

RECIPROCAL PEER TEACHING FOR PROBLEM-SOLVING TEAMS IN A SENIOR-year SCIENCE COURSE

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BACKGROUND

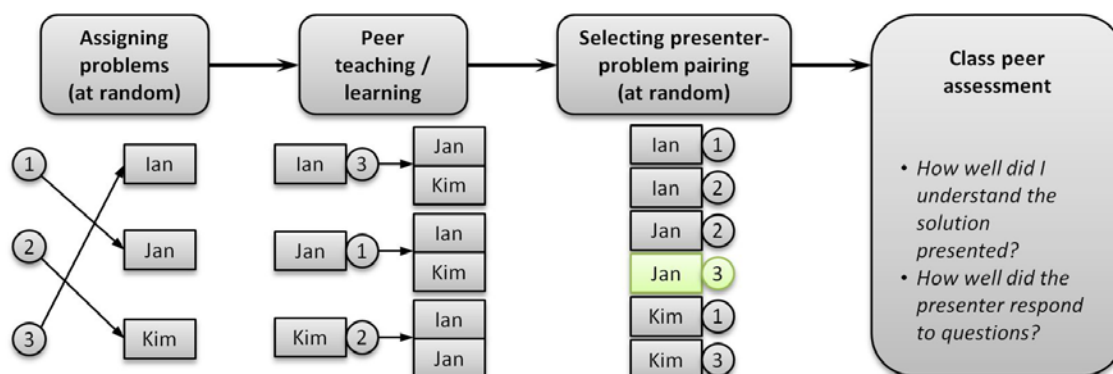
The transition from junior to senior year physics can require a substantial increase in problem-solving skills. Reciprocal Peer Teaching (RPT) was trialled as a means to improve student engagement and performance in a challenging subject (Advanced Mechanics). In RPT, each student alternately acts as teacher and learner in a small group environment. With this dual role, students benefit from both the preparation to instruct as well as receiving and critiquing instruction. RPT can also lead to higher motivation and engagement levels as success relies on inter-dependence of peers and individual accountability in the team (Rittschof & Griffin, 2001).

AIMS

The project aimed to enhance student engagement in a senior-year physics subject by designing and implementing a group assignment that adapts the RPT model of learning.

DESCRIPTION OF INTERVENTION

The design of the RPT-based group assignment is illustrated below.



Each student (indexed Ian, Jan and Kim) in a self-selected group of three was randomly assigned mechanical mathematical problems (indexed 1-3). Every group member was tasked with instructing the other group members in the solution to their problem. A student-problem pairing was randomly chosen for immediate presentation of the solution to the entire class, with the stipulation that the presenter had to be the 'learner' rather than the 'teacher' for the selected problem. The presentations were peer-assessed, which added a further element of peer learning in a larger-group environment.

DESIGN AND METHODS

In 2014, students ($n = 12$) were surveyed at the end of the semester to evaluate their learning experience in the RPT group assignment. The survey comprised of a set of five-point Likert score statements (1 = strongly disagree to 5 = strongly agree) and a focus group. Human ethics approval (UTS HREC REF NO. 2014000630) was obtained for this study.

RESULTS

Students reported that the small group learning environment *enhanced their learning* (4.45 ± 0.19), in part because it *brought together different skills and understandings* (4.33 ± 0.13) and because it was *enjoyable* (4.36 ± 0.19). The benefits of RPT were manifested in responses to *Being responsible for teaching other students made me prepare more carefully* (4.42 ± 0.18) and *Through teaching my peers, I felt I mastered the problem and understood it more deeply* (4.17 ± 0.22). However, the *productivity of peer learning* was deemed only moderately high (3.42 ± 0.25).

CONCLUSIONS

The results of the survey and the focus group indicate enhanced engagement with the subject material following implementation of RPT for the group assignment. The repeated cycle of learning and teaching provided the motivation to understand the material in-depth through a sense of accountability for group success. Further work is required to assess the impact of RPT on academic performance.

REFERENCES

Rittschof KA, & Griffin BW (2001) Reciprocal Peer Tutoring: re-examining the value of a co-operative learning technique to college students and instructors. *Educational Psychology*, 21: 313-331.

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