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Improving Group Member Participation of 4th Year Section A Civil Engineering extension Students in integrated Project Work at Debre Markos University

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ABSTRACT

Group work is a form of voluntary association of members benefiting from cooperative learning, which enhances the total output of the activity. Therefore, group discussion is a way for active participants to explore new ideas.

Based on the previously observed practices in 4th year civil engineering students at Debre Markos University, the group member participations was not pleasing. The objective of this study was to identify the core causes of low participation of group members in their project work and to take actions for improving group member participation. The data collection method used questionnaires and interviews and was analyzed using Microsoft Excels.

Action research done in civil engineering 4th year Extension courses focused on continuous advising and instruction. These practices have achieved a good understanding of how to increase active participation in their group work activities. Therefore, a main conclusion of this project is that an active learning method helps the students to share skill, knowledge and attitude to each other.

1. Introduction

Group discussion is a way for active participants to explore new ideas from the active participants in groups which greatly helps the individuals engages in the task. Active learning develops the knowledge, skills, values and attitudes that plays a vital role in bringing socio-cultural, economical, technological, political and environmental advancements (Sewnet Tesfaye and Kassegn Berhanu, 2014).^[9] However, to achieve these goals the teaching learning process at all educational institutions must support strong teachers' and students' interaction to use active learning methods such as making suitable class room environments and resources for projects.

Ministry of Science and Higher Education has advocated and proclaimed all over Ethiopian Universities for applying active learning and teaching methods. Accordingly, at Debre Markos University (DMU) several active learning methods such as group work, presentation, laboratory works, project works etc. have been implemented and studied in many different fields of studies. Group work is the focus of this study.

From the experience we know that improving educational quality can't be achieved at once; rather it requires tireless efforts in all levels of educational institutions. To achieve better teaching methods of active learning the instructors focused on the participation of students.

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Students play an important role for their own learning, so the teaching methods must include practices that require students to take responsibility for their own learning. This action research project will focus on student participation in group work by using active learning methods (ALMs). Data of student participating in the *Civil Engineering 4th Year Section A Extension course* will be obtained using questionnaires and interviews. The data synthesized using Microsoft Excel.

1.1 Problem Statement

All higher education institutions in Ethiopia (Jimma University, Addis Ababa university, Arba Minch university, ...) including Debre Markos University strives to generate competent graduates, give community serves and engaging in research activities. As a result, the university curriculum incorporates some integrated projects for their academic achievement. It was observed that students' participation in the *4th Year Section A Civil Engineering Extension Integrated Project* was very unequal. Usually one or two members of the group became responsible to perform all the tasks of the project and the rest of the group members were not actively participated. This result of unequal participation leads to unequal assessment of basic knowledge and skills. The challenge of this study is to identify the cause of low participants of the group members in the project work and improve or enhance their participation.

1.2 Objective

The main objective of the research is to improve active participation the group members in their project work.

- i. To identify the root causes of low participation of group members
- ii. To take actions for improving group member participation

1.3 Significance and Scope of the Study

The significance of this study is to create active participant students. Active participant students are less dependent of others and develop to increase self-confidence in their abilities throughout life. Actively participating students learn more from their mistakes and how to create relationship.

The scope of the study is to use action research to identify the root causes of low participation of students in group work by collecting student data and using that data to develop intervention teaching practice to improve the level of participation in *their integrated group project*.

2. Importance of Modern Education

Education enhances socio cultural, economical, technological, political and environmental development. Applying active learning teaching methods is a crucial strategy in creating responsible, strong, self-confidence, leaders who will improve the development of the country. Expanding the universities to over 33 nationwide and increase the intake capacities of universities to over 100,000 students each year is a start. Also university-industry linkage was created to support development, making the intake capacity of universities 70% for science and technology and 30% for social science which can support the country for its development in technology (Yosef Kasa, 2016).^[11]

Over the years, scholars, researchers and national reports have discussed the importance of employing active learning instructional strategies to maximize student learning in the college or university classrooms, and researchers have proved that active learning is a very promising teaching method (Gallagher, S., 1997).^[5]

Most education researchers Eggen, P., & Kauchak, D. (2007),^[3] Laura Maher (2010),^[8] Atalay Mesfin Aneteneh (2014),^[11] Sewnet Tesfaye and Kassegn Berhanu, (2014)^[9] and Shi Qing-he, (2016)^[10] agree that active learning methods consists of students working together in groups small enough so that everyone can participate in a clearly assigned task.

