

Improving Students' Academic Achievement In 2nd Year Horticulture Students

Belayneh Yohannes

Department of Agricultural Economics, Ethiopia

* Corresponding author:

Email: belayneh477@gmail.com

Abstract.

Peer learning is underpinned by social constructivist learning theory. Collaborative peer learning is a means of preparing learners to become independent and actively involved in constructing knowledge for themselves and understanding how to use it. The objectives of The study was to distinguish the major problems that affect the implementation of peer learning in the department and to find and apply possible strategies that help to improve student's academic this study was achievement used two stage sampling. Methods in the first stage 2nd year horticulture students were selected, and then random sampling method was applied. The study identified that, unequal sharing of tasks among group members, Problem of group organization/formation, lack of students' a preparation were the major problems.

Keywords: Knowledge, peer, organizations and sampling.

I. INTRODUCTION

1.1. Background of the Study

Education is the only instrument to bring about desirable economic, social and political change. In this era of globalization and technological revolution, education is considered as a first step for every human activity. It plays a vital role in the development of human capital and is linked with an individual's-being and opportunities well for better living (Battle & Lewis, 2002). The development of a nation depends upon the number educated citizens who have access to quality education (Anwar *et al.*, 2016). Generally, it is the backbone of societal transformation in all aspects of life (Muhammed, 2012). The primary purpose of teaching at any level of education is to bring a fundamental change in the learner (Tebabal & Kahssay, 2011). To meet this purpose, schools should be encouraged to adopt pedagogical practices that promote the active involvement of students learning. One practice that has received widespread coverage over the past decades is cooperative learning. It refers to an instructional method in which students at various performance levels work together in small groups toward a common goal. It is a pedagogical practice that helps the students to gain and create both academic and social relationships as well as to accomplish shared. Farzaneh and Nejadansari (2014) conceptualized peer learning as a victorious teaching approach in which learners of diverse abilities, talents and backgrounds work together in small groups to attain a common goal. Many studies have shown that was better students' for how ever academ involved in a peer learning environment, and the effects of peer learning on student achievement can be remarkable

(Kamuran *et al.*, 2008; Zakaria *et al.*, 2013). Moreover, it develops social skills such as communication, presentation, problem solving, leadership, delegation and organization (Zakaria *et al.*, 2010). Looking for all the above benefits, Ethiopia introduced peer learning strategy as a means of instruction in all levels of education from upper primary schools to colleges and universities in 2010 (Woldemariam and Girmay, 2015). Since then, all public schools and universities have been practicing cooperative learning by organizing their students in a team consisting of 5 members from different academic achievements (higher, medium and lower achievers). Such kind of one-to-five group student's in its local organ Even though, it is new and young in its age Raya University in general and college of Agriculture and Natural Resource specifically accepted the responsibility for implementing cooperative learning strategies in order to i the teaching staff members of the college, the researcher observation implies that cooperative learning implementation and its fruitfulness is not as expected due to the large class size, classroom arrangement, lack of resources, and student's negative attitude Therefore, it is essential and timely issue that conducting an action research on

peer learning in order to identify its challenges and alternative solution for better practices and for improving students academic achievement in college of agriculture and natural resource specifically animal science department.

1.2. Statement of the Problem

Peer learning also aids in the development of social skills such as communication, presentation, problem solving, leadership, delegation and organization (Cheng and Warren, 2000). Moreover, it is very essential for job skills that are required in the 21century are those skills that students need to possess in order to succeed in the present and future workplace. These skills include creativity, critical thinking, communication, collaboration, literacy competency, flexibility, initiative, productivity, leadership, and responsibility. In Ethiopia, peer learning strategy is implemented as a means of instruction in all levels of education from upper primary schools to colleges and universities since 2010.

