

Evaluation of group work in the Chemistry and Biotechnology laboratory

Case study

Carla A. Santos and Ana Gabriela Gomes

Departamento de Engenharia Biológica e Química
Escola Superior de Tecnologia do Barreiro, IPS

Barreiro, Portugal

carla.santos@estbarreiro.ips.pt ;

gabriela.gomes@estbarreiro.ips.pt

Abstract — In the laboratory classes of Biotechnology Bachelor course, students are joined as groups of 3 to 5 members to execute several laboratory protocols and attain measurable physical results. There are four main phases for each weekly task: 1st preparation before the lab class, 2nd organizing the material inside the lab class, 3rd executing methodology and 4th elaborating the technical written report. All these phases are performed as a team work in each group, which must organize themselves to attain the objectives. In order to better understand how each group worked, students were asked to voluntarily answer a quiz about Self and Peer assessment. The method applied was the online Sparkplus [1] which had four categories: Efficient functioning of group, Leadership, Number crunching and Writing report. Each category had 3 to 6 criteria that students had evaluated in a slider scale from Well Below Average to Well Above Average.

work inside their group. A small number of cases need to increase these skills and so the application of this methodology is necessary.

From the teacher's point of view the results offered a validation of the teamwork perception obtained from observations during classes and, in certain cases, the results added new information about the issues a group of students faced during the phases not performed in classes.

The application of this methodology was just informative, as it was a preliminary stage, and did not influence the individual grade of the students. The engagement of students in undergraduate engineering and technology courses benefit from this simple and quick quiz by enhancing the judgment skills of the individuals regarding teamwork [2]. It was also an opportunity, in a technology course, for the students to develop the collaborative skills, as group work is a mandatory competence.

Since students said that it was unfair to have an equal reward when there was an unequal contribution to the teamwork [3], using a confidential and systematic method like this quiz avoids such situations. This and other benefits may be perceived in the academia.

Keywords — Sparkplus; Laboratory group work; Self and Peer assessment; judgment skill; teamwork.

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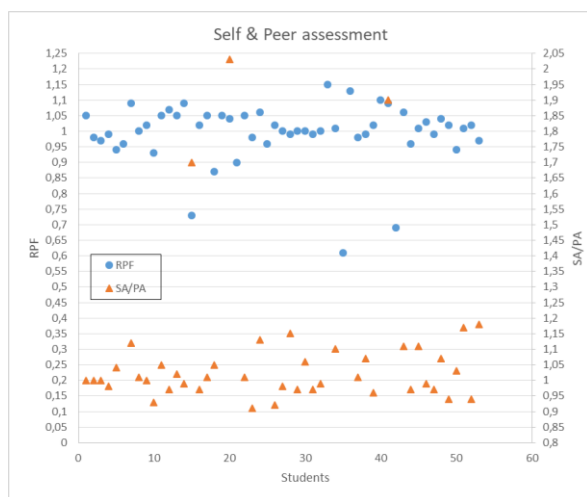


Figure 1. Relative Peer Factor (RFP) indicate hetero-evaluation and SA/PA indicate self-evaluation of students.

The results from 86% of the 51 students enrolled in the classes until the end of the term were analyzed. Self-evaluation (SA/PA) revealed 3 cases of overvalued students which had a SA/PA higher than 1.2 (Figure 1). Hetero-evaluation (RFP) showed 4 cases of low contribution to the group work which is shown by a relative peer factor lower than 0.8, but the majority of students were between 0.85 and 1.1. These results indicated that the majority of students were self-aware and conscientious of each member contribution to group