

FACTORS AFFECTING THE IMPLEMENTATION OF
ACTIVE LEARNING IN CHEMISTRY LESSONS
(THE CASE OF GRADE 11 STUDENTS IN SOME PREPARATORY
SCHOOLS OF HORO GUDURU WOLLEGA ZONE,
OROMIA REGIONAL STATE)

BY
TESHOME MOSISA



A THESIS SUBMITTED TO
THE DEPARTMENTT OF CHEMISTRY
SCHOOL OF APPLIED NATURAL SCIENCE
PRESENTED IN PARTIAL FULFILLEMENT OF THE REQUIREMENT FOR
THE DEGREE OF MASTER'S IN APPLIED CHEMISTRY

OFFICE OF GRADUATE STUDIES
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

SEPTEMBER, 2017
ADAMAA

FACTORS AFFECTING THE IMPLEMENTATION OF
ACTIVE LEARNING IN CHEMISTRY LESSONS
(THE CASE OF GRADE 11 STUDENTS IN SOME PREPARATORY
SCHOOLS OF HORO GUDURU WOLLEGA ZONE OROMIA
REGIONAL STATE)

BY

TESHOME MOSISA

ADVISOR: GEMECHU DERESA (PhD)

CO-ADVISOR: ROBSAN MERGO (PhD)



A THESIS SUBMITTED TO
THE DEPARTMENT OF CHEMISTRY
SCHOOL OF APPLIED NATURAL SCIENCE
IN FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN APPLIED CHEMISTRY

OFFICE OF GRADUATE STUDIES
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

SEPTEMBER, 2017
ADAMA

DECLARATION

I hereby declare that this MSc Thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis/ dissertation have been duly acknowledged.

Name: _____

Signature: _____

This MSc Thesis has been submitted for examination with my approval as thesis advisor.

Name: _____

Signature: _____

Date of submission _____

ADVISOR'S APPROVAL SHEET

To: Chemistry department

Subject: Thesis submission

This is to certify that the thesis entitled “ Factors affecting the Implementation of Active Learning in Chemistry Lessons (The Case of Grade 11 Students in Some Preparatory Schools of Horo Guduru Wollega Zone Oromia Regional State)”submitted in partial fulfillment of the requirements for the degree of Master’s in Applied Chemistry, the Graduate program of the department of Chemistry, and has been carried out by Teshome Mosisa Wako Id. No GSS/0229/05 under my/our supervision.

Therefore, I/we recommend that the student has fulfilled the requirements and hence hereby he/she can submit the thesis to the department.

Major Advisor: Gemechu Deresa (PhD) Signature _____ Date_____

Co-Advisor: Robsan Mergo (PhD) Signature_____Date_____

APPROVAL OF BOARD OF EXAMINERS

We, the undersigned, members of the Board of Examiners of the final open defense by **Teshome Mosisa Wako** have read and evaluated his/her thesis entitled "Factors affecting the Implementation of Active Learning in Chemistry Lessons (The Case of Grade 11 Students in Some Preparatory Schools of Horo Guduru Wollega Zone, Oromia Regional State)" examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirement of the Degree of MSc in Chemistry.

Gemechu Deresa (PhD)
Major advisor

Signature

Date

Robsan Mergo (PhD)
Co-advisor

Signature

Date

Fedil W Kedit (PhD)
Chairperson

Signature

Date

Hadeu H / Kiros
Internal Examiner

Signature

Date

Rndalew Rufa (Dr.)
External Examiner

Signature

Date

ACKNOWLEDGEMENTS

Frist and for most, I am grateful for His love and kindness of the Almighty God in giving me health, strength, patience and protection throughout my study work. Next I would like to deeply appreciate and gratify my advisors Dr .Gemechu Deressa and Dr. Robsan Mergo for their valuable guidance, constructive comments and encouragement at every stage of the study from proposal preparation to the end of this paper.

In addition I am grateful thanks to students, chemistry teachers and directors of the preparatory schools of Amuru, Alibo and Agemsa who co-operated me during data collection. Last but not least my sincere gratitude goes to Adama Science and Technology University for providing financial support for this work.

Finally I would like to thank my family and friends for their invaluable support and encouragement during my study.

