Peer Ratings in Blended Groups and Mathematics Performance

Edgar Julius A Lim

***Abstract*— The study was conducted to see if there is a difference in the performance of students in their achievement test compared to the ratings given by their group members. It further wanted to solve the problem of "hitchhikers", those members who don't do anything, no contribution at all, but get the same grade as their group mates who have been doing all the tasks, in their group activities. Experimental research design was utilized where the subjects were randomly assigned to groups of male and female. The subjects of this study was composed of 12 blended groups**

Statistics showed that there was no significant difference in the peer ratings given by male to male and female, no difference also of peer ratings given by female to male and female. There was no significant difference too on the peer rating given to male by both male and female, but it turned out that there was a significant difference in the peer rating given to female by both male and female students. However, significant differences were revealed on the result of the achievement test of both male and female to the peer ratings given by male and female members of the group. These results could be attributed to the subjective rating of their peers, the 'close friend' factor and the 'give me 95, I'll give you 95' habit.

***Keywords*—Blended groups, Mathematics performance, Peer rating,**

I. Introduction

The development of effective teaching strategies to improve the quality of learning in the tertiary level has been constantly increasing in the recent years (Lee, et. al., 2012). College professors and instructors have been trying and using varied strategies that will make their teaching more effective.

Since the 1960s, there has been growing and sustained interest in small-group learning approaches at the school level and in higher education. (Davidson, 2014). According to Dingel (2013), one of the commonly used strategies nowadays is the cooperative learning which has gained popularity in higher educational institutions. However, the giving of grades fairly to all group members proportionate to their contributions remains a problem.

Another problem worldwide in group learning is the existence of "hitchhikers" (Kaufman, et, al., 1999).They are the group members who don't do anything, no contribution at all, but get the same grade as their group mates who have been doing all the tasks. One way to avoid hitchhiking is to use peer ratings to evaluate individual performance of group members and to give rating to the group members individually based on their average ratings.

Thoms (2010) and Lee (2012) said that different rating systems have been used in all educational settings. In any academic environment instructors may use peer ratings as a system to get feedbacks across group members in different group requirements. He believed that a rating system can offer a new measurement to learners' engagement and social interaction.

According to Lee (2012), peer evaluation lacks credibility as perceived by most teachers that's why this form of evaluation has not been used extensively. Although peer rating is effectively motivating students has been considered less reliable than teachers' evaluation for they evaluate different things.

It is in this light that this study is investigated, to find if there is difference in student evaluation and teacher evaluation.

II. Statement of the Problem

The study would like to find the difference of peer ratings in blended groups and mathematics performance of Elementary Education students.

Specifically, this study seeks to answer the following questions;

1. What is the mean of the peer ratings given;
   a. by male to male members and by male to female members?
   b. by female to male members and by female to female members?
2. Is there is a significant difference in the peer ratings given;
   a. by male to male members and by male to female members?
   b. by female to male members and by female to female members?
   c. to male members by male and female group members?
   d. to female members given by male and female member?
3. What is the performance of the students in their Achievement test?
4. Is there a significant difference in the mathematics performance of
   a. Male students and peer ratings given male member?
   b. Male students and peer ratings given female member?
   c. Female students and peer ratings given male member?
   d. Female students and peer ratings given female member?

Manuscript received June 8, 2017.

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https://doi.org/10.17758/URUAE.UH09171014

III. Conceptual Framework

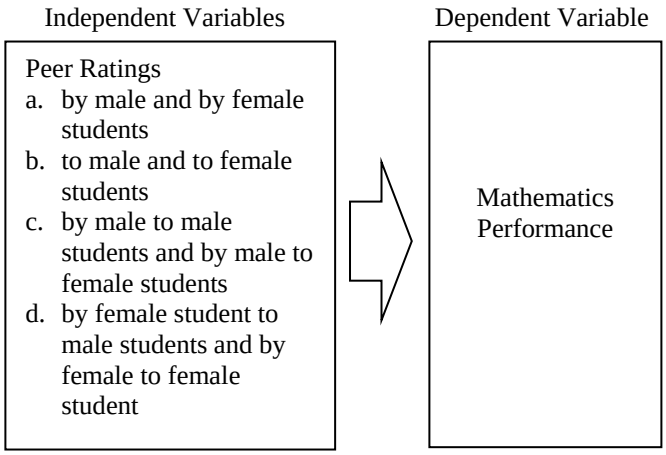

Fig 1. The Conceptual Framework of the Study

Fig. 1 presents the conceptual framework of the study being undertaken. It presents the independent variables – peer rating given by and to the respective genders. The dependent variable considered is the mathematics performance which we want to find out if it has relationship with their team members' ratings.

