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Full Length Research Paper

Improving the achievement of second year natural resource management students of Madawalabu University through cooperative learning

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The purpose of this action research is to improve the achievement of students in general and, to examine the perception of students and teachers about cooperative learning, to identify major factors affecting the implementation of cooperative learning and to identify the possible strategies used to improve cooperative learning in Madawalabu University, School of Biodiversity and Natural Resource Management, particularly Department of Natural Resource Management. Descriptive case study design and both qualitative and quantitative research methods were employed. Quantitative data were collected from 23 students through observation and focus group discussion. In the selection of the sample population, available sampling was employed, and data were analyzed by using percentage, mean grand mean and t-test .The findings of the study revealed that students' participation was low concerning cooperative learning, and the practice of cooperative learning was challenged by different problems like lack of awareness and motivation both from the side of teachers and students, dependence of lower achievers on higher achievers, unequal sharing of work among group members, inappropriate group organization, uncomfortable seating arrangement of students, insufficient support and follow up from teachers before the implementation of action plan. Nevertheless, by utilizing the proposed actions like creating awareness about the importance of cooperative learning, re-organizing group arrangement, providing different responsibilities for each member of the group and providing the required support for all the groups, there is the improvement on achievement of students. Therefore, cooperative learning can improve the achievement of students if it is conducted in a well-organized way by using different strategies that help learners to take responsibility by themselves.

Key words: Achievements, cooperative learning, improving, students.

INTRODUCTION

Learning is generally defined as cognitive changes, that is, some addition to a learner's knowledge structures or

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re-organization and reconstruction of existing knowledge. This change occurs as connection is made between new material and prior knowledge, and then integrated into the learner's existing knowledge base. The more complex the learning, the more complex those cognitive changes are. According to socio-cognitive learning theory (Vygotsky, 1978), cognitive change is strongly influenced by interaction and activity with others. Because of this reason, today various college and university students are increasingly being asked by faculty to work co-operatively and learn collaboratively. This increased emphasis on group learning is partly a reaction to societal changes including a new emphasis on team work in the business sector (Millis and Cottell, 1998) coupled with a realization that in a rapidly changing information society, communication skills are increasingly important (Hansen and Stephens, 2000).

At the tertiary level of education, the reasons include an increasingly diverse student population who need to develop ways of learning together in order to achieve (Millis and Cottell, 1998), the increased use of teaching and learning that emphasizes learner-driven approaches such as peer learning (Hansen and Stephens, 2000). Researchers have shown that group learning leads to academic and cognitive benefits. Group learning promotes students' learning and achievement (Zakaria et al., 2013; Kamuran and Fikri, 2008), increases the development of critical thinking skills, and promotes greater transfer of learning (Brandy and Tsay, 2010). Group learning also aids in the development of social skills such as communication, presentation, problem solving, leadership, delegation and organization (Zakaria et al., 2010). These days, Ethiopian public schools starting from primary to tertiary level implement cooperative learning in the name locally called 'one-to-five' organization even though the implementation is at its infant stage. The method was implemented with the objective of enhancing students' educational achievements in particular and improving quality of education in general. Therefore, it is sensible conducting action researches in the area of cooperative learning in order to facilitate better learning environment for students who engage in it and to enhance outcomes of the cooperative learning.

Statement of the problem

Cooperative learning is an approach to group work that minimizes the occurrence of those unpleasant situations and maximizes the learning and satisfaction that result from working on a high-performance team. A large and rapidly growing body of research confirms the effectiveness of cooperative learning in higher education. It is relative to students taught traditionally that is, with instructor-centered lectures, individual assignments, and competitive grading. Cooperatively taught students tend to exhibit higher academic achievement, greater persistence through graduation, better high-level reasoning and critical thinking skills, deeper understanding of learned material, greater time on task and less disruptive behavior in class, lower levels of anxiety and stress, greater intrinsic motivation to learn and achieve, greater ability to view situations from others' perspectives, more positive and supportive relationships with peers, more positive attitudes toward subject areas, and higher self-esteem (Mabrouk, 2007).

There are several reasons why cooperative learning works as well as it does. The idea that students learn more by doing something active than by simply watching and listening has long been known to both cognitive psychologists and effective teachers and cooperative learning is by its nature an active method. Beyond that, 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. The term cooperative learning (CL) refers to students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including that the team members be held individually accountable for the complete content of the assignment or project.

