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## Peer Feedback: Quality and Quantity in Large Groups

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Providing peer feedback is an activity that does not only support the receiver of the feedback in his or her learning process, it is also useful for those who provide feedback, as they have to critically analyse the work or performance of colleagues [1]. Apart from the specific contents of peer feedback comments, the quantity and the diversity of peer feedback compared with teacher feedback is one of the main advantages of the inclusion of peer feedback in assessment. This article describes the second edition of a 15 ECTS project-oriented course for Informatics Engineering Master's students at the University of Minho, in which peer assessment of team performance is part of the assessment method. A shift from teacher- to student-centred learning implies a larger involvement of students in their assessment. Peer assessment and peer feedback are elements of the assessment process that transfer responsibilities from the teacher to the students. They are not just assessment activities, but part of the learning process itself [2]. Students develop skills like making informed judgments, self-evaluation, critical thinking, and coping with frustration by analysing learning outcomes of their peers and formulating feedback. Students are more involved in their assessment process when they have a larger responsibility [3, 4]. Peer assessment of processes creates the opportunity to provide students with extensive feedback that cannot be given by teachers. Student who give feedback to a number of peers and, therefore, also receive feedback from a number of peers are faced with a wide range of feedback statements that represent more than one interpretation, as would be the case of teacher feedback. Student feedback is more open to discussion than teacher feedback [5]. In this study, peer feedback as giv-

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en in a project work context is analysed and compared with peer feedback of the previous year, in which the demands for students were less extensive. This 15-ECTS course aims to emulate real-life situations faced by software engineers. Its main aim is to enable students to acquire skills related to: (1) development of a software product, system or service in a team, and (2) analysis of the potential business value of the product. By working in large teams the students learn many professional skills, such as communication, leadership, responsibility, HR management, project management, and marketing. The project is carried out within a strict time limit. 61 students, divided in 5 teams participated in the study. All teams had to define and describe five peer assessment criteria, decide on their relative weights and define five benchmarks. Feedback comments were analysed using the categories Strengths, Weaknesses, Remark on specific task, Remedial action, General encouragement, Justification of grade, Transferable skills, Not enough information and No comments.

At four different moments, a given student had to assess, through the web-based tool, each of their peers on all the five criteria, by assigning a grade between 0 and 100 and writing a justification. This led to 4,369 justifications. Looking at the distribution of the comments over the categories, the Strengths category has the highest frequencies (>65%). When comparing the four assessment moments through a one-way analysis of variance, no significant differences were found between the relative distributions over the categories. A one-way ANOVA between the five teams revealed significant differences.

The most important conclusion of this study is that the peer feedback system enabled an amount of feedback that is impossible to provide by teachers. Students wrote more than 4,500 comments, receiving at least 60. The distribution over the categories is still rather unbalanced and using the identification of strengths as the major category of feedback comments leaves out opportunities for improvement. Only at the last assessment moment, when frustration and irritation with peers who work less, have taken over, students feel at ease to make critical comments. Making more balanced comments that also take into account aspects of improvement will contribute to reflection on and improvement of their own work [1]. ■

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