
An attempt to enhance the quality of cooperative learning through peer assessment

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Abstract

Cooperative learning has been found to yield many benefits to students who engage in it. Not only does it assist students in acquiring knowledge, but it also helps them to develop cognitive and social skills. In institutes of higher education, cooperative learning is becoming a common feature in tutorial activities and course assignments, especially in teacher education programs. One of the weaknesses in the use of cooperative learning and using the groups' products as part of course assessment is the awarding of equal grades to all members of the group. Participation of students in cooperative work varies, as some put in a lot of effort while others do the minimum. In this paper we report the effect of introducing peer assessment as a means to enhance the participation of group members in cooperative work. The views expressed by the students who participated in the exercise indicate that the introduction of peer assessment achieved the desired effect.

Introduction

The Singapore education system is undergoing rapid changes. In order to meet the new initiatives introduced by Singapore's Ministry of Education in schools, teacher education is also currently undergoing various changes in the area of curriculum and assessment at the National Institute of Education, Singapore. The changes in the curriculum and assessment modes are a move towards providing student teachers with the opportunity and autonomy to take greater responsibility for their learning. In addition to these ongoing changes, we feel that there should be changes in the way student teachers learn at the Institute, to ensure that they have first-hand experience with learning skills, which they can impart when they are in schools as educators. With this in mind, we introduced a cooperative learning approach with peer assessment into the elective module we were teaching at the Institute.

Cooperative learning

There are many potential benefits to encouraging cooperative learning:

1. Cooperative learning helps to build higher-level cognitive skills as well as interpersonal skills (Michaelsen 1992, cited in Freeman 1995).
1. Cooperative learning helps students to develop interpersonal skills (Slavin 1987) such as: getting to know and trust team members; communicating effectively and clearly; providing support and challenging fellow team members; and engaging in constructive conflict resolution (Johnson & Johnson 1994). In addition, these social skills may help students to acquire a sense of social responsibility (Vermette 1988).
1. Cooperative learning is beneficial in a multiracial society, as in Singapore; findings by Pate (1988) suggest that people of different ethnic backgrounds, working together on a task, problem or goal, develop positive feelings as well as mutual respect for each other. In the long run, this could serve to promote positive feelings and better understanding among the students from different ethnic groups.
1. A cooperative learning environment has a positive impact on student achievement (Ream 1990).
1. Cooperative groups have been shown to obtain significantly higher achievement scores compared to individualistic groups, in a post-test (Sherman & Thomas 1986).
1. A study has shown that students in a cooperative group can learn material better than students who attempt to learn it individually (Yager et al 1985).
1. The experience of being in a cooperative group also gives rise to a feeling of having achieved success, which in turn enhances self-esteem. Students thus look forward to coming to school and meeting

their group (Slavin 1980). This positive feeling towards school is present among students involved in a cooperative group as compared to others who are not involved in a cooperative learning experience (Slavin et al 1985).

1. Students learning cooperatively become active learners who want to contribute and discuss ideas with teachers (Davidson & O'Leary 1990).
1. Students in a cooperative group assist each other to stay on task by discussing the problems that other members in the group are facing (Johnson & Johnson 1981; Salend & Sonnenschein 1989).
1. Students in a cooperative group engage in higher-order thinking (Slavin 1987), because they need to reorganise their thoughts and explain concepts to the other team members.

Although significant benefits arise from incorporating cooperative learning, there are also potential negative outcomes. Some of the negative effects are: the formation of dysfunctional groups; an inability to work together to deliver the desired outcomes of the task; and a lack of democracy within a group to form a consensus as to how a task should be carried out (Beckman 1990).

However, in view of the many advantages cited by researchers, there is now a strong movement to use cooperative learning in education. At the National Institute of Education (Singapore), more and more courses engage students in cooperative learning tasks. We, the authors, also use cooperative learning strategies in delivering our courses.

Peer assessment in cooperative learning

Researchers have cited many benefits of peer assessment, for instance: it enhances the development of critical faculties (Searby & Ewers 1997; Stainer 1997); promotes students' learning (Michaelsen 1992, cited in Freeman 1995); and encourages cooperative learning as opposed to competitive learning (Lejk & Wyvill 2001; Orsmond et al 1996). Students engaged in cooperative learning using peer assessment have indicated that they have been encouraged to participate actively and have found it an interesting experience (Lourdusamy & Divaharan 2000). In fact, the students expect their peers to take the group activity seriously and thus develop trust in their group members, in addition to the rewarding experience of cooperative learning with peer assessment (Purchase 2000).

One of the concerns of introducing cooperative group work in institutions of higher education is the students' concern for the level of fairness of assessment, as all group members are awarded the same mark (Conway et al 1993). This is a flaw that needs to be addressed, as students' behaviour and attitude to learning are highly influenced by the assessment system. One way of

ensuring student involvement is by rewarding their participation and contribution (Yueh & Alessi 1988).