Although peer learning has been implemented for more than eight years in Ethiopian Higher Education Institutes, the program has not been effective as it expected. Department of Horticulture is one of the department in college of agriculture and natural resource in Raya University. The department accepted the responsibility for implementing peer learning strategies in order to improve students' learning *one outcome to five peer learning*. The in the targe horticulture department in particular and in the university in general was to enable 50% of the student to score above 3 average grade point, to enable all students to score above 2.5 GPA for semester result and to reduce student's 12 (21%) of the academic students have scored 3 and above and 17(29%) have scored between 2.5 and 3. 12 students were academically dismissed. Therefore, the major purpose of this action research is to improve student achievement through effective implementation of peer learning by addressing the above issues. The researchers designed the following basic questions to investigate the problems and make proper intervention to improve student achievement; this action research project was answered the following basic questions:

1. What are the major determinants that affect practices of peer learning in the Horticulture department?
2. How peer learning practices will be improved for the future for the Horticulture department?

1.3.Objectives of the Study

The general objective of this action research is to improve student achievement through one to five peers learning. The specific objectives are.

- ✓ To distinguish the major problems that affect the implementation of peer learning in the Horticulture department,
- ✓ To find and apply possible strategies academic achievement in that Horticulture department.

II. LITERATURE REVIEW

2.1.Effects of Peer learning

When peer learning is implemented with thought fullness about what form of organization best fits the target purpose, context, and population, and with reasonably high implementation integrity, results are typically remarkable (Topping, 2001; Topping and Ehly, 1998). The research evidence is clear indicating that cooperative learning can yield significant gains in academic achievement in the targeted curriculum area. Cooperation enhances learning in several ways. Weak students working individually are likely to give up when they get stuck; working cooperatively, they keep going. Strong students faced with the task of explaining and clarifying material to weaker students often find gaps in their own understanding and fill them in. Students working alone may tend to delay completing assignments or skip. Yamarik (2007) found three possible reasons why peer learning groups performed better on exams. First, peer learning raised student-instructor interaction. Students felt more comfortable asking questions as a group than individually. Second, peer learning increased group studying for the exams. Third, the novelty of working in small groups sparked greater interest in the material. Peer learning has been linked to other positive social or affective outcomes.

One benefit is the increase in social skills of students who participate in group work (Whicker *et al.*, 1997). These skills can help students perform in situations outside of the school setting. Being able to work with others can be a very useful attribute to have when seeking employment in many companies. Working co-operatively with peers and valuing co-operation, results in greater psychological health, higher self-esteem and greater social competencies than competing with peers or working independently (Sisay, 2015). Moreover, peer learning has also been noted to be among the most cost-effective learning strategies (Levine and Meister, 1987). Some studies certainly demonstrate high effect size at low delivery cost. In addition an essential element of peer learning contexts is the quality of talk that takes place. Co-operation through talk enables learners to reconstruct and elaborate their ideas through peer dialogue (Bereiter, 2002) and is the primary tool for the joint construction of knowledge by teachers and learners in learning contexts (Mercer, 1996). Talk stimulates students to ascertain and resolve, for themselves, what was confusing or problematic (Brophy, 2002).

2.2. Teacher and Student Role in Peer Learning Implementation

Implementing peer learning is more complex and demanding for the teacher, as well as the student (David Kaufman, 1997). Therefore, successful peer learning contains two factors (a) the teacher's first task is to induce students to necessary proficient knowledge and inducement to work harder cooperatively; before the class the teacher should offer designs and arrangement of curriculums. Peer learning is the instructional use of small groups so that students work together to maximize their own and each other's (Johnson, 1987). In order to have small groups work together successfully, a teacher has to compose five essential elements in each lesson (Johnson, 1993): positive interdependence, face-to face interaction, individual accountability, social skills, and group processing. To improve teaching and learning effects, teachers can use these five elements as important guidelines in their teaching situations.

2.3. Challenges for Implementing Peer Learning

According to Nuntrakune (2008) the traditional competition based classroom low achieving students may feel embarrassed and humiliated in their struggle to keep up. In addition to this, in some institutions cooperative learning is seen as cheating because the educational pedagogy recognizes and rewards individual effort and competition and discourages cooperation among students (Oregon University, 2013). Slavin, (1995) pointed out that in a group lacking individual accountability one or two students may do "Loafing". Students, who are slow in learning may be dominated by their group leader, who are superior in their academic performance if it is not well managed. Organizing students based on ability in the same group may increase dependency. Because homework and group work is done only by their superior. If the teacher does not properly manage the group, students may waste time by doing something, which is insignificant to accomplish the task the ability grouping may discourage low achiever students (Sisay, 2015). According to Efrem and Oukula (2015) sometimes one-to-five peer learning, is not widely accepted as it is considered as, by many students, a means of increasing marks, is believed to be discouraging talented students and focus more on low achievers. Apart from this, many students and even teachers think it as just a political agenda which must be implemented with no compromising since once higher institutes are commanded (top-to-down command).