One of the advantages of student participation is that it offers the possibility of exploring a variety of viewpoints and an opportunity to share their own experience and knowledge.

There are many different methods for increasing participation that were very similar to our study. Many researchers Kumera Takele Yadeta (2020),^[7] Yosef Kasa (2016),^[11] FIPPI APRILA (2017),^[4] Carlos Gonzalez De Sande and Juan ignacio godino llorente (2014),^[2] Atalay Mesfin Aneteneh (2014),^[11] Laura Maher (2010)^[8] and Kriflik, L. and Mullan, Judy (2007)^[6] concluded that the following active learning teaching methods were effective small group size formation, inclusive group formation, providing clear instruction for each activity and teaching students communication skills.

Therefore the students' participation can be improved by continuously applying the following critical techniques; forming small inclusive groups actively supervising the students on each activity and offering continuous instructions in how to be actively participate on each activity

3. Location of the Study Area

This study is conducted at the Technology Institute

school of civil and hydraulic engineering, Debre Markos University in the 4th year Civil Engineering program and specifically sec A for extension students.

The University is found in Debre Markos which is located in north western part of Ethiopia. The town is 300 km NW of the capital, Addis Ababa and 265 km SE of Bahir Dar, the capital of Amhara National Regional State.

4. Methods

The primary student data was collected in 4th year Civil Engineering Section A extension course. For this research the following primary data collection methods were applied.

i. Questionnaires

Eleven crucial questions were prepared and framed different perspectives to explore the feeling/attention and practice of *students* with respect to active participation during the course High-Way group project. All those interviews were focus mainly on how to enhance the quality of education and improve the actively participation of students in the classrooms. Finally the distributed questionnaires were collected and interpreted using excels.

ii. Interview

Interviews were the second way of gathering student data. The interviews were focused on how to enhance the quality of education and improve the actively participation of students in the class room. Five well reviewed and structured interview questions were distributed to explain their ideas freely.

iii. Sample Size

In this research the target population of the study includes 4th year civil engineering students who participated High-Way design project. The actually number of students was small in number that is 15 students. Therefore, all the

students have been taken as a population for the study.

5. Results and Discussion

Data was collected from the target population of civil engineering 4th Year Section A extension students through questionnaires and interview data collection system.

5.1 Data Obtained from Questionnaires

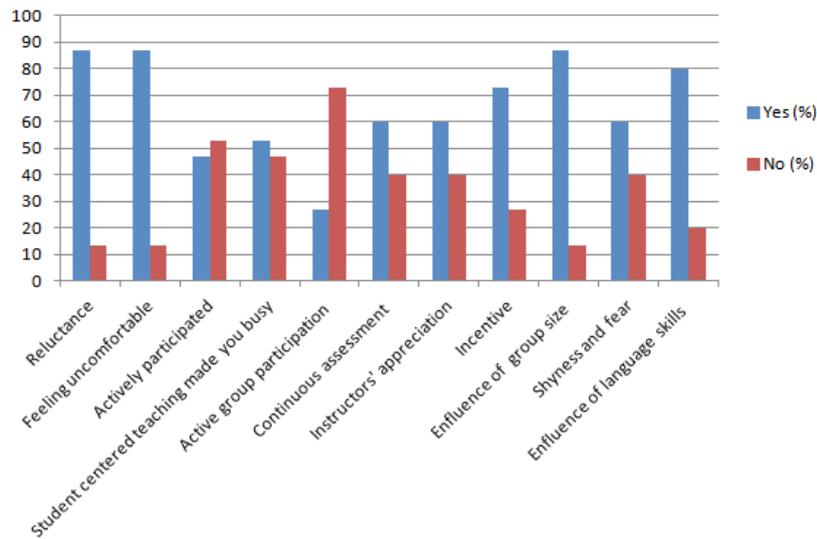
To analyze the feeling/attention and practices of civil engineering 4th Year Section A extension students, eleven crucial questions were prepared and framed from different perspectives. The responses to the questionnaires revealed the instructor to student relationship was not always positive; A few of the instructors have treated the students unwisely responding to diminish their vision and dreams of actively participation in the class (Table 1). Therefore, most of the interviewees stated that creating a safe learning environment is essential. Instructors should have training for active learning-teaching methods.