Taking this into consideration, we decided to include peer assessment in one of our courses, to reward the students for their efforts. Besides being rewarding, we agree with Conway et al (1993), Goldfinch (1994) and Freeman (1995) that peer assessment is one way of controlling 'free-riders' in group-related assessment tasks. On the other hand, it has been found that peer assessment causes discomfort in students, as they perceive it as criticising their friends (William 1992). Students in William's experiment suggested that the situation could be improved by providing streamlined marking guidelines. We considered this suggestion in designing our intra-group peer assessment.

In summary, Keaten and Richardson (1993), Falchikov (1995) and Pond et al (1995) claim that there are a number of advantages to introducing peer assessment:

1. The students are motivated and accountable for doing homework before class.
2. Students gain an increased awareness of the importance of group dynamics.
3. The presence of free-rider members within groups considerably decreases.

The decision to go ahead and introduce peer assessment for this cooperative learning group also stems from the fact that people like to be recognised for their achievements, a fact that Yueh and Alessi (1988) claim can help foster self-esteem. Student teachers need to know that each of them, in their own unique way, can contribute to the success of the group. This helps the student teachers to realise their potential.

In our experience, student teachers at the National Institute of Education generally find cooperative group work for their tutorial presentations interesting and meaningful, as it gives them the opportunity to

1. translate theories they are exposed to in lectures into plans of action; and
2. exchange ideas with their class peers.

However, we had noticed that participation of students in cooperative group tutorial work varies, as some students put in a lot of effort while others do the minimum. The success element of cooperative group work depends on positive interdependence and individual accountability. For positive interdependence, there must be awareness among group members that their success is linked to that of others. For individual accountability, each group member has to be accountable to do his/her part and help others complete the group task successfully.

So, it was decided that for the module we were teaching, the student teachers would be assessed for tutorial participation and presentation. Using this approach, we hoped to engage the students fully in the tutorial activities. We also decided to involve the students in the assessment process for both the group presentations (inter-group product evaluation) as well as the contribution of fellow group members to the success of the group's work (intra-group process evaluation).

This was based on the assumption that since fellow students would know what each group member had contributed to the task, they would be in the best position to assess that contribution. This procedure is a departure from the norm in assessment practices at the National Institute of Education (Singapore), where students are not commonly involved in assessing peers' work. Though this procedure is quite widely practiced in North America and Europe, we were not sure how our students would receive it.

The aim of this exercise was to find out whether the introduction of peer assessment improves the quality of participation in cooperative learning, as perceived by the students in one of our courses.

Method

Participants

Sixty-nine Post-Graduate Diploma in Education (PGDE) students who enrolled for the elective module 'Instructional strategies and learning effectiveness' participated in this exercise. The PGDE is a one-year professional training program. The average age of the students is about 24 years.

Procedure

At the beginning of the course we briefed the students on the procedure for peer assessment with respect to the cooperative work they would be doing for the tutorials. They were also told that only about 20% of the course assessment marks would be involved in this process. The rest of the assessment would be standard essay assignments evaluated by their tutors. Their consent was obtained. They were willing to try and provide feedback.

For this exercise the students were divided into groups of five in the tutorial groups. They were allowed to form their own groups. The rationale for this was that, on some occasions, they were also required to meet outside class hours to prepare for the tutorial. They were assigned five tutorial tasks that were related to the theoretical component in lectures. The student teachers were required to work in their groups to prepare for class presentations on the assigned tasks.

Two forms of peer assessment were operational during the tutorial presentation. First, the other groups assessed each group's presentation (inter-

group product evaluation) based on evaluation criteria for each task. The tutor also evaluated the presentations independently. Second, students collectively assessed the contribution of their group members towards the tutorial task, through negotiation (intra-group process evaluation). An assessment guide and a scoring rubric were provided for this purpose (see Appendix).

At the end of the course, the score sheets of the groups were collected and the marks for each student were computed. The students were also asked to express their views and feelings about the peer assessment exercise. We prepared a special form for this purpose. The views of the students were gathered in this way. The students did not relate this task to the course assessment in any way, but expressed their views about their experiences with this procedure. The students were aware that their comments might be used by their tutors for publication purposes.

Data analysis

The views expressed in the feedback forms were analysed qualitatively to get an impression of the student teachers' experiences with peer assessment and the effect of peer assessment on the quality of their participation in cooperative work.

Results and discussion

In general, the students were positive about cooperative group work for tutorial tasks and the use of peer assessment as a monitoring strategy. The views they expressed in their written comments indicate that peer assessment did help to encourage and accentuate the benefits of cooperative group work for these students. Students perceived the task of assessing the group presentations of their peers as interesting, acceptable and a task they liked to be involved in. However, they also found the task somewhat difficult and sometimes felt awkward in having to judge the performance of their peers - a view similar to that expressed by the subjects in William's study (1992).