III. METHODS

3.1. Description of the Study Area

Raya University is one of the 11 newly established public Universities in Ethiopia in 2017 with the aim of teaching and learning, conducting research and providing community services to the surroundings. It is located at 668 Km from Addis Ababa (capital city of Ethiopia) and 126km from Mekelle, the capital city of the Tigray.

3.2. Research Design

The researchers use the descriptive research design. This method was selected because it enables to investigate the way how to address, improve challenges of student peer learning and based on the findings to implement the implementation of peer learning at the department based on the information secured from these respondents.

3.3. Sources of Data and Methods of Collection

Both primary and secondary data sources were used to collect qualitative of data. The primary data were collected via questionnaires, interview and observations. The weakness of one data collection method was improved by the strength of another because of this different methods of data collection were implemented in this study. A questionnaire was containing both close ended and open-ended types to collect data from students. The questionnaire was distributed for all the department students. Direct classroom observation was conducted to observe the extent of student's participation in peer learning a implementation of peer learning. In order to supplement the data that is obtained from the primary sources, secondary sources of data achievement in the previous semester were used in this study. For collecting data, the researchers informed the department about the issues and also research group make clear the idea for the student about the research to engage freely in the research.

3.4. Target population, Sample and Sampling Techniques

These action researches were conducted in department of Horticulture, College of Agriculture and Natural resource of Raya University. The target population of this study was regular second year undergraduate students. Regarding sample, all second year students of horticulture department were participated in the research.

3.5. Methods of Data Analysis

The data were analyzed by using descriptive statistics like frequency, percentage and mean to achieve the expected objectives of the study. After analysis, the result were presented using tables, figures and graph.

IV. DATA ANALYSIS AND PRESENTATION

This part of the research has two sections. The first section deals with the background of the students (sex and age of student) while the learning system.

4.1. The background of students

A total of 58 students from department of horticulture department were considered for this research and 58 questionnaires were distributed to the students. From the total sample size of respondents filled the questionnaire properly, 25% of the respondents are male and the remaining 75% of them are female (Table 1). As depicted in the item 2 of the same table, pertaining to student's age, (75%) of them majority were found in between the age group of 18 to 25 and where as about 12.5% and 12.5% of them were found above 25 and below 18, respectively. This implies that students were at a good age status to understand each other while they carry out their tasks by using peer learning.

Table 1. Background of the students

No	Characteristics	Sample Respondents (80)		
		Frequency	Percent	
1	Sex	Male	42	73.60
		Female	15	26.40
2	Age	<18	6	2.5
		18-25	40	75
		> 25	6	12.5

Source: survey result, 2019

4.2. Interest of students in peer learning

The students were asked about their interest in participating in peer learning and 55.5 % of them were interested in participating in peer learning while the rest 45.5% were not interested in peer learning because they perceived that they are shouldering burdens of poorly performing students. They also think it consumes their time and it is better in studying individually. Moreover, they reflect that some member of the group is not actively participating in peer learning (Figure 1).