The proven benefits of cooperative learning notwithstanding, instructors who attempt it frequently encounter resistance and sometimes open hostility from the students. Bright students complain about being held back by their slower teammates; weak or unassertive students complain about being discounted or ignored in group sessions; and resentments build when some team members fail to pull their weight. Knowledgeable and patient instructors find ways to deal with these problems, but others become discouraged and revert to the traditional teacher-centered instructional paradigm, which is a loss both for them and for their students (Mabrouk, 2007). This action research tries to find criteria for effective implementation of cooperative learning, challenges of CL applications and outlines proven methods for implementing CL and overcoming common obstacles to its success. Then altogether, when they know that others are counting on them, they are motivated to do the work in a timely manner (Mabrouk, 2007).

Recently**,** implementing cooperative learning strategies started in Ethiopian education system from lower grade level to higher institution to enhance student learning. However, the implementation is not successful compared to the desired objectives. This is because of different factors. "Questions like what do students gain from

cooperative learning? Why do we need cooperative learning? Is cooperative learning appropriate for all students? How does cooperative learning improve students' achievement? What types of cooperative learning structures are more successful in the class-room?" are some of the fundamental questions raised by different people in various educational institutions in Ethiopia. To clear the above confusion, the researchers were motivated to improve students' achievement using cooperative learning strategies because the cumulative GPA (CGPA) of second year students in the department of natural resource management (NRM) was low compared to that of first year students, even if the teachers working in the department of NRM are trying to implement cooperative learning. Therefore, the major purpose of this action research is to improve students' achievement by addressing the above issues. The researchers designed the following basic questions to investigate the problems and made proper intervention to improve students' achievement. This action research project sought to answer the following basic questions:

1. What is the status of students' participation in cooperative learning?
2. How can we improve students' achievement through cooperative learning?
3. What are the factors contributing to low participation of students' in cooperative learning?
4. What are the possible strategies that help to improves students' cooperation learning?

Objectives of the Study

The general objective of this action research is to improve students' achievement through cooperative learning. In addition to this, the following specific objectives are treated:

1. To improve students' positive interdependence and social skills (social relations within and between groups) in the department, awareness about cooperative learning.
2. To improve students' achievement through the application of cooperative learning.
3. To reduce the major challenges that hinders the implementation of cooperative learning.
4. To apply possible strategies that help to facilitate cooperative learning.

MATERIALS AND METHODS

Description of research area

This action research is part of an experimental research that aimed at improving the achievements of the students of second year NRM department of the students at Madawalabu University, Ethiopia.

Research design and methodology

This part deals with research design, source of data, population, sample and sampling techniques, data collection instrument, procedures of data collection, and methods of data analysis. Descriptive case study research design was used. This design was selected because it enables one to obtain data about practice and challenges of cooperative learning, and based on the finding**,** it helps to improve students' achievement and implementation of cooperative learning at Madawalabu University School of Biodiversity and Natural Resource Management, Department of NRM. Both qualitative and quantitative research methods were applied for the study. The major methodological concern of the research was descriptive analysis and interpretation of the responses for the given questionnaires, observation and focus group discussion (FGD) in reference with the theoretical and practical framework of cooperative learning. The analysis and interpretation were mainly emphasized on the role of cooperative learning to improve students' achievement.

Source of data, sample population, sampling techniques and data collection instrument

The required data were collected both from primary and secondary sources. The primary data sources were teachers and students, through questionnaires, direct observations of the real situations related to the practices of cooperative learning process in the classroom and FGD with NRM Students. In addition to primary data, secondary data were collected from related research works, documents at different lines, students' achievement in the previous semester and social interaction changes. With the available sampling techniques, 23 students participated in the research. Educators have advocated for the use of multiple methods of data collection, because by selecting complementary methods, a researcher can improve the weakness of one method with the strength of another. In line with this, Patton (1987) and Yemane (2005) stated that the use of a single data collection technique has both strengths and weaknesses. The use of more than one data collection techniques in a single study helps the researcher to substantiate the strength and correct the defect of any one source of data. Based on this idea, the researchers employed variety of tools to gather information about the practice and challenges of students' cooperative learning. Observation, FGD and questionnaire were the common instruments used in data collection. The instruments are used to assess teachers' and students' perception about cooperative learning, the role to improve students' achievement and social interaction, challenges and possible strategies to improve students' cooperative learning. Questionnaire containing both close ended and open-ended types was used to collect data from students about their perception, roles and problems encountered in the effectiveness of cooperative learning. The questionnaire was preferred as instrument of data collection because it is the most

flexible tool and possesses a unique advantage over others in collecting both qualitative and quantitative information (Kumar, 2006).