IV. Scope and Limitation of the Study

This study will be conducted in Eastern Samar State University College of Education during the second semester of School Year 2016 – 2017. The subjects of the study are the three sections of third year Elementary Education students who are enrolled in Problem Solving.

The subjects who are enrolled is composed of very small number of male students, therefore, only those group with equal number of male and female students are included in the study.

V. Methodology

A. Research Design

This study will utilize the quasi – experimental research design. It will find the difference of peer ratings in blended groups and mathematics performance of Bachelor Elementary Education students.

B. Research Locale

The study will be conducted in Eastern Samar State University College of Education, Borongan Campus.

C. Subjects of the Study

The subjects of this study is composed of 12 blended groups with four members each, 5 blended groups from the first section, 3 and 4 blended groups respectively from the second and third sections. These are the only groups with both male and female students as members.

D. Sampling Technique

Random sampling will be used to identify the female students who will be included in this study and total enumeration will be used for male students due to the limited number of enrollees. A total of 48 students in the three sections will be included in the different four – member blended groups.

E. Research Instrument

The study will utilize a researcher-made group learning activities and mathematics achievement test. A Peer Rating instrument used by Kaufman, et. al., (1999) in their study "Peer Ratings in Cooperative Learning Teams" will be utilized in rating the performance of their fellow group member.

F. Validation of Instruments

A dry-run will be conducted and item analysis will be done to validate the instrument. The final copy will be subjected to face and content validation by a fellow math teacher.

G. Statistical Treatment

The mean will be used to find the average of the mathematics achievement test of the subjects of the study. The t – test will be utilized to find out if there are significant differences in the peer ratings given by and given to male and female student members of each blended group, and to the mathematics performance of the subjects and will be tested at 0.05 level of significance.

VI. Results

Table 1:
Mean of Peer Ratings given by male and by female students

Given by	Given to	Mean
Male	Male	90.55
	Female	90.33
Female	Male	89.74
	Female	89.37

Table 1 presents the mean of the peer rating given by male and by female students in each blended group to their group members. The mean rating given by male students to their fellow male members is 90.55 which is 0.22 higher than the mean rating given to the female group mates at 90.33, which is in consonance with the mean rating given by female students to male group mates of 89.74 which is 0.37 higher than the mean rating to their fellow female group mates which is 89.37. This implies that male members were perceived by both male and female group mates to be performing better in the group activities.

Table 2.1:
T-test of the Difference in the peer rating given by male students

Ratings	N	Mean	SD	Mean Difference	p
to male	24	90.55	3.410	0.22	0.33*
to female	48	90.33	2.450		

*not significant

Table 2.1 shows the t-test of the difference in the peer rating given by male students to male and female group mates. From a total of 24 male and 48 female ratings, the mean peer ratings given to them by male raters did not show any significant difference at p value of 0.33 greater than 0.05 level of significance. This implies that the ratings given by male students to their male and female group members were more or less the same.

https://doi.org/10.17758/URUAE.UH09171014

TABLE 2.2:
T-TEST OF THE DIFFERENCE IN THE PEER RATING GIVEN BY FEMALE

Ratings	N	Mean	SD	Mean Difference	p
to male	48	89.74	3.356	0.27	.119
to female	24	89.37	4.479		

*not significant

Table 2.2 presents the t-test of the difference in the peer rating given by female students to male and female group mates. From a total of 48 male ratings given with a mean of 89.74 and 24 female ratings with a mean of 89.37 showed no significant difference at p value of 0.119 greater than 0.05 level of significance. This implies that female students gave their male and female group members ratings which were more or less similar.