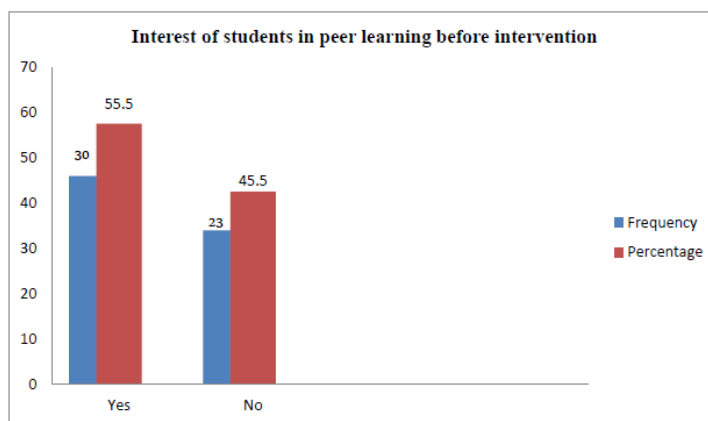


Fig 1. Interest of students in peer learning

4.3. Students awareness about peer learning on academic achievement

The students were asked to state their opinions regarding the impact of peer learning on their academic achievement. According to their response there are of course plenty of benefits that could be garnered from participating in peer learning. Participation in peer learning have many advantages, including enhance academic achievement, promote face-to-face interaction, improve communication skills, develop team spirit, develop ability to work with diversified group and develop critical thinking and reasoning skills

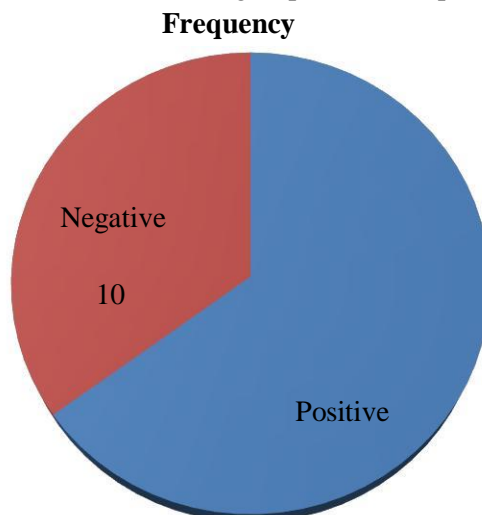


Chart1: Students perception about the impact of peer learning on their academic achievement

4.4. Problems in peer learning practices

The practices of peer learning may not be free of problems. Several research findings indicated that there are several challenges in cooperative learning practices. Similarly in this study, in order to indentify the problems and also to distinguish to what extent these problems are affecting cooperative learning practices, about ten variables were presented for the students to rate on the issues saying; very high (5), high (4), medium (3), low (2) and very low (1). Moreover, the total horizontal weight score which is the sum of rank order frequencies multiplied respectively by 5 for the very high, 4 for high, 3 for medium, 2 for low and 1 for very low was calculated and used to rank the problems. Accordingly, the rank of each problem was presented in Table 2 below.

Table 2. Problems in cooperative learning practices

N	Problems	Very high(5)	Hig h(4)	Mediu m(3)	Low (2)	Very low(1)	Total weight	Rank position
1.	Lack of awareness	33	16	16	7	8	299	4rd
2.	Lack of support	4	7	19	32	18	187	9th

3.	Organizational problem	30	21	17	8	4	305	3rd
4.	Language problem	10	10	20	24	16	214	6th
5.	Unequal sharing of tasks among group members	34	18	14	11	3	309	22d
6.	Lack of preparation	27	18	13	14	8	282	1st
7.	Uncomfortable class seating	7	6	17	31	19	191	8th
8.	Shortage of time	3	15	21	24	17	203	7th
9.	Poor academic background	2	10	20	28	20	186	10th
10.	Shortage of reference materials	21	12	20	14	13	254	5th

As indicated in Table 2 above, the result of the study showed that from about ten expected problems in peer learning the students have been stated frequently the following factors as challenges that hinder learners not to participate actively in peer learning:

- ❖ 2nd Unequal sharing of tasks among group members
- ❖ 3rd Problem of group organization/formation,
- ❖ 4th Lack of students' awareness to work in
- ❖ 1st Lack of preparation
- ❖ 5th Shortage of reference materials
- ❖ 6th Language problem
- ❖ 7th Shortage of time
- ❖ 8th Uncomfortable class seating
- ❖ 9th Lack of support
- ❖ 10th Poor academic background

5. Implementing the intervention

Finding-4:1 Lack of preparation

The finding of the study also showed that lack of preparation was another problem that hinders the effective implementation of peer learning. Therefore, the research team was agreed with student to support them by providing different supportive materials like worksheet, homework, assignment, etc, to help them for preparation in peer learning before coming into the class. This can be done by asking all instructors to prep was done on 25/09/2011 for 2hr. In doing so, all the instructors provided task to be done in peer learning groups as much as possible that can help them for improving their academic achievement.

