

# Improving Student's Participation in the Classroom in Chemistry Freshman Students at Assosa University: An Experimental Action Research

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**Abstract:** There is no question that education plays a great role for all aspects of development. When we see the developed nations in the world; they have been developed not only they have excess natural resources and minerals, but also they have learnt how to use it and how to properly manage it. In other words, they have a great advancement in education. Numerous studies have been conducted on engaging students in classroom discussions. Here, previous research is pulled together to gain a comprehensive overview of the benefits of participation, logistical issues in participation, student confidence and personality traits in participation, the instructor's influence on and suggestions for increasing participation. In case of our country, the government takes different measures to enhance the development; one is by education. But our education system faces different challenges. Among them is our students are not taking learning as their own responsibility rather they consider it as a fulfillment of having some kind of certificate. In short, they are not actively participating in the classroom. To conduct the study both interview and observation are used as a data gathering tools to collect information about the student's participation in the classroom. Different action strategies were taken like, advice; changing the seating arrangement, reinforcement, etc...from this interventions used by observations there around on average 14 students participated per day which is seen to be a great change in participation that existed before. In general, the research indicates that there is a great change in the behavior of students to actively participate in the classroom.

**Keywords:** Classroom, Active Participation, Passive, Action Strategies

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## 1. Introduction

### 1.1. Background of the Study

Education plays a key role for the development of a country. Our country, Ethiopia is now taking different measures to use education for development. Among the mechanisms to list a few are; expanding the universities up to 33 nationwide and also different university colleges and technical vocational schools, increase the intake capacities of universities 100,000 and above each year, creating a university-industry linkage, 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, and also introducing active learning methods in all Ethiopian Universities. Our University (Assosa University) also adopts active learning

methods and now we are just practicing it.

According to Education Sector Development Programme IV (ESDP IV) It is necessary therefore to shift attention to quality concerns in general and to those inputs and processes which translate more directly into improved student learning and which help change the school into a genuine learning environment (such as: quality-focused school supervision, internal school leadership, increased student participation, school-community partnerships).

When we see the literature, the views of learning theorists such as Vygotsky on learning and instruction challenge the wisdom of traditional pedagogic practice quite significantly (Beck 2001). William (1989), however, argues that activity-based learning is influenced by institutional and interactive social factors; whereas Vygotsky's theory characterizes learning as an individual's concrete perception of real world objects. He states, moreover, that cognitive learning takes

place through social interactions through which knowledge is internalized.

The traditional classroom regards learning as a process of student absorption of knowledge that has been pre-digested and imparted by the teacher. The new approach emphasizes active participation of both the learner and the teacher. While the teaching in the tertiary setting is acknowledged to have some exceptions, largely this rule of learning remains the same at all levels of teaching and learning. Biggs (2003) highlights the need for some changes in tertiary teaching and instructional design to bring about better teaching and learning outcomes. He further states that according to Halligan (1988), reciprocity is a hallmark of good interaction, especially in pupil-pupil exchange, which enhances learning. This emerges as a common criterion for 'good quality' interaction in a range of teaching-learning contexts. Biggs (2003) further suggests that active learners are able to achieve a higher level of engagement and thus a higher level of cognitive learning in their academic work. This study, which clearly demonstrates that when students interact more intensely their performance improves, supports Biggs's assertion.

Even if our government takes different measures to achieve a better goal by the education system; there are different challenges that the education in the universities face. Among them the basic one is our students are not active participants in the classroom. Thus there is a strong need to create active and responsible citizens that could participate in achieving core objectives. Here, because of this we need to improve the participation of students in the classroom by creating different mechanisms.

### **1.2. Statement of the Problem**

In today's world; Education has been transformed as to be a means for achieving one's own need and this can be accomplished by implementing active learning. In the earlier times students are considered as to be an empty pot that the teacher will fill knowledge by lecture method without an active involvement of students in the classroom i.e. by considering students as passive learners, so that they have no room for participation and discussion in the classroom.

In contrary to the above assertion; there is a constructivist approach for learning that students should have to play a great role for their own learning and take a responsibility. The advocates of constructivists consider (ideas) should have to be constructed by the learner by themselves, if so education will be very interesting and fruitful. This means that we have to use active learning methods so that students will interact with their environment and discuss with their colleagues. Now the Ministry of Education (MOE) is advocating active learning approach in all our 33 universities. But when we come to Assosa University even if we are using some active learning methods students are very dormant to participate in the classroom can be contributed by different factors like large classroom, awareness of teachers to use active teaching methods is low, students' perception about education is very low, etc... Besides, the researcher has two and three years

experience in teaching such kind of students but now we want to change this assertion so that our students will be active participants in the classroom that will contribute for the overall development of our country.