Direct classroom observation was conducted to see the extent of students' cooperative learning organization, their support of teachers, and participation in cooperative learning in the entire classroom. As a method for collecting qualitative data, group discussion emphasizes learning of the thoughts and experiences of others. When the participants take part in a group interview, they can demonstrate interest in the discussion topic. When the participants are mutually interested in the discussion, their conversation often takes the form of sharing and comparing thoughts about the topic (Victor, 2006). Based on this assumption, FGD was used to elicit data regarding the teachers' and students' perception towards the implementation of cooperative learning, challenges and possible strategies to enhance cooperative and collaborative learning in Ethiopian higher institutions.

Procedures of data collection and methods of data analysis

The researchers informed both the school and the department about the issues, and also the research group made the idea clear to the students for them to engage freely in the project. From the beginning of data collection to the intervention made by teachers in the classroom to improve the achievement of student's information was accountably communicated. The researchers analyzed quantitative data through percentage, mean and frequency. Percentage was utilized to analyze and determine different characteristics and personal background of the respondents. The frequency was utilized to analyze and describe the extent to which cooperative learning affects students' achievement. Independent sample t- test at $P< 0.05$ was also utilized to check whether there is significant achievement difference between pre-test and post-test students' achievement. The data obtained through observation and FGD were analyzed using narrative description (qualitative methods of analysis).

Analysis and interpretation of data

This part of the paper has two sections. Section one deal with the background information of respondents while section two deals with the overall result of the analysis of the issue under investigation (views of respondents about cooperative learning). From 23 questionnaires dispatched to students, 100% (23) questionnaire items were filled properly and returned. Therefore, the analysis part presents the data obtained from these 23 students. Regarding the sex of students, 9 (39.13%) were males and the remaining 14 (60.87%) were females. In terms of age, all the respondents aged between 19 and 23. This indicates that, the respondents were matured enough to understand and fill the questionnaire dispatched to them (Table 1). Table 2 contains questionnaire designed to collect data on the attitude and interest of student in cooperative learning. Questions were carefully designed and administered in such a way that the participants of the study choose the idea that most appropriately match with their feelings; very high (5) and high (4) to show their agreements with the ideas of the questionnaire and low (2) and very low (1) to disagree and (3) undecided when they face difficulties to agree or disagree with the ideas of each questionnaire. Accordingly, each item of the questionnaire was analyzed as follows.

From Table 2, for item one 39% of respondents had chosen scale number 4, which indicates the largest response for this particular question. Even though significant numbers of the participants (27%) were reluctant to decide on this issue, vast majority of the students have interest in cooperative learning. 18% respondents indicated that students' interest in cooperative learning is very low and 13% indicated that prevalence of low interest in cooperative learning among students. From this, one can conclude that there is a variation of interest in cooperative learning in the classroom. This also showed the prevalence of gap on students' knowledge about cooperative learning, even though majority (45%) of them responded that students have knowledge/ understanding of cooperative learning.

The second item of the questionnaire was designed to collect information on students' participation in co-operative learning. As indicated in the table, 18 and 13% participant had low and very low participation and 36% indicated high participation. This indicated that significant numbers of students are reluctant to participate in cooperative learning. The role of cooperative learning in improving academic achievement and social interaction among students is one of the questions presented to the students. Even though, the significant number (27 and 40%) of the respondents scaled very high and 27 and 22% respondents scaled high, 13% respondents scaled low and 13 and 9% of respondents scaled very low. This indicated that there is no uniformity among students about the role and importance of cooperative learning in improvement of academic achievement and social interactions among students.

Another important question is about students' awareness of cooperative learning practices. As indicated in the table, 13 and 36% participants scaled very high and high and 9 and 13% of participants respond low and very low. This indicates that significant number of students did not have awareness about cooperative learning. Even though majority of students have good understanding and better awareness on cooperative learning, there is no uniformity of understanding among

Table 1. Background information of the respondents.