From the above table 87% of the students responded that group participation has been affected by being afraid, reluctance or feeling uncomfortable when they randomly asked to response to the whole class. Only 27 % of the students responded that all members of the group have actively participated in each activity. On the other hand 60% of the students stated that the instructors positively appreciating their trails in participation. While 60% the students stated self-confidence, shyness and fear are the triggering factors to present their ideas in front of the whole class clearly and freely. 87% of the students responded that large group size has a negative impact on active participation teaching methods.

The cluster analysis of questioners responses presented on the bar graph below.

Table 1 Questionnaires and the response of civil engineering 4th Year Section A extension students

| No | Questionnaires | yes | % | No | % |
|----|---|-----|----|----|----|
| 1 | Feeling afraid and being reluctance to present their ideas for the whole class | 13 | 87 | 2 | 13 |
| 2 | Feeling uncomfortable for brain storm question that you're randomly invited to response for the class | 13 | 87 | 2 | 13 |
| 3 | Always attend and actively participated in the whole activities | 7 | 47 | 8 | 53 |
| 4 | student centered teaching methods made you busy | 8 | 53 | 7 | 47 |
| 5 | All members of the group have actively participated in each activity | 4 | 27 | 11 | 73 |
| 6 | To create self confidence & competent student, continuous assessment is vital. | 9 | 60 | 6 | 40 |
| 7 | Positively treating and appreciating of your trial | 9 | 60 | 6 | 40 |
| 8 | Incentive/encouraging instructors to push and actively supervising each group | 11 | 73 | 4 | 27 |
| 9 | Large group size has a negative impact in active participation | 13 | 87 | 2 | 13 |
| 10 | Shyness and fear are the triggering factors to present in front of the audience | 9 | 60 | 6 | 40 |
| 11 | Language skills has negative consequence for actively participating | 12 | 80 | 3 | 20 |



Graph 1. The cluster analysis of the questioners

5.2 Data Obtained from Interview

The second methods of collecting primary data for this action research were through interviewing Debre Markos University institute of technology civil engineering 4th year sec A extension students and some staff members to explain their ideas freely. For this activity the five framing questions were prepared.

1. Why the students are not actively participation in the group work activities?
2. Which types of assessment method do you prefer and why?
3. What do you feel on applying active learning methods in your field of study?
4. What is the impact of class room arrangement on teaching learning process?
5. Do you think that the usual organized class arrangement has a negative impact on group participation?

The responses obtained from the interview were articulately described and summarized as follow.

Based on their experience and observation the staff members of Debre Markos University responded that students had not been attended in the group work activities, lack of willingness and poor habit of participating in group work. They also noted the main reasons students were reluctant to use active learning methods, course curriculum condition (nature of the course content), lack of subject matter knowledge were the major causes of students that do not participated actively in the group works.

According to the civil engineering section A extension students low participation resulted from:- a. lack of time they come from remote areas, b. different geographic location of the group members preventing them to meet

together, c. unable to get internet access to update their content and subject knowledge, d. jobs, they are partly governmental employees, e. home life being a leader of the family, f. feel tired due to overloading, g. expense increase due to transportation cost, h. lack of willingness to work together were the major factors/causes for low participation of students in group work. On the preferred assessment method, students preferred objective types of questions per specified test/exam schedule since they believed that it gives some preparation time. Students believed that time was a limited factor to apply active learning method to their field. Based on the interview conducted the usual class room arrangement has its own impact in applying group work activities. The class room arrangement should be regarding when applying the active learning methods.