### **1.3. Research Objectives**

The general objective of the study is "to improve classroom participation" of students of first year chemistry department of Assosa University.

### **1.4. Specific objectives of the Study**

In line with the general objective, the following specific objectives are stated. These are

1. To assess the level of participation of students in the classroom.
2. To identify teaching methods which encourage students to participate in the classroom?
3. To identify factors that hinder students from participation.

### **1.5. Research Questions**

The following research questions are stated as a research question:

1. What is the level of students' participation?
2. How teaching method affects students' participation?
3. Why students' participation becomes low in the classroom?

## **2. Literature Review**

Volumes of literature have been written regarding the value and importance of student participation in classroom discussion. Few, if any, instructors (particularly at the college level) would dispute the position that students who participate in class learn more. This is, after all, how most of us feel we learn the best. However, actual evidence to support this hypothesis seems somewhat lacking. Rather, for most educators, it is almost intuitive that creating an environment where students freely converse and share ideas cannot help but foster a better understanding of course material and an appreciation for what it means to be a mature learner and thinker. But educators must be cautious in their assertions. Today's teachers must be aware of our weaknesses and strengths.

A number of studies have been carried out in the past to determine the effectiveness of teaching and learning strategies and a number of methods have been proposed. However, these strategies cannot be applied in every teaching and learning situation, particularly in multi-cultural tertiary settings, and they need careful consideration while being implemented in such situations. There is a need to identify how these strategies can be applied most effectively into the classroom, giving special consideration to various factors and the mechanisms in the learning process, such as time allocation for the task, applying the correct teaching strategy, the teaching learning environment and the quality of

instruction to engage the students in the learning task. These entail the level of student involvement in the class discussion and the learning activity.

As argued by Biggs (2003), the learning process depends on the level of student-student interaction and student-teacher interaction in a conducive learning environment. The formation of appropriate interactive groups and the effective use of materials with clear instructions are essential tools in the teaching-learning process.

Williams (1989) states that Vygotsky's common concept in his writing about learning, the 'Zone of Proximal Development', indicates that range of skill the learner is developing but has not yet been able to master. He strongly believes that what a learner is able to achieve with assistance at one point in time, he or she will eventually be able to do unaided. If learning inside the classroom is done through interaction, the learners develop the skills through peer assistance, and hence become able to do it on their own.

McIlrath and Huitt (1995) strongly believe that models are very effective in facilitating action research in learning and teaching. One way of applying these models is for teacher scholars to look critically at their own teaching strategies, frequently conducting research in their own classrooms to find out the effectiveness of their methods. His discussion on the model of learning clearly focuses on a number of issues. One of these is the dominance of time and the quality of instructional inputs. He argues that sufficient time allocations and opportunity for practice and remedial intervention are essential for achieving the required level of mastery of the subject.

In this research we analyze our interaction with the students in the teaching-learning process. In the context of our, students may be characterized as passive learners, for whom it has been found that classroom interaction tends to be a one-way process. The present study uses observation to investigate this aspect of weakness in the teacher-student interaction process. Another crucial factor in effective teaching and learning is the correct implementation of cooperative learning. Many studies have shown that correct implementation of the technique yields improved results in acquisition and retention of the subject and contribute to the development of interpersonal communication skills and self confidence (Johnson, Johnson and Smith 1998).

Oakley et al., (2004) strongly believe that students should be involved in discussion that is strongly interactive. This enhances student cooperation for positive learning outcomes and confidence building. According to Johnson and Johnson (1985) where group interactions are strong, student learning outcomes are more desirable and a higher level of self-esteem is achieved. This produces a more open learning environment where students speak out more freely with confidence and acquire related skills. Additionally, students involved in interaction in classroom learning tend to display higher motivation to learn, especially intrinsic motivation. By this process the students are also encouraged to assist their peers, thus promoting more effective learning. Where the instructor intends to apply interactive learning, specific

strategies are need. This has to be identified and practiced in a constructive way to monitor group characteristics and behavioral trends to maximize the interaction and hence the learning process (Johnson and Johnson 1985).

