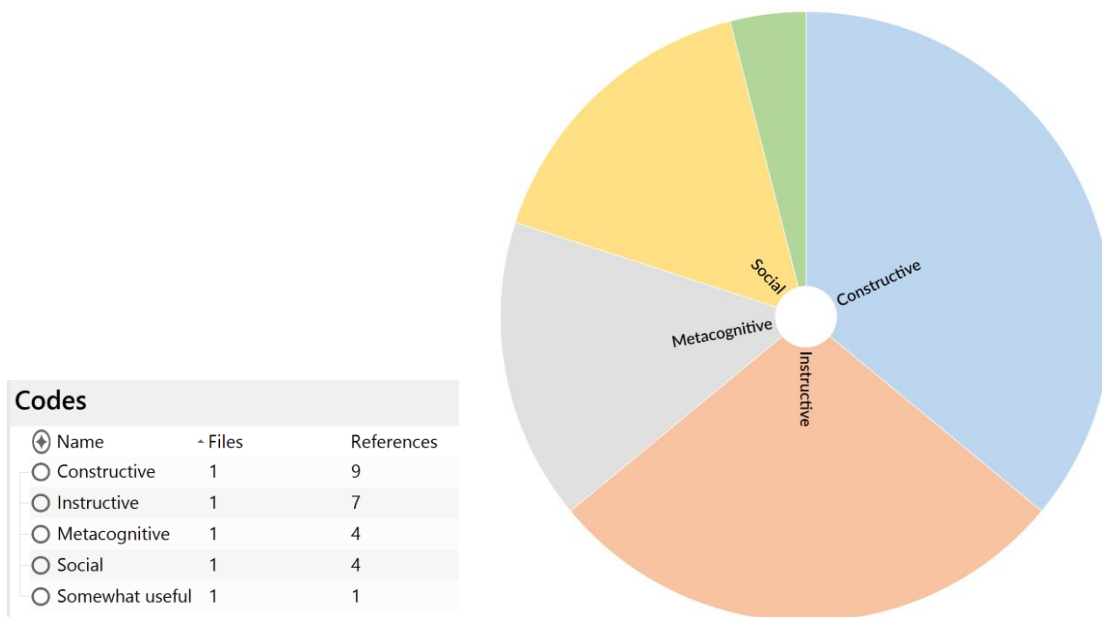

Codes		
Name	▲ Files	References
Constructive	1	9
Instructive	1	7
Metacognitive	1	4
Social	1	4
Somewhat useful	1	1

Fig. 3. Codes synthetized from the responses to the question "What did you like about *Two Stars and a Wish*?". Codes overview and hierarchy chart generated by CAQDAS Nvivo14.

Responses to question "What did you not like about *Two Stars and a Wish*?" pointed to challenges rather than expressed criticism. Word frequency query highlighted the word *difficult* (*vanskelig* in Norwegian) as the most frequently repeated. The word *difficult* appeared in 10 out of 14 responses, i.e., in 71% of the comments. The remaining words highlighted by the word frequency query are

grammatical words without semantic meaning. Students found it difficult to formulate feedback statements and specifically suggestions for improvement ("the wish" comments).

Among the comments concerning possible improvements in peer assessment activity the opinion expressed in more than one comment suggested including the teacher's voice in the assessment.

Fig. 4. The result of word frequency query run on the responses to the question "What did you not like about *Two Stars and a Wish?"*. Word cloud generated by CAQDAS Nvivo14 from 154 items.

4. Discussion and Conclusions

Both numerically based results and the outcome of textual data analysis indicate positive perception of peer feedback. All students participating in the survey expressed favorable opinions about *Two Stars and a Wish* technique. Responses that were expected to provide critical remarks, pointed recurrently to challenges and not specific disadvantages of the activity. The number of those remarks was significantly lower than the number of positive remarks. This result encourages us to continue using peer assessment as learning activity and guides the direction of our work towards helping students overcome the difficulties they specified. Problems with formulating assessing comments may indicate the need for more emphasis on training critical and reflective thinking skills. A few students mentioned metacognitive benefits of peer assessment. The awareness of the importance of metacognition for learning needs to be increased and metacognitive strategies systematically practiced to ensure high quality of pharmaceutical education. The abilities to self-question and evaluate one's own work/learning - crucial metacognitive skills, may significantly contribute to the ability to question and evaluate work done by others. A few students mentioned social attributes of peer assessment as beneficial. Numerous theories emphasize the social and contextualized nature of cognition and meaning [19], [20], [21]. Current shift in cognitive science and educational theory is characterized by as a move away from "acquisition" of knowledge towards "participation" metaphor, according to which "knowing about" is a situated activity [22]. Socially situated nature of "knowing" translates to socially situated nature of knowledge processes. Nevertheless, various challenges may arise considering the social context of peer assessment. Peer assessment might be influenced by "friendship bonds, enmity or other power processes, group popularity level of individuals, perception of criticism as socially uncomfortable or even socially rejecting" [23]. It is therefore important that the teacher is aware of the possible existence in the class of interpersonal variables which may adversely affect the learning potential of activities relying on peer interaction. It is possible that factors of this nature affected response behavior in the presented study. More in-depth studies with a more complex methodological approach are needed to investigate this aspect.

The limitation of the presented survey is that it did not create the opportunity to investigate students' opinions on receiving feedback. This investigation will be undertaken with the future realization of peer assessment. To gain more in-dept insight in students' perceptions it will be also important to inquire

into how students perceive the influence of peer assessment on engagement in learning and motivation to improve learning progress.

The study results are based on a limited sample of pharmacy students and are therefore not generalizable. However, the data obtained provides important information for further work in the project.

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