TABLE OF CONTENTS

CONTENT	PAGE
DECLARATION	i
ADVISOR’S APPROVAL SHEET.....	ii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES.....	vii
ABBREVIATIONS AND ACRONYMS	ix
ABSTRACT.....	x
1. INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of the Problem.	3
1.3 Objectives of the Study	5
1.3.1 General objective	5
1.3.2 Specific objectives	5
1.4 Significances of the Study.....	5
1.5 Delimitations of the Study.....	5
1.6 Limitations of the Study	6
1.7 Operational Definitions of Important terms	6
1.8 Organization of the Study.....	6
2. REVIEW OF RELATED LITERATURE	7
2.1 The Origin of Active Learning.	7
2.2 Essence of Active Learning.....	7
2.3 Principles of Active Learning in Chemistry Lessons	9
2.4 Approaches of Active Learning in Chemistry Lessons.....	9
2.5 Importance’s of Active Learning in Chemistry Lessons	9
2.6 Factors Affecting the Implementation of Active Learning in Chemistry Lessons.....	9
2.6.1 Appropriateness of the curriculum prepared for the level.	10
2.6.2 Teachers competence in the implementation of active learning chemistry lessons.....	10
2.6.3 Students readiness in the implementation of active learning during lessons.....	12

2.6.4 Availability of adequate facilities used during chemistry lessons.	12
2.6.5 The impact of class size on implementation of active learning.	13
2.6.6 The role of educational leaders towards implementation of active learning.	13
2.6.7 Societal attitudes towards chemistry lessons.	14
2.6.8 Influence of assessment methods used by chemistry teachers.....	14
2.7. Conceptual Frame Work	16
3 .RESEARCH METHODOLOGY.....	17
3.1 Research Design.....	17
3.2 Study Area and the Sampling Sites	17
3.3 Data Types and Sources	19
3.4 Sampling Techniques and Sample size Determination	19
3.5 Instrumentatipn and Validation	20
3.5.1 Questionnaire	20
3.5.2 Interview	20
3.5.3 Class room observation.....	20
3.6 Procedures of Data Collection	21
3.7 Methods of Data Analysis	21
3.8 The Issue of Validity	21
3.9 Ethical concerns	21
4. RESULTS AND DISCUSSIONS.....	22
4.1 Analysis of Data obtained from Students' Questionnaire.	23
4.2 Analysis of Data obtained from Class room Observations.	43
4.3 Analysis of Data obtained from Interview Questions.	48
4.3.1 Analysis of data obtained from Interview of chemistry teachers.	48
4.3.2 Analysis of data obtained from school directors.....	49
5. SUMMARY, CONCLUTIONS AND RECOMMENDATIONS	50
5.1 Summary	50
5.2 Conclusions	511
5.3 Recommendations	52
REFERENCES	53
APPENDICES	57

LIST OF TABLES

TABLE	PAGE
Table: 1 .sampled preparatory schools and the number of samples taken for the study.....	19
Table: 2 .sampled preparatory schools with sample size taken for the study.....	20
Table: 3 .Distributions of students according to their sex and age.....	20
Table: 4.Views of students towards teachers' competence in active learning.....	23
Table: 5 .Views of students towards appropriateness of the curriculum in active learning.....	26
Table: 6 .Views of students towards student's readiness in active learning.....	28
Table: 7 .Views of students towards adequate facilities in active learning.....	30
Table: 8. Views of students towards large class size in active learning.....	32
Table: 9 .Views of students towards the roles of educational leader ships in active learning.....	34
Table: 10. Views of students towards societal attitudes in active learning.....	35
Table: 11. Views of students towards the assessment method used active learning.....	37
Table: 12. One sample T-test analysis of students response.....	39
Table: 13. Correlation analysis of the implementation of active learning and factors.....	40
Table: 14 Regression analysis of the implementation of active learning method to factors.....	41
Table: 15. Stepwise multiple regression of implementation of active learning on independent variable treated.....	42
Table: 16. Class room conditions to implement active learning.....	43
Table: 17. Chemistry teachers' competence to implement active learning.....	44
Table: 18. Implementation of the curriculum in the teaching learning process.....	45
Table: 19. Students' readiness during implementation of active learning.....	46
Table: 20.Availability of adequate facilities to implement active learning.....	47
Table: 21.Assessment related activities in the teaching learning of chemistry lessons.....	47

LIST OF FIGURE

FIGURE	PAGE
Map of the study area.....	18

ABREVIATOIN AND ACRONYMS

ICDR- Institute for Curriculum Development and Research.