Instructors' input in the interaction process also influences the learning process in many important ways, particularly learners' attitudes towards the instructor, the peers and the subject matter. Johnson and Johnson (1985) argues that clarity of instructions is instrumental in both the interaction process and the learning outcomes. Deutsch (1962), Johnson and Johnson (1983), Sharan (1980) and Slavin (1977) strongly support structuring of the classroom to facilitate cooperative work among students, which they point out is an essential feature in interactive strategies (Johnson and Johnson, 1985). Researchers argue that discussing issues with one another in the group and supporting each others' ideas with reasoning enhances student learning and builds self-confidence. Further, they argue that a strong sense of positive interdependence among group members builds better coordination and helps in the exchange of ideas (Johnson and Johnson, 1985). The results of this study support these views.

Moreover, Johnson and Johnson (1985) found in their research that cooperation is preferred to be the dominant interaction pattern in the classroom compared to the competitive or individualistic setting Kaufman and Felder (2000). They found that in a cooperative setting, achievement improved and learners developed a more positive attitude towards the subject. At the same time, they found that the positive response is not universal; students who were reluctant to interact with others may be negatively affected. Therefore, caution is needed when interactive learning is being encouraged, to recognize that such learners need special attention to develop the right attitude towards the interactive process. This requires the application of appropriate instructional strategies as the instructor monitors the program in operation.

The formation of groups is also an important task in the process of enhancing interaction. The instructors should be instrumental in the formation of groups based on appropriate strategy to enhance the interaction. For example, weaker students should be coupled with the stronger ones, to facilitate the learning and interaction. Failing to do this could result in adverse outcomes for the weaker groups, which could have long term adverse outcomes. Normally, the stronger students tend to seek other stronger ones leaving the weaker students to group with each other Oakley et al (2004).

If stronger and weaker students are combined in the groups, the weaker ones are able to gain from the stronger students in tackling the assigned tasks. In this way, but indirectly, the weaker students are receiving peer tutoring. On the other hand, the stronger students gain confidence in the subject matter and are encouraged to interact, reinforcing the teaching and learning process (Oakley et al., 2004). They further argue that continued interaction could transform the pair groups into effective teaching-learning team. It is important therefore, to set out clear guidelines for team functioning and formulate a common set of expectations for

the group task.

Time is another factor that affects learning outcomes. In McIlrath and Huitt (1995), Huitt supports Proctor's (1984) claim that in academic learning time is one of the process predictors of student achievement. McIlrath and Huitt (1995) further state that student involvement, as defined by Carroll (1963) refers to the engagement time or time-on-task. This implies that the time given to the students for a particular task determines the learning outcome. If the students are not provided enough time to learn or engage in the activity, then the outcomes are likely to be poor. The time allocated should be sufficient for the students to decipher the materials and engage in the learning activity.

### 3. Research Methodology

#### 3.1. Target Group

The target groups of this research are first year chemistry students which are 37 in number. First year students were selected because, they are more benefited from the result of the research than second and third year students and they are better suited for our action research project because the other second and third year students finish classes before the research was completed. The overall data and practice was carried out in Mathematics subject sessions.

#### 3.2. Research Approach

The study was both qualitative and quantitative type of research, because both numerical and non-numerical data were collected during the study by observation and interview with the students in the classroom.

##### *Type and Source of Data*

The study used both primary and secondary data. The primary data were collected through observation and interview from first year chemistry students. The secondary type of data also collected from published and unpublished materials which are from authorized and authenticated organizations such as department documents, journals, etc...

The sources of data for this study are basically first year chemistry students of Assosa University.

#### 3.3. Method of Data Collection

To begin this investigation, online library databases were searched for academic journal articles that were clearly investigating student participation in classroom. Dissertations, conference papers, and book reviews were not included. Though out-of-class communication is clearly important, the effort here was focused on the communication that takes place inside of the classroom, and to a lesser extent, that which takes place in the "in-class" online environment. Qualitative and quantitative data were collected using interview and observation from the class selected for this research. As a quantitative approach, observation was carried out for two months in class for their participation relative to many different factors; particularly a check list were used for five days for which how many students were

participated, interview was conducted with those students who are inactive in class participation to what makes them passive in the class. In addition to this, interview was conducted with students who seat at the backside. As a qualitative approach, the journal studies assisted well, allowing students to give independent opinions on the effectiveness of the teaching methods. The literature provides support to the methods chosen in this research.

#### 3.4. Data Analysis

The data which is found by interview and observation for the three specific research questions was analyzed using micro-soft Excel and also percentages and averages were used.

### 4. Data Presentation and Analysis

The findings of the study can be put into three categories in relation to our three specific research questions that we found from the interview and observation. These data collection tools were used to answer the three specific research questions as much as possible.

#### 4.1. Magnitude (Level) of Participation

From Table A1, Out of a total number of the students on average eight students were participated per day; that is on average 29 students were inactive in a day. From the inactive students, female students account on average almost 67.59%, 28.28% are males and the rest are students who are absent in class.