Finding-2: Unequal sharing of tasks

Unequal sharing of tasks among group members was one of the problems that hinder the participation of the students in peer learning. Therefore, the research team intervenes to this problem by giving different roles for each group members so as to improve the effectiveness of peer learning to improve their academic achievement. This was done on 28/09/2011 for 1hr by giving different roles for each and every member of the group as indicated here under.

Leader: a group leader provides direction, instructions and guidance to a group of individuals, for achieving their goal.

Facilitator: A facilitator of a group who helps a group members to understand their common objectives and assists them to plan how to achieve these objectives; in doing so, the facilitator remains "neutral" meaning he/she does not take a particular position in the discussion. Responsible for getting the group started, keeping it on task, and involving all members.

Note taker: a student who takes notes during peer learning activities

Reporter: a student who is responsible for summarizing group decisions and for presentation

Timekeeper: a student who is responsible for keeping group on task and on time particularly with in-class and other activities.

Finding-3: organization problem

The result of the study also showed that arrangement of students in the group was also found to be one of the factors affecting peer learning. In first semester group organization was based on the grade 12 result, sex and region. However, the result of the study showed that this formation was not effective and there was problem in group formation. Therefore, the research team was formed new group structure which was based on the first semester cumulative GPA, interest of the student, sex and region from where they come. This was done on 28/09/2011 for 1hr.

Finding -4: Lack of awareness

Lack of awareness about peer learning was one of the major factors affecting the participation of students in peer learning and hence it has been one of the causes for low achievement of students in the department. As a result, awareness creation discussion was held with students for 2 hour for each section on Thursday 23/09/2011.

V. EVALUATION OF THE INTERVENTION

After intervention had take place, the research team tried to evaluate the result of each intervention and the result of evaluation was presented here under:

1. **Result on problem of group formation:** After re-organizing the group all students were responded that they become happy and satisfied with the new group arrangement. They also asked to have continuity for the future.
2. **Result on lack of awareness:** After two hour training and interactive discussion with students about their awareness towards peer-learning on their academic achievement their awareness was raised from 65% to 95% and they were interested to participate in peer learning to improve their academic achievement. After giving different role for each member of the network all students in each group was satisfied and they said that responsibility encourage low academic achiever, develop self confidence and communicative skills. It also helps the students to help each other rather than relying on one or two student in the group to do the work; decreasing negative classroom behaviors, such as not paying attention, not listening, or disturbing and having a stronger self-esteem between them. Group formation after re arranging the group formation 100% of the students were very interesting for thier new group formation.

VI. CONCLUSION

The finding of this study revealed that implementation of student peer learning in 2nd year Hrticulture department was affected by many factors. But the most problems that frequently stated by respondents were unequal sharing of tasks among group members, problem of group organization/formation, lack ofck ofstudents'preparation.In awa order to overcome those challenges and impro effective implementation of peer learning, the research team has undertaken different actions. The actions were giving different responsibility to each and every member of the group to minimize the unequal sharing of tasks among group members, re-organizing the group structure of students, improving the awareness of students about peer learning and providing supportive materials that can help the students to prepare themselves participation in peer learning. All the actions were implemented and evaluated accordingly to the action design. As the evaluation result showed, all students were responded that they become happy and satisfied with the new group arrangement. They also asked to have continuity for the future. After giving different role for each member of the network all students in each group was satisfied and enable the students to help each other rather than relying on one or two student in the group to do the work; decreasing negative classroom behaviors, such as not paying attention, not listening, or disturbing and having a stronger self-esteem between them. At the end, the research team found that, there is a significance improvement on student's ac achievement due to the effective implementation of peer learning.

Recommendations

Since there are major problems it is better to improve these problems such as awareness ccreation, group formation, and equal sharing of tasks. The group should be re organized and also awareness should be

given to the students. Teachers also have to give some tasks to the whole members to the peer learning to participate equally with in the group.

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