Sex	No	%	Age	<18	19-23	24-28
Male	24	80	No	0	30	0
Female	6	20	%	0	100	0

Table 2. Analysis of data obtained through questionnaire on students' perception about cooperative learning.

S/N	Items	Responses Scale									
		5		4		3		2		1	
		n	%	n	%	n	%	n	%	n	%
1	Students' interest in cooperative learning	1	4	9	39	6	27	3	13	4	18
2	Students' participation in cooperative learning	1	4	8	36	5	22	4	18	3	13
3	Students sharing of different responsibility in group at Different time	4	18	5	22	6	27	2	9	3	13
4	Received feedback from instructors about cooperative Learning group work	7	31	6	27	4	18	3	13	1	4
5	Students' knowledge about importance of cooperative Learning	1	4	10	45	6	27	2	9	2	9
6	Instructors' support of cooperative learning if necessary	7	31	7	31	4	18	2	9	2	9
7	Role of cooperative learning in improving achievement	6	27	6	27	3	13	3	13	3	13
8	Role of cooperative learning in improving social interaction	9	40	5	22	3	13	3	13	2	9
9	Cooperative learning creates common understanding among Students	3	13	14	63	3	13	1	4	1	4
10	Students' awareness of cooperative learning practices	96		8	36	7	31	2	9	3	13
11	Students' motivation to participate in cooperative learning Fully (assignment & project work)	4	18	4	18	4	18	3	13	6	27
12	Cooperative learning creates positive inter-dependence Among students in the class room.	6	27	2	9	5	22	5	22	4	18

students about cooperative learning. Some students are reluctant or do not fully participate in cooperative learning. There is a gap in practicing cooperative learning among students in the classroom. A significant number of students did not clearly know what cooperative learning is and the implication is that there is the need for awareness rising program for the students in the classroom to help all learners have common understanding of cooperative learning.

As indicated in Table 3, the overall mean score for all items is 3.3. This indicates that the factors are highly affecting the participation of students in cooperative learning in general. Among all, factors indicated in item numbers 2, 8, 9, and 11 have high effect in hindering student's participation. This means lack of students' motivation to work in groups (mean=3.97), dependence of lower achievers on higher achievers (mean=3.9), unequal sharing of work among group members (mean=4.07), and problem of grouping/ organization structure (mean=3.83) are highly affecting the participation of students in cooperative learning. In similar manner, lack of students' awareness about the benefits of cooperative learning (mean=3.43), uncomfortable seating arrangement of students (mean=3.1), insufficient support and follow up from teachers (mean=3.1), shortage of time given by instructors to deal with the given issue (mean=3), domination of some group members (mean=3.37) and lack of reinforcement by teachers (mean=3.23) are highly affecting the participation of students in cooperative learning even if their effect is a little bit lower than those identified earlier.

Analysis of data obtained through focus group discussion

In the group discussion conducted with 2nd year NRM

Table 3. Respondent's views for items related with factors affecting the participation of students on cooperative learning.

S/N	Item/Indicator	N	Mean
1	Lack of awareness about the benefits of cooperative learning	23	3.43
2	Lack of students motivation to work in group	23	3.97
3	Uncomfortable seating arrangement of students	23	3.1
4	Insufficient support and follow up from teachers	23	3.1
5	Lack of teachers motivation to use cooperative learning	23	2.43
6	Shortage of time given by instructors to deal with the given issue	23	3.0
7	Domination of some group members (higher achievers)	23	3.37
8	Dependence of lower achievers on higher achievers	23	3.9
9	Unequal sharing of work among group members	23	4.07
10	Lack of reinforcement by teachers	23	3.23
11	Problem of grouping/organization structure	23	3.83
12	Relating cooperative learning with politics	23	2.17
	Grand mean		3.3

Scales <1= Very Low, 1.01-2= low, 2.01-3= Undecided 3.01 – 4=highly, 4=Very Highly.

students, we have identified the following major challenges that hinder successful implementation of cooperative learning:

a. Lack of awareness about the advantage of cooperative learning.
b. Problem of organization or group structuring.
c. Lack of continuous support from the instructors.
d. Lack of materials to conduct project and different assignments.
e. Some students develop dependency on higher achiever students.
f. Shouldering all the responsibility up on group leader.
g. Problem of providing different responsibilities to group members.
h. Absence of rotating the responsibility and re-organizing the group.