#### 4.2. Teaching Method of the Instructor

In case of the teaching method, from the information we get by observation and interview for inactive students it has a great impact on students' participation in class and some students account their inactivity the teaching methods that teachers use. Even if the university is practicing active teaching methods not all of the instructors are implementing it correctly as it is planned as we get from the information with informal discussions. Some of the factors instructors listed are; class size, class schedule, etc...The students said that it would be better for them to use active teaching methods so that they will participate better in the classroom.

#### 4.3. Problems of Students

From the total inactive students; 90% were seated at the back of the class. Female students at the back of the class account 94%. From the students interviewed for their low participation in class, 60% were due to afraid of their incorrect response, 23.45% were due to language problem and 16.55% were due to their background. In case their seating position in the class, those students who seat at the middle area of the class were mostly those students with background problem that is problems like not participated before, with less background knowledge, etc... But 86% of the interviewed students have chosen the back side because of their assumption that a teacher can't ask them. Students assume that they are out of control, if

they seat at the backside.

Another reason that students may not participate in class is because of their own personal fears of feeling inadequate in front of others, regardless of the logistics of the classroom setting. From the data it would be concluded that students may feel intimidated or inadequate in front of their classmates and teachers, and thus choose not to participate. Students even reported confidence as the most motivating factor for their participation in class.

## 5. Conclusion

In this study, the researcher found different factors that are directly related to the low classroom participation. As we have seen in the data presentation and analysis part of this study, most of our students are not participated in class. Based on this problem and the objective "Improving classroom participation" the researcher had been devised different action strategies/interventions were taken like; positive reinforcement, using active teaching methods, using active teaching methods, changing the seating arrangement, giving advice for those who are in need, etc...

The outcome of this study was students are less motivated to participate in class but we have to create a conducive environment for them to have a motivation for participation so as to achieve their own goal.

## 6. Future Work

### 6.1. Actions Taken/Intervention

There are so many students who are not active participant in the class. Thus there is a need to take an action. To improve students' participation in class, so many action strategies were taken. The following are among the action strategies taken:

1. Positive reinforcement for those who make other students active in their one to five arrangement; this can be done by first using by their one to five arrangement at the beginning of the class and mostly one student is

active in their group so we will give a positive reinforcement for him for what he did in the classroom for his group members.

2. Introducing the next session topic and tell them to prepare a short not on that topic and read it finally they can come with some idea; this can be done by giving a handout and told them to read in their one to five group arrangement.
3. For those students with the afraid of different factors, corresponding psychological advice was given depending on the issues that make students to be inactive by the instructors.
4. The seating arrangement of the students' was exchanged depending on the nature of the problem this can be done by arranging their one to five in a way that they can rotate with in some interval of days.
5. Ask for new hands or for some new people to speak, ask students on opinion questions learn students' names and call them by their names, ask students meaningful questions, and finally control the students who are over-participants in chemistry first year students there is one students who can control the class, we made other students to participate so that it will not always given the chance for him rather it will be distributed for others.

### 6.2. Action Evaluation

By applying the above actions in the classroom and by the results obtained from the observation (see Table A2) on average 14 students were participated per day. Among this on average 60% of them are Females and 38.57% were males. From this we can understand by applying the above action strategies our students inactivity were more or less changed but there exists a need more research and action undertaken to have a very important change in students participation

### 6.3. Description of the Next Step of This Research

The researcher was deciding to apply all the techniques that are given and others based on the specific class situation to motivate students to participate in the classroom.

## Appendix

*Table A1. Checklist Before the Intervention.*

Day(s)	Number of students participated			Number of students not participated			Remark
	Female	Male	Total	Female	Male	Total	
Day 1	5	3	8	20	8*	28	*1 absent
Day 2	4	3	7	20*	9	29	*1 absent
Day 3	3	3	6	20**	9	29	**2 absent
Day 4	6	4	10	19	8	27	---
Day 5	5	4	9	19*	7*	26	*1 absent

*Table A2. Checklist After Intervention.*

Day(s)	Number of students participated			Number of students not participated			Remark
	Female	Male	Total	Female	Male	Total	
Day 1	9	6	15	15*	5*	20	*1 absent
Day 2	8	6	14	17	6	23	---
Day 3	8	5	13	15**	7	22	**2 absent
Day 4	7	5	12	16	9	25	---

***Students Interview Guide***

1. Why do you think students' participation in the classroom is very low?
2. What do you expect from the teacher that will motivate students to participate in the classroom?
3. What is expected from you to participate in the class?

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