TABLE 2.3:
T-TEST OF THE DIFFERENCE IN THE PEER RATING GIVEN TO MALE

Ratings	N	Mean	SD	Mean Difference	p
by male	24	90.55	3.410	0.811	.049
by female	48	89.74	3.356		

*significant

Table 2.3 shows the t-test of the difference in the peer rating given to male students by their male and female group mates. With a mean of 90.55 rating from male group mates and 89.74 female group mates, a mean difference of 0.811 and p value of 0.049 which is less than 0.05 level of significance revealed significant difference. This implies that though both male and female members of each group perceived male students to perform better in the group activities, the perceptions as revealed by the ratings given by male and female members still varies significantly.

TABLE 2.4:
T-TEST OF THE DIFFERENCE IN THE PEER RATING GIVEN TO FEMALE

Ratings	N	Mean	SD	Mean Difference	p
by male	48	89.37	4.479	0.859	.001
by female	24	90.33	2.450		

*significant

Table 2.4 displays the t-test of the difference in the peer rating given to female students by their male and female group mates. With a mean rating of 89.37 from male group mates and 90.33 female group mates, a mean difference of 0.859 and p value of 0.001 revealed a significant difference. This implies that though both male and female members of each group perceived female group mates to be performing less as compared to male group mates' performance, their perceptions as revealed by the ratings given by male and female members still varies significantly.

TABLE 3:
PERFORMANCE OF STUDENTS IN THE ACHIEVEMENT TEST

Students	N	Mean
Male	24	79.91
Female	24	78.11

Table 3 exhibits the mean of the achievement test performance of the male and female students. The 24 male students under study obtained a mean rating of 79.91 in their achievement test while the 24 female students under study obtained a mean rating of 78.11, making a mean difference of 1.8. Results of the achievement test is in consonance with the perception of male and female group mates (Table 1) both giving a higher mean peer rating to male members of the group. This reveals that male members were not only perceived to be performing better in the group activities, but did performed better in the achievement test.

TABLE 4.1:
T-TEST OF THE DIFFERENCE IN THE ACHIEVEMENT TEST OF MALE STUDENTS AND PEER RATING GIVEN BY MALE GROUP MATES

Ratings	N	Mean	SD	Mean Difference	p
achievement	24	79.91	4.799	10.64	.000
peer rating	24	90.55	3.410		

*significant

Table 4.1 presents the t-test of the difference in the achievement test of male students and peer rating given by male group mates. With the achievement mean rating of 79.91 and mean peer rating by male group mates of 90.55, a mean difference of 10.64 was revealed and with an obtained p value of 0.00 proving that there is a significant difference in these results. Though the result from table 3 is showing consistent result with table 1, the t-test reveals that mean peer rating was too way high as compared to their mean achievement rating. This implies that students give grades as high as possible for them to be given the same.

TABLE 4.2:
T-TEST OF THE DIFFERENCE IN THE ACHIEVEMENT TEST OF MALE STUDENTS AND PEER RATING GIVEN BY FEMALE GROUP MATES

Ratings	N	Mean	SD	Mean Difference	p
achievement	24	79.91	4.799	9.83	.039
peer rating	48	89.74	3.356		

*significant

Table 4.2 shows the t-test of the difference in the achievement test of male students and peer rating given by female group mates. With the achievement mean rating of 79.91 and mean peer rating by male group mates of 89.74, a mean difference of 9.83 was revealed and with an obtained p value of 0.39 proving that there is a significant difference in these results. Though the results from tables 1 and 3 are consistent with each other, the t-test reveals that mean peer rating was higher compared to their mean achievement rating.

TABLE 4.3:
T-TEST OF THE DIFFERENCE IN THE ACHIEVEMENT TEST OF FEMALE STUDENTS AND PEER RATING GIVEN BY MALE GROUP MATES

Ratings	N	Mean	SD	Mean Difference	p
achievement	24	78.11	5.400	12.22	.000
peer rating	48	90.33	2.450		

*significant

Table 4.3 shows the t-test of the difference in the achievement test of female students and peer rating given by male group mates. With the achievement mean rating of 78.11 and mean peer rating by male group mates of 90.33, a mean difference of 12.22 was revealed and with an obtained p value of 0.00 proving that there is a significant difference in these results. Though the results from tables 1 and 3 are consistent with each other, where the female students' performance was below than performance of the male students, the t-test reveals that mean peer rating was still higher compared to their mean achievement rating.

