Mitigating social loafing in collaborative learning

Danja R. Sonntag, *LTH*

Abstract— **Collaborative learning is a pedagogical approach that emphasizes group work and project-based learning to promote problem-solving skills and deeper understanding. However, collaborative learning also presents challenges. One common issue is social loafing, whereby people contribute less to a group effort than they would if they were working alone. In more serious cases, this leads to free-riding, where some students do little or no work but still receive credit for the group's efforts. At the Faculty of Engineering at Lund University, group-based projects are a central part of most courses, especially in the later stages of study. This article examines strategies to minimize social loafing and prevent free riding in collaborative learning environments.**

Index Terms—**Collaborative learning, social loafing, free-riding**

I. Introduction

COLLABORATIVE learning is a pedagogical approach that integrates group work and project-based learning to encourage collective problem-solving. Research shows that group work positively influences student learning and supports deep learning (see, e.g., Visschers-Pleijers et al., 2006). In addition, collaborative learning offers social benefits (e.g., promoting understanding of diversity), psychological benefits (e.g., increasing students' self-esteem), and academic benefits (e.g., promoting critical thinking skills) (see, e.g., Laal and Ghodsi, 2012).

At LTH, most courses, particularly in the later stages of the study programs, incorporate group exercises (Hellström et al., 2009). Despite its advantages, collaborative learning also poses challenges. One such issue is social loafing, defined by Latané et al. (1979) as "a decrease in individual effort due to the social presence of other persons". In extreme cases, this leads to free-riding, where students receive rewards for little effort. This problem is often intensified when group members are assessed collectively rather than individually (Kench et al., 2009). This article outlines a range of pedagogical approaches aimed at mitigating social loafing and free-riding, and discusses their application across various courses offered at the Department of Industrial and Mechanical Sciences.

II. Concepts to minimize social loafing

Organizational factors play a key role in shaping the dynamics of group work and can significantly influence the extent to which students engage meaningfully. In minimizing social loafing, one recommendation is to use small group sizes of typically three to four students to enhance individual accountability (see, e.g., Benning, 2024). Another strategy discussed in the literature is random group formation, which helps to prevent pre-existing dynamics that can lead to unequal effort distribution (Swaray, 2011; Tejada et al., 2016; Rajaguru et al., 2020). Swaray (2011) further recommends incorporating randomness not only in group formation but also in presentation settings. Specifically, he suggests randomly selecting both the presenting group and the individual presenter to ensure that all students stay actively engaged throughout the project and are equally prepared to represent their group's work.

Another widely discussed strategy in the pedagogical literature for minimizing social loafing is the use of self and peer assessments (see, e.g., Conway et al, 1993; Goldfish, 1994). Self-assessment involves students evaluating their own contributions, while peer assessment refers to students assessing the work of their group members (Hanrahan and Isaacs, 2001). Goldfish (1994) emphasized the importance of combining both methods, noting that exclusive reliance on peer assessment can lead to inconsistencies, such as one student being overly generous while others are more conservative, potentially penalizing the generous student. Including self-assessment helps to balance this effect.

Peer assessment can be conducted holistically or through a category-based evaluation (Lejk and Wyvill, 2001). In holistic assessments, students assign a single score reflecting the overall contribution of each of their group members, whereas in a category-based assessment, multiple dimensions are evaluated, which are then aggregated into a final score. Despite its benefits, such as reducing the possibility of social loafing and contributing to student learning, peer assessment can be perceived as stressful or uncomfortable by students (see, e.g., Hanrahan and Isaacs, 2001; Wanner and Palmer, 2018; Stančić, 2021). To address this, clear guidelines and instructions are essential (see, e.g., Kench et al., 2009; Hanrahan and Isaacs, 2001; Wanner and Palmer, 2018).

II. Case study and results

To evaluate the effectiveness of minimizing social loafing and free-riding, several approaches discussed in the previous section were partially implemented over a two-year period across three advanced-level courses offered at the Department of Industrial and Mechanical Sciences. All courses involved group work in teams of three to four students, aligning with recommendations in the literature (e.g., Benning, 2024). Although small group sizes are generally considered to be beneficial, they did not eliminate social loafing on their own.

Danja R. Sonntag (e-mail danja.sonntag@iml.lth.se) is a senior lecturer at the Department of Industrial and Mechanical Sciences at LTH.

Random group formation, as suggested by Rajaguru et al. (2020), was tested in one course. Although this method promotes diversity in skills and backgrounds, it also introduces challenges. Students expressed dissatisfaction, particularly in the CEQ evaluations, with comments such as: "*The fact that group members do not help out needs to be addressed. For example, allowing people to decide on the group themselves.*" Random allocation of students into groups resulted in mismatches in schedules and ambition levels. Due to the challenges observed during implementation and student dissatisfaction, this approach was not continued in subsequent courses.

A random selection of presenting groups was also trialed. Although the groups were free to choose the presenter(s), students preferred pre-assigned presentation slots to being able to better prepare. Feedback indicated that a random selection of presenting groups increased pressure rather than reducing loafing, and it was therefore discontinued.