Based on these findings, the research team proposed different actions to be taken in order to improve the participation of students in general and their academic achievement in particular under the next section. From the practical experience of students the following possible solutions were identified from to improve the effectiveness of cooperative learning that promotes students' social interaction, positive interdependence, confidence, self-esteem and achievement.

a. Improve the awareness of all stakeholders about cooperative learning.
b. Re-organize students into groups for a particular topic and rotating responsibility.
c. Give clear instructions, and explain how they work together and assess effectively.
d. Each member of the group will have a specific task to complete within the group.
e. Assign different tasks like facilitator, note taker, timekeeper, leader, observer, reporter or tasks specific to the topic.
f. The group is responsible for the outcomes, which are evaluating against agreed criteria.
g. Provide material and academic support to the students to improve their self-esteem and confidence to reduce dependence.

Action plan, implementation and evaluation

When we conducted this action research, the researchers developed strategies that clearly identified the role of teacher and the role of students. The teacher's role in cooperative learning is fundamentally different from that in a more traditional model. It is vital that the teacher first provides the supportive classroom ethos to encourage cooperative learning and opportunities for team building. Alongside, this is the necessity for developing interpersonal skills as part of a planned programme. The teacher plays indispensable roles for the success of the programme among the fundamental roles undertaken by the teachers. See the following action plan table. The role of the students in cooperative learning is different from that in traditional classrooms; it includes student-to-student interaction over subject matter as an integral part of the learning process. In contrast, the traditional classroom consists primarily of teacher-fronted lessons, independent work, and competition. Student practice is usually independent, independent problem solving or worksheet work. Often, student interaction is discouraged: 'keep your eyes on your own paper', 'No talking.' In addition, there is often a competitive component in the

traditional classroom when students respond to teachers by answering their review questions. Cooperative learning is characterized by frequent student cooperation (Spencer, 2009). See Table 4 on the role of students in cooperative classroom.

Implementation of the action plan

Activity-1- Creating Awareness about Cooperative Learning For Students.

Lack of awareness about cooperative learning is one of the major factors affecting the participation of students in cooperative learning and hence, it has been one of the causes for low achievement of students in the department of NRM. As a result, awareness creation discussion was held with students for two periods (2 h) on Monday 04/04/2016 and Thursday 07/04/ 2016.

Activity -2- Re-organizing and Re-structuring the group.

Since group arrangement of students was found to be one of the factors affecting cooperative learning, re**-**organization of groups was conducted based on three semesters cumulative GPA of students on April 8, 2016. After this, the research team members developed a model that enhances cooperative learning environment by giving responsibility to each and every member of the group as indicated here under. Student A (Leader), Student B (Facilitator), Student C (Note-taker), Student D (Reporter), Student E (Time keeper) and Student F (Observer).

Activity -3- Based on this model, detailed elaboration about the responsibilities of each member is given on 8 April 2016 as follows:

1. Leader: A group leader provides direction, instructions and guidance to a group of individuals, for achieving a certain goal. Based on the major findings of the analysis result, the following action plan is designed for implementation.

2. Facilitator: A facilitator of a group helps 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.

3. Note taker: A student who takes notes during cooperative learning activities.

4. Reporter: A student who is responsible for summarizing group decisions for the larger class.

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

6. Observer: A student who pays close attention to cooperative learning activities**.** Based on the above model each member of the group was assigned to a specific responsibility. This was held on 8 April 2016. The summary of responsibility given for every member of the group is described as follows. For the sake of consent, we cannot write the name of students.

Activity-4- Monitoring and assisting each group members as needed after providing the task to be performed. The instructor started to provide tasks to be done in cooperative learning groups based on the above newly arranged grouping system. In doing so, the instructors also provided all the necessary support as needed by all group members as much as possible. The instructor conducted this activity for almost one month starting from April 11, 2016 to May 25, 2016.

Activity -5- Evaluating the performance of each group**.** To evaluate the performance of each group the instructor used two techniques. The first one is by observing the number of students who participate and try to answer the questions raised by the instructor while the instructor is rotating around all groups to provide feedback. The second technique is by providing a post-test from the topics which are totally covered through cooperative learning for one month. The results of pre-test and post-test which were scored out of ten are presented under action evaluation.