TABLE 4.4:
T-TEST OF THE DIFFERENCE IN THE ACHIEVEMENT TEST OF FEMALE STUDENTS AND PEER RATING GIVEN BY FEMALE GROUP MATES

Ratings	N	Mean	SD	Mean Difference	p
achievement	24	78.11	5.400	11.36	.000
peer rating	24	89.37	4.479		

*significant

Table 4.4 shows the t-test of the difference in the achievement test of female students and peer rating given by female group mates. With the achievement mean rating of 78.11 and mean peer rating by female group mates of 89.37, a mean difference of 11.36 was revealed and with an obtained p value of 0.00 proving that there is a significant difference in these results. This result is one with the result in table 3, where mean peer ratings given were higher than the mean achievement rating. This may imply that students give high grades for them to be given the same.

VII. SUMMARY

A. Summary

This study was conducted to find out the differences in the peer ratings in blended groups and the mathematics performance of BEED students at Eastern Samar State University Borongan Campus. This study was conducted from November to March of school year 2016 – 2017.

This study used the experimental research design. It tried to find out the differences in the peer rating in blended groups and the students' mathematics performance.

The subjects of this study is composed of 12 groups, each with four members – two male and two female members. Five groups are from the first section, three and four groups from the second and third sections respectively for a total of 24 male and 24 female students.

The mean was used to find the average of the peer ratings and achievement tests. T-test was used in finding the difference in the peer ratings and achievement tests.

VIII. FINDINGS

Based on the results of the peer ratings and the achievement test, the following findings were formulated;

1. Male students were given higher mean peer ratings by both male (90.55) and female group mates (90.33). The mean peer ratings given to female students by both male (89.74) and female group mates (89.37) were lower compared to that of male students'.
2. T-test revealed that there was no significant difference in the peer ratings given by male students to male group mates and female group mates. No difference also in the peer ratings given by female students to male group mates and female group mates.
3. Significant difference was revealed in the peer rating given to male students by male group mates and female group mates. Significant difference also was revealed in the peer rating given to female students by male group mates and female group mates.
4. Male students obtained higher mean achievement rating of 79.91 compared to the female students mean achievement rating of 78.11.
5. Using the t-test, significant differences were revealed in the mean achievement score of male students and peer ratings given by male group mates and female group mates. Also, significant differences were revealed in the mean achievement score of female students and mean peer ratings given by male group mates and female group mates.

IX. CONCLUSIONS

Based on the results, both male and female students were given high peer rating by both male and female group mates, including the 'hitchhikers' being given high ratings with less contribution in the group activities, enough to say that students believe that each one of them will also be given high rating if they give their fellow group mates high scores.

Though both male and female students received high peer ratings, male students were given higher rating compared to that of the female ratings. This is in consonance with the performance of the male students in their achievement test where they obtained higher mean achievement rating compared to the female students mean achievement rating. Implying that male students performed better in both group activities and achievement test.

Based on statistics, the following conclusions were formulated; (1) there was no significant difference in the peer ratings given by male students to male group mates and female group mates; (2) there was no significant difference in the peer ratings given by female students to male group mates and female group mates; (3) there was a significant difference in the peer ratings given to male students by male group mates and female group mates; (4) there was a significant difference in the peer ratings given to female students by male group mates and female group mates; (5) significant differences were revealed in the (a) male mean achievement rating and mean peer rating given by male group mates, (b) male mean achievement rating and mean peer rating given by female group mates, (c) female mean achievement rating and mean peer rating given by male group mates, (d) female mean achievement rating and mean peer rating given by female group mates.

X. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are presented:

1. Mathematics teachers should know their students before starting the course to enable the former to select and employ the appropriate teaching approach and strategy.

2. Teachers should focus on the elimination of 'hitchhikers' during group activities.
3. Teachers are encouraged to utilize peer rating during group activities on condition that fair and realistic rating for every member of the group.
4. School administrators should encourage professors to use other teaching approaches making the students the center of the teaching-learning process.
5. School administrator should send instructors and professors to seminars on new trends in education, strategies and approaches.
6. Future researchers may conduct a similar study to validate results of this study.

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