MOBCN-Ministry of Basic Education and Culture of Namibia.

MoE- Ministry of Education.

ABSTRACT

The objective of this study was to assess factors affecting the implementation of active learning in chemistry in some preparatory schools of Horo-Guduru Wollega Zone. To achieve this goal Amuru, Agemsa and Alibo preparatory schools were selected as study area. The sample study consisted of 228 grade 11 natural science students, 7 chemistry teachers and 3 school directors/vice directors of the school. The students were selected from each sample school using simple random sampling technique. The chemistry teachers and the school directors/vice directors were selected on the bases of availability sampling. The research method employed in the study was a descriptive survey. Questionnaire, Interview and Observation were the major data gathering tools used in the study. The data was analyzed and interpreted by descriptive statistics using spss in terms of the frequency of number of respondents' in percentage, mean, standard deviation, one sample T-test, Pearson correlation and regression analysis method. The result of the study revealed that the magnitude of implementation of active learning methods during chemistry lesson was not much expected; this was related to factors affecting its implementation in the teaching-learning process, mainly teacher's competence, and appropriateness of the curriculum, facilities, class size, roles played by educational leaders, societal attitudes and the assessment methods used in the process of implementation. The main problems observed in the teaching learning of chemistry includes, ineffective implementation of the curriculum mainly using the strategies properly, lack of instructional materials and adequate facilities , unequal and low participation of students, large class size , insufficient support given by educational leaders for the implementation of active learning, low positive societal attitudes towards chemistry lessons. Based on the findings, the conclusions were made and recommendations forwarded to alleviate the existing problems.

Key words: - Active learning, Student-centered, Implementation, Instructional-materials.

1. INTRODUCTION

1.1 Background of the Study

Education is often regarded as the most determinant factor for socio-economic development and progress of countries and no country can achieve the intended goal without education and training programs. Focusing on the Science and Technology Education is becoming a common goal for nations regardless of their developmental level (Weil-Barais, 2001) for advancement in science and technology helps as a tool for boosting the country's economic, social and political development.

Teaching is a process that involves bringing desirable changes on learners so as to achieve specific outcomes (Ayeni, 2011). In order for teaching to be effective teachers need to be conversant with numerous teaching strategies that take recognition of the magnitude of complexity of the concepts to be covered (Adunola, 2011).

Active learning is a teaching strategy or any instructional method that engages students in the teaching-learning process that makes students to do meaningful learning activities like class discussion, small group discussion, and debate, posing questions to the class, think-pair-share activities, and short written exercises and polling the class (Bonwell and Eison, 1991).

Active learning method not only encourages students' autonomous learning and problem solving skills but also provides pupils with greater personal satisfaction, more interactive with peers, promotion of shared activity and team work, greater opportunities to work with range of pupils and for all members of the class to contribute and respond (Capel, *et.al.*, 1995).

In the modern world, schools are considered a place where information and facts are imparted and the learners get a lot of knowledge and skills of various natures by their own, using active learning methods. Regarding this Leu (2000) states that, the young learners, learn best when they can associate what is being learned by making learning meaningful. Modern societies need people equipped with scientific and technological knowledge and skill at the highest level (MoE, 2002). To attain this goal of developing students' science knowledge, teachers need to know chemistry well; how to teach it which in turn, involves having sound chemistry pedagogical knowledge as well as linking it with life problems.

In active learning method, student's need is on the fore front in the design of the course designed which enable students to conduct inquires, acquire knowledge, and make meaning of what they have learned which may lead to better students' attitudes, critical thinking and writing skills by developing students' achievement (Bonwell and Eison, 1991).

Over the past couple of decade's society has placed infinitely more emphases on the academic achievement of its citizens. Thus the quality of education has been the primary focus of different governments for centuries.