On the whole, students' views were positive. These student teachers felt that peer assessment motivated them to work better in their groups. In addition, it provided them with a sense of achievement and encouraged them to be more responsible for their own learning, thereby further developing their higher-order thinking skills, by being more critical of themselves and their peers. Some student teachers found it to be a fair system of assessment. They felt that the system encouraged them to work cooperatively and assisted them to improve their interpersonal skills. It helped them to stay focused on the common goal set by the group members and to stay on task. Some of the views expressed by student teachers are as follows:

Peer assessment is good, for it encourages all the team members to make an effort to contribute during discussion. And it also fosters team spirit to perform better, as other teams are assessing our team.

The idea of peer assessment is basically good. It gives impetus to every member in the group to participate and not be a free rider. However, it is the idea or method that takes some getting used to, particularly in an Asian culture like ours.

The peer assessment adopted for this module is rather an interesting and refreshing way of grading. This is the first module where I have encountered such an assessment. It is still new but I feel it is rather successful as it helps to motivate all the group members to contribute to meet the objective of a group work.

For inter-group evaluation, we discuss about [sic] the performance of other groups, which I think is good. In addition, it forces us to pay more attention when others are presenting. This method of evaluation is quite interesting.

Some student teachers felt awkward, especially with the intra-group peer assessment. This was especially the case when students had to assess their fellow group members in a transparent system. The following comments typified their feelings:

As members have known each other too well and work as a group, assessing each other is difficult and non-objective.

The group formed consists of self-selected members. Hence, working relationship [sic] is very good. Therefore peer assessment is often difficult, invalid and unnecessary.

A number of student teachers suggested that intra-group peer assessment of the contribution of fellow group members should be done in confidence and not openly.

Peer appraisal should be done in confidence. Open discussion leads to awkwardness.

Everyone feels awkward and does not want to offend any of the group members. May I suggest that at the end of every tutorial, each member be given a piece of paper and in confidence grade other group members.

To make it less awkward when it comes to intra-group assessment, why not give each member an assessment sheet and evaluate group members individually.

Conclusion

The aim of this exploratory study was to assess the perceptions towards peer assessment of student teachers who were enrolled in an elective education module, as a means to improve the quality of participation in cooperative learning. The views expressed by the student teachers indicate that their involvement in peer assessment had encouraged them to participate actively in the tutorial activities. Also, these student teachers perceived peer assessment of group presentation as non-threatening, interesting and acceptable.

However, student teachers felt awkward participating in the face-to-face assessment of fellow group members. In this situation, they found it difficult to give unbiased assessment. This is consistent with the findings of William (1992) and Keaten and Richardson (1993).

With the introduction of cooperative learning together with peer assessment, the students developed several learning skills. The student teachers' perceptions and views suggest that they were able to develop their communication skills with their group members by providing support as well as challenging their team members to realise their potential: a finding also observed by Johnson and Johnson (1994). In addition, the students felt a sense of responsibility working in a group, as reflected by Vermette (1988). With cooperative learning, the student teachers felt that they were able to set common goals and to be on task to achieve these goals through the help of fellow group members, who reminded each other of the targets. This is similar to the observation made by Salend and Sonnenschein (1989).

As suggested by past research, cooperative learning can be encouraged in students through a system of rewarding their participation and contribution (Yueh & Alessi 1988). We translated this into practice by introducing both inter-group and intra-group peer evaluations into an Asian context, where the learning environment is quite different from that of North America and Europe: it is rather competitive. Noting the student teachers' perceptions and comments, we suggest that peer assessment is a constructive component that can contribute to the successful implementation of cooperative learning.

Views expressed by student teachers involved in this exercise were synonymous with the advantages of introducing peer assessment suggested by past researchers like Keaten and Richardson (1993), Falchikov (1995), Pond et al (1995) and Lourdusamy and Divaharan (2000): peer assessment motivates students and makes them more accountable for their contribution to group work. In addition to raising the awareness of group dynamics, it reduces the presence of 'free-riders' within groups.

We would thus encourage the implementation of peer assessment for cooperative learning, especially in higher learning institutions where students are mature enough to take responsibility for their own learning. However, like William (1992), we suggest that the intra-group assessment be done as a

confidential exercise, as a large number of students in our study, as in his study, were not in favour of open, face-to-face assessment.

We would also like to point out that this was not a rigorously designed experimental study, but a report of our attempt to introduce peer assessment into a context where it is not a normal practice. A carefully designed study may shed more light on the usefulness of peer assessment to enhance the participation and quality of involvement in cooperative work.

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Appendix

Criteria for assessment
The person attended out-of-class meetings held for discussing the tutorial assignments.
The person actively participated during the out-of-class tutorial discussions.
The person came prepared for the tutorial discussions.
The person actively participated during in-class group discussions.
The person actively contributed ideas for the completion of the tutorial assignments.
The person showed a genuine concern for both the task and the welfare of the group.
The person played a part in developing input from the other team members for the successful completion of the tutorial assignments.

Scoring rubric	
10.0-9.0	outstanding contribution and leadership
8.5-7.0	superior contribution
6.5-5.0	moderate contribution
4.5-3.0	occasional contribution
2.5-1.0	present but no contribution