Generally from the above analysis there are gaps in the behavior of some of the students and instructors. The authors strongly believed that a continuous and actively supervising of the students is vital to bring behavioral and learning change for students.

5.3 Actions to be Taken to Improve Student in Group Participation

The analyzed questionnaire and interview data lead us to plan effective changes related to students' needs. Several approaches can be used to improve students' participation in group work. The approaches were identified on the basis of the researchers' experience, interview with teachers and questionnaire from the students. The following approaches were used to make group work effective.

- Friendly communication to students about the rele-

- vance of the group work
- Small group sizes formation.
- Inclusive group formation.
- Clarify the process and the final outputs of the tasks (Giving clear direction about the group work).
- The group work tasks will be interdependence and fairly distribute among each members.
- Apply Crossover group communication.
- Formulate adequate mechanism to assess the contribution of each group member.
- Use continuous assessment methods

5.4 Actions Implemented

The approaches identified by the researchers to improve students' participation in group work were implemented on the fourth year section A civil engineering extension students. First, the students were told about the relevance of group work for their learning (rationale for using group work). Second, the students were assigned randomly into five disaggregate groups of three members (small group) to keep the groups balanced. Third, the students were given clearly set direction and expectation for group work. Fourth the presenters were randomly assigned among students with circulating group leader. This ensures everyone will be ready, responsible, actively participate and avoid dependency among one another. After the presentation is completed, each student was instructed to answer some questions from the teacher and members of other groups based on what was presented by his/her respective group.

Finally, an assessment technique that considers the contribution of each group was implemented. During the implementation of the final approaches, both the process and the product of the group were considered.

Lastly, the students were required to show their understanding on each task to ensure all students were participated equally in each task. They performed very well, with full confidence in their presentations in front of their classmates.

5.5 Evaluation of the Changes

The researchers tried to see whether the selected approaches have brought changes in students' behavior (participation) in group work. To this end, when the group work is in process, completed and submitted, the researchers were committed to evaluate the accomplishments of the action research in each stage.

The points listed below were the evaluation that was done by the researchers:

- Strict observation were held by teacher during their group work activities,

- The students were required to answer some questions such as state the objectives and significance of their group work tasks,
- The students were also requested to present their group work to their class. In that way the contribution of each member of a group is determined on the basis of his/her response to questions rose mainly by the teachers and by the members of other groups as well.

Finally, it was observed that almost all the group members of the students were able to answer the questions raised from the teachers and their classmates. It helps the researcher to check individual participation in group work. This indicates that the participation of the students in group work improves after the selected actions or strategies were implemented.

Therefore, on this action research project we have justified that active learning teaching methods such as collaborative, group works, cross over groups, balloon game, jigsaw, microteaching, buzz groups, presentation and others similar activities are the basic solutions to enhance students' participations in group work and help each other.

6. Conclusion

According to the data that we have collected from civil engineering 4th year section A extension students applying Active Learning Methods is extremely difficult. This is because we can't solve many of the participation problems of students, many come from remote area to the university, some of them were overloaded by engaging in governmental office and have being the leaders of their families. As a result of these factors, they did not have enough time to meet for group works. However, according to the action research done in civil engineering 4th year extension students through continuous advising and convincing to apply active learning methods, they have achieved a good understanding and performing active participation in their group work activities.

In this action research we have learned that it is possible to improve students' participation in group work by appropriately implementing different methods such as communicating the relevance of group work for learning, assigning students randomly into groups of small size, random assigning of presenters, circulating the group leader, giving clear directions and expectation about group work and assessing students based on individual contribution. Therefore, we have concluded that an active learning method helps students to share skill, knowledge and attitude to each other through group participation.

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