To achieve these goals it is necessary to get qualified teachers that are expected to facilitate learning, not merely instruct predetermined facts and knowledge at all levels. This means that the way teachers were trained should assist them to implement, interpret, adapt and elaborate the curriculum, to address the varied learning needs of the pupils in schools and the students' better cope with challenges of life and profession with great ease (SIDA, 2000).

Even though chemistry has great importance for the development of science and technology, it is not possible to say it was reached the desired level in Ethiopian education system. This was attributed to a variety of factors; teacher's competence, students' readiness', methods of teaching, quality and availability of resource materials, attitudes towards chemistry lesson, assessment techniques used, factors in and out the school. The new instructional model, active learning method intends to produce active and motivated learners who can cope with the demands of the modern world (MoE, 2003).

The training of science teachers, especially that of chemistry teaching should considers the use of various teaching and assessment methods in secondary schools in order to equip students with knowledge and skills that enhance their learning out comes (Derebsa,2001).

Even though the objectives of educational policy of Ethiopia (MoE, 1994) were to develop problem solving ability of the individuals; still there are problems in the process of implementing active learning in secondary schools that the researcher observed through his teaching experience.

Even though different factors are faced in the implementation of active learning, the researcher was focused on the basic factors in the teaching-learning of chemistry lessons in some preparatory schools of Horo Guduru Wollega Zone.

1.2 Statement of the Problem.

The primary purpose of teaching at any level of education is to bring a fundamental change in the learner (Tebabal and Kahssay 2011). So to facilitate the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit the specific objectives.

Active learning involves providing opportunities for students to do meaning full talk and listen, write, read, and reflect on the content, ideas, issues, and concerns of an academic subject (Meyer and Jones, 1993).

The method gives greater emphasis up on problem solving mode of delivery at all levels, enhancing the quality of teachers, employing effective teaching methods, assessment technique and disseminating science and technology (Azamat,2013).In addition it makes students to do meaning full learning activities and thinking about what they doing (Bonwell and Eison,1991).

Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research (Hightower, 2011). Moreover, research on teaching and learning constantly endeavor to examine the extent to which different teaching methods enhance growth in student learning. Quite remarkably, regular poor academic performance by the majority students was fundamentally linked to application of ineffective teaching methods by teachers to impact knowledge to the learners (Adunola, 2011).

Chemistry involves abstract thinking, and research shows that older students perform better and exhibit higher level of understanding and schools should set students up for success by teaching chemistry in the latter years of high school rather than earlier (Saul and Kikas, 2003).

In this respect, (Hargreaves, 1993) stated the deeper knowledge and greater confidence in teaching their subject(s); and being aware of becoming proficient in new teaching methods like active learning can certainly help teachers increase their pupils' opportunities to learn. Teachers who are skilled and flexible in using different teaching methods and strategies are knowledgeable about the subject matter and are more able to improve the achievements of students.

Recent studies revealed that most teachers in Ethiopia lack not only the subject matter knowledge but also mode of delivering it and most of them failed to implement the new curriculum mainly because they had little understanding of the contents and methods of delivering it (Derebssa, 2001).

Even though secondary school teachers are expected to apply active learning approach to attain the desired goal, there are different factors that have not been assessed yet and to what extent they affect its implementations. So, the study was focused on the basic factors affecting the implementation of active learning in chemistry lessons in some preparatory schools of Horo Guduru Wollega Zone.

Basic research questions:-

1. To what extent are active learning approaches being implemented in preparatory schools of Horo Guduru Wollega Zone?
2. Do the instructional materials conducive and the class room conditions appropriate to implement active learning in the teaching-learning of chemistry lessons in preparatory schools of Horo Guduru Wollega Zone?
3. What are the major challenges in the implementation of active learning in the teaching-learning of chemistry lessons in preparatory schools?
4. What measures should be taken to minimize factors related to the teaching-learning of chemistry in preparatory schools?

1.3 Objectives of the Study

1.3.1 General objective

The general objective of the study was to assess the major factors affecting the implementation of active learning method of teaching chemistry lessons in preparatory schools.

1.3.2 Specific objectives

1. To check the current status of implementation of active learning in grade 11 chemistry lessons.
2. To identify awareness's of societies on active learning and the contribution of it on students learning.
3. To know the effect of basic factors on the implementation of active learning in the teaching-learning of grade 11 chemistry lessons.
4. To find out ways by which problems related with the teaching-learning of grade 11 chemistry lessons can be minimized.

