Assessing the Individual in Team Based Design Projects

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Motivation

- Team based design projects allow the assessment of a broad range of graduate attributes, such as teamwork, communication, professionalism, ethics, project management, problem solving and design.
- Most often when we grade the outputs of team-based projects, we assess the team as a whole; assigning one grade to the entire team.
- Understanding the learning outcomes of individuals in these team environments is important both from an accreditation standpoint, but also from a student motivation standpoint.
- By implementing individual assessment, we believe issues related to social loafing can be reduced, and communication between team members improved.

Methodology

- In our second year mechanical engineering design course, we engage students in a term long design project
- Students work in teams of 4 to complete a design challenge
- Previous iterations of this course utilized only team based assessments
- Based upon previous research in individual assessment techniques [1], we added individual design journals and oral examinations
- Design journals were implemented to encourage student reflection on the design process and monitor engagement [2].
- Oral examinations were introduced to the milestone presentations in order to evaluate the individual’s knowledge of the desired learning outcomes.
- Peer evaluations were used to monitor teamwork, communication and cohesiveness

Methodology continued

- Addition of the individual assessments appeared to improve the communication between team members.
- There was a little to no change in the overall perceived contributions from team members.
- The design journals became a large logistical burden for the course directors and TAs. Additionally, the quality of the entries varied greatly.
- Training in how to write entries is necessary.
- Oral examinations were a useful and relatively easily applied tool in evaluating the knowledge of individuals in a team, however more work needs to be done to determine the best method of applying this technique and assessing the outcomes.

Results

- To evaluate the effect that individual assessments had on teamwork, we compared peer evaluation from this year’s course with previous iterations of the course which had only team evaluations
- Peer evaluations were conducted via an online tool [3]. Previous iterations consisted of evaluations from 140 students over 2 years. Current course contained 94 students.

Conclusions

References


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