In one course, self and peer assessment was introduced across four assignments and a structured form, adapted from Boston University and based on Goldfinch (1994) and Lejk & Wyvill (2001), was used. A category-based assessment was used, which included eight rubrics covering aspects such as participation, time management, and contribution to the assignment deliverables. Students rated each category and were encouraged to justify their scores with comments. Although the peer assessment was not part of the formal grading, students were informed that significant discrepancies could result in an instructor's intervention. Two key observations could be made:

1. Some students or entire groups gave uniform scores across all categories, undermining the purpose of the assessment.
2. The comment section was more informative, especially when students explained divergent scores. These comments ranged from minor issues (e.g., arriving late to meetings) to more serious concerns (e.g., lack of participation), helping the instructor identify potential problems.

In addition, a survey was conducted among the course participants to receive further feedback about their perception of the peer assessment. The results are presented in Figure 1. Although the survey showed that the self and peer assessment supported a critical reflection on students' own performance, it also showed that it did not increase engagement in the group work. Based on these experiences and student feedback, such as "*It required too much evaluation and was difficult to assess thoroughly*", it was decided that the peer assessment would not be further used as a tool to minimize free-riding. However, it should be noted that, for example, using fewer categories or a holistic evaluation could be an alternative, as well as making the peer assessment part of the actual grading.

Instead, peer assessment was replaced in future courses with a critical reflection task, where students were asked to reflect on their group work, their own contributions, and areas for improvement. This reflection was graded and yielded several benefits: fewer reported group issues, deeper student engagement in the group projects, and valuable insights for the instructors into group dynamics. In cases of imbalances, instructors could schedule follow-up meetings to discuss potential imbalances and solutions with the groups. Thus, critical reflection, an important aspect of learning, had a stronger positive effect than peer assessment, and was perceived by students as less time-consuming and stressful.

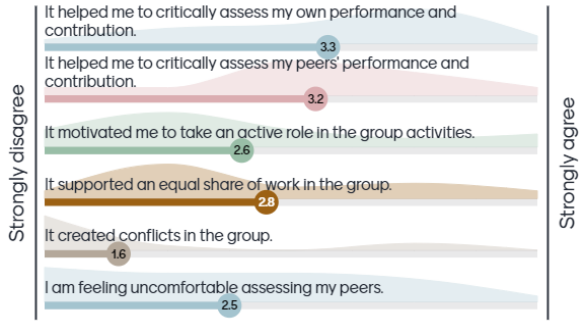

Figure 1. *Student evaluation results regarding peer assessment*

IV. Conclusion

Although various concepts have been discussed in the literature to mitigate social loafing, it remains a challenging problem, particularly in collaborative learning, where assessment is largely based on group work.

References

Benning, T. M. (2024). *Reducing free-riding in group projects in line with students' preferences: Does it matter if there is more at stake?*. Active Learning in Higher Education, 25(2), 242-257.

Conway, R., Kember, D., Sivan, A., & Wu, M. (1993). *Peer assessment of an individual's contribution to a group project*. Assessment & Evaluation in Higher Education, 18(1), 45-56.

Goldfinch, J. (1994). *Further developments in peer assessment of group projects*. Assessment & Evaluation in Higher Education, 19(1), 29-35.

Hanrahan, S. J., & Isaacs, G. (2001). *Assessing self-and peer-assessment: The students' views*. Higher Education Research & Development, 20(1), 53-70.

Hellström, D., Nilsson, F., & Olsson, A. (2009). *Group assessment challenges in project-based learning–Perceptions from students in higher engineering courses*. In 2: a Utvecklingskonferensen för Sveriges ingenjörsutbildningar, 2009.

Kench, P. L., Field, N., Agudera, M., & Gill, M. (2009). *Peer assessment of individual contributions to a group project: Student perceptions*. Radiography, 15(2), 158-165.

Laal, M., & Ghodsi, S. M. (2012). *Benefits of collaborative learning*. Procedia-social and behavioral sciences, 31, 486-490.

Latané, B., Williams, K., & Harkins, S. (1979). *Many hands make light the work: The causes and consequences of social loafing*. Journal of personality and social psychology, 37(6), 822.

Lejk, M., & Wyvill, M. (2001). *Peer assessment of contributions to a group project: A comparison of holistic and category-based approaches*. Assessment & Evaluation in Higher Education, 26(1), 61-72.

Rajaguru, R., Narendran, R., & Rajesh, G. (2020). *Social loafing in group-based learning: student-created and instructor-created group perspectives*. Education+ Training, 62(4), 483-501.

Stančić, M. (2021). *Peer assessment as a learning and self-assessment tool: a look inside the black box*. Assessment & Evaluation in Higher Education, 46 (6), 852-864.

Swaray, R. (2012). *An evaluation of a group project designed to reduce free-riding and promote active learning*. Assessment & Evaluation in Higher Education, 37(3), 285-292.

Tejada, F. R., Fasanella, D. R., Gong, T., & ElFadaly, M. (2016). *The effect of non-randomized and randomized teams on students' opinions of team assessment*. Currents in Pharmacy Teaching and Learning, 8(6), 889-895.

Visschers-Pleijers, A. J., Dolmans, D. H., De Leng, B. A., Wolfhagen, I. H., & Van Der Vleuten, C. P. (2006). *Analysis of verbal interactions in tutorial groups: a process study*. Medical Education, 40(2), 129-137.