Action evaluation

After intervention had taken place, the research team evaluated what change occurred. Some of the major changes observed are briefly presented as follows:

1. After two hours training and interactive discussion with NRM students on their awareness of cooperative learning methods, 17 (73.07%) students rate their awareness about cooperative learning as high and the rest 6 (26.92%) rate their awareness about cooperative learning as medium.

2. Re-organizing and re-structuring of the group: After re-arranging their group, almost all the students became happy and asked the department of NRM if they will continue it as one of their courses to be taken in the next year beyond using it for only this research purpose. Beyond this re-arrangement/re-organization of group members also provided an additional opportunity for students to create and strengthen their social life with new members of the group in which they did not practice such behavior in the past two years even if they are learning in the same class.

3. Providing different roles: Regarding the provision of a specific task for every member of the group most students (>90%) agreed that it enhanced their feeling of

Table 4. Action plan.

S/N	Activities	Role of students and instructors	Time require	Expected out come
1	Creating awareness about cooperative Learning	Instructor provides training for students. Student actively participate in the training	2 h	All student have good understanding about cooperative learning
2	Reorganizing group arrangement	Instructor restructures the organization of group members based on achievement. Student should participate in new group.	2 h	Well organized group will be formed
3	Providing different roles for each group members like facilitator, note taker, leader, observer, reporter, or tasks specific to the topic	Instructor develops cooperative learning models, which comprises different roles. Student should perform their role	1 h	Each group member will feel responsible for his/her roles
4	Plans lessons that decide on: (a) objectives, (b) size of groups (c) how to group pupils, (d) group roles and (e) Materials needed.	Instructors Prepare plan for cooperative learning	2 h	Prepared Effective cooperative learning plan
5	Determine the number of students who will be assigned to each group with a range of levels, mixed by intellectual ability or achievement level.	Instructor Organize students based on achievement and participation	1 h	Create mixed ability group of students
6	Develop a cooperative climate and esprit de corps in the classroom. Develop a positive classroom environment.	Instructor should inspire students about Cooperative learning. Student should develop positive interdependence	5 min eachclass	Create cooperative learning climate
7	Reward students for such social skills as helping others, in different activities	Instructor should provide simple reward to the students	A class per week	Create rewarding Environment
8	Present and clearly explain the Activities that will student take parts to complete.	Instructor should provide clear direction and students should follow the direction	½ h	Student which follow the instruction properly
9	Monitor and assist as needed by providing the task to be performed	Instructor provides the necessary support. Student should ask teacher when they need	12 h	Each group will gain sufficient support from the instructor
10	Evaluate each group's performance/product	Make ready themselves to the exam and done the assignment cooperatively.	3 h	A high student academic achievement

responsibility for their task as it mandates every student to participate in cooperative learning. At the end of taking all the actions discussed above, the research team observed slight improvement in student's achievement (Table 5).

As Table 6 indicates, the number of students who scored below 5 reduced from 7 (22.2%) to 1 (5.6%). In addition to this, the number of students who scored above 8 increased from 3 (11.1%) to 7 (25%). This change indicates that the implementation of the identified actions has great role in improving the achievement of students.

As indicated in Table 7, the mean score of students in pre-test and post-test is 6.16 and 7.47 respectively. This indicates that, planned and well-organized implementation of cooperative learning improves the achievement of students. In supporting this, the analysis of data obtained through observation indicated that, the number of students who participate during cooperative learning at the time of classroom discussion was also high. The result of t- test $t(70) = -3.47$, $P<0.05$, indicates that, there is significant difference in the score of students at pre-test and post-test. In some courses, we can observe change in pre and post cooperative learning implementation

Table 5. Provide different role for newly re-organized group.

Group-1		Group-2		Group-3		Group-4		Academic Advisor
Stud-A1	Leader	Stud-B1	Note taker	Stud-C1	Note taker	Stud-D1	Reporter	Mr. x & y
Stud-A2	Note taker	Stud-B2	Observer	Stud-C2	Time keeper	Stud-D2	Leader	Mr. A & Z
Stud-A3	Reporter	Stud-B3	Reporter	Stud-C3	Reporter	Stud-D3	Time keeper	
Stud-A4	Observer	Stud-B4	Leader	Stud-C4	Leader	Stud-D4	Note taker	
Stud-A5	Facilitator	Stud-B5	Facilitator	Stud-C5	Facilitator	Stud-D5	Facilitator	
Stud-A6	Time keeper	Stud-B6	Time keeper	Stud-C6	Observer			

Table 6. Results of students on pre-test and post-test.

Score of students	In pre-test		In post-test	
	n	%	n	%
5 and below 5	7	22.2	1	5.6
Between 5 and 8	13	66.7	15	69.4
Above 8	3	11.1	7	25

Table 7. Values of independent samples t-test for pre & post test.

Group	Number of student	Mean score	SD	Mean difference	P value at α=0.05 level
Pre-test	23	6.14	1.74	1.33	0.001
Post-test	23	7.47	1.50		

Table 8. Change in score pre-implementation and post-implementation.

Score of students	In post-test		In pre-test	
Course name	**Range ecology and management in NRM**		**GIS and Remote sensing**	
Test	9.78/15	SD=5.9	8.1/15	SD=5.9
Assignments and Quizzes	39.7/45	SD=0.69	28.87/45	SD=0.69
Final	29.7/40	SD=6.54	31.13/40	SD=6.54
Total	73.08/100	SD=11.85	67.97/100	SD=11.85

(Table 8). This study is in line with study by Brady and Tsay (2010), Brown and Ciuffetelli (2009) and Ke and Grabowski (2007). Brown and Ciuffetelli (2009) different researches in the perspective of cooperative learning demonstrated extremely positive results. In school situation cooperative learning engage students in group and increase learning, education, knowledge, skills. On the subject of cooperative learning the positive outcomes include: academic attainments, improved relations and increased personal, social and intellectual development. Similarly, Brady and Tsay (2010) describe that students who fully take part in group activities, provide useful feedback and positive behavior which is essential for their academic carrier. Study supports the perception that cooperative learning is an active pedagogy that promotes higher educational attainment. Cooperative learning increases enjoyment of school and class regarding skill, motivation, behavior, attitude and interdependence.

As we observed from the above table in 1st semester, GIS and Remote sensing course the average score of the student was 67.97/100. However, after the implementation in 2nd semester students score 73.08/100 in Range ecology and management. This indicates that there was a positive change after the implementation of cooperative learning. Cooperative learning actively involves students in the learning process. These findings are consistent with the findings of some previous researchers such as Mohammed (2014); Zakaria et al.

(2013) and Ifamuyiwa and Akinsola (2008).

Conclusion /Action research cycle

Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding and achievement.' In the similar manner, the research team had full confidence to improve the achievement of students through the application of cooperative learning. To this end the research team undertakes different actions such as: (1) Awareness creation because Lack of awareness about cooperative learning was one of the major factors affecting the participation of students in cooperative learning and hence**,** it has been one of the causes for low achievement of students in the department of NRM. As a result, awareness creation discussion was held with students for two periods (2 h) on Monday 04/04/2016 and Thursday 07/04/ 2016. At the end improved the awareness of students. (2) Re-organized the group since group arrangement of students was found to be one of the factors affecting cooperative learning, reorganization of groups was conducted based on three semesters cumulative GPA of students and possible to create working group. (3) Providing different responsibility to all member of the group to reduce dependency each student has one role facilitator, timekeeper, observer, leader, note taker and reporter. At the end, it is observed that student responsibilities are improved. (4) Monitoring and providing feedback, the instructor started to provide task to be done in cooperative learning groups based on the newly arranged grouping system. In doing so, the instructors also provided all the necessary support as needed by all group members as much as possible. Finally, we can observe that student teacher interaction are improved and also their participation. While conducting this action research, the researchers faced some challenges.

One of the main challenges was lack of experience in doing action research, awareness of student and teacher in implementing all activities and managing time to cover all the contents of the course within the specific amount of time and to provide sufficient and timely feedback for all groups. At the end, the research team found out that, there is slight academic improvement of students due to the application of cooperative learning. This indicates that, cooperative learning improves the achievement of students when it is applied in a more organized and well-planned way. In addition, the research teams recommended that all department and schools/colleges across the university should implement and improve the achievement of their students through cooperative learning.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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