1.4 Significances of the Study

The study will have the following importance.

1. It will bring feedback for chemistry teachers to improve their active learning methodology.
2. It will give directions towards more effective implementation of active learning in the teaching-learning of grade 11 chemistry.
3. It will indicate the use of participation of teachers, students, educational experts and others bodies in increasing favorable condition for the implementation of active learning.
4. On the top of this, the study will initiate other researchers to conduct similar study at a wider scale in similar areas.

1.5 Delimitations of the Study

It could be better if the study were conducted in large scale. However, due to time concern the researcher was delimited to three preparatory schools of Horo Guduru Wollga Zone, Amuru, Agemsa and Alibo schools.

Even though the schools have grade 11 and grade 12, the study was delimited to grade 11 natural science students, chemistry teachers and the school directors.

1.6 Limitations of the Study

The researcher strongly agrees that the inclusions of large population size in the study could have a great value so as to elicit more credible information. However, because of time constraints the researcher was not able to conduct such in depth broadly study.

1.7 Operational Definitions of Important terms

Active learning: The method of learning in which students actively involve in different activities/tasks in the teaching-learning process (Bonwel and Eison).

Implementation: The process of putting a method or the practical use of methods in a class room.

Instruction: Any deliberation in the teaching learning process which is intended to promote the learning of students in formal settings.

Continuous assessment: -continuous process by which teachers should gather information about learners' progress in achieving the learning targets (ICDR, 1999).

1.8 Organization of the Study

The study was organized in to five parts. The first part was introduction, the second review of related literature, the third was research methodology, the fourth was data analysis and interpretation the last and the fifth was summary, conclusion and recommendations.

2. REVIEW OF RELATED LITERATURE

2.1 The Origin of Active Learning.

In the recent years, educators are advocating a shift from passive sitting and listening to a more active and dynamic learning experience (Wilson and Corpus, 2005).

The development of the methods of teaching has been traced back to ancient Greece in various literatures and the most long lived and widespread set active learning method was those associated with the study of language (ICDR, 1999).

The subject chemistry was developed greatly throughout the 20th century and the subject was introduced to students during their upper secondary school. During the primary school and lower secondary school, the subject science in general is inserted in the school curriculum. Only when the students enter the upper secondary school that they learn chemistry, biology and physics in separate classes.

One of the aims of chemistry curriculum for the secondary school students is to provide students with the knowledge and skills in science and technology. Chemistry has an important role to create awareness on the need to love and care for the environment and plan active role in its preservation and conservation for future communities (Institute of Curriculum Development Research, 2005).

2.2 Essence of Active Learning

Active learning is a technique where students do more than simply listen to lecture they are doing something including discovering, processing and applying knowledge. In addition it refers to practice that requires students to assume a large share of responsibility for conducting inquiries, applying knowledge and making meaning of what they have learned (Chet.*et.al.*, 1993). The method concentrates on the teaching function which helps the teachers to select objectives at the correct level of difficulty to meet the students' needs, which brings the students in to the organization, thinking, and problem solving process of the discipline.

According to Okpala (2006), this method help in building sense of self-expression in the students and serves as means of giving practical experience and awareness. This method, if properly applied, has proved to have immense advantages over the lecture method of teaching chemistry.

A recent study of exemplary science teachers has linked success at improving student interest in science with providing a context in which meaningful learning can take place (Collette and Chiappetta, 1994).

2.3 Principles of Active Learning in Chemistry Lessons

Any other teaching learning method, the student centered method (active learning) approach has its own underlying principles. In the learner centered class room, students are actively involved in the teaching-learning process and their prior knowledge and experience is an integral part of that process. In the process teachers were encouraged to articulate their ideas and opinions in order that create opportunities for learning and encourage learners' anatomy.

According to Institute of Curriculum Development and Research, active learning approach has the following principles:-

1. The students' participation in class room task is necessary for learning.
2. The learner has full responsibility for his/her learning.
3. The learner can experience the cognitive, affective and psychomotor domain of development together in his or her learning.
4. The students work in pairs and in small groups, collaborating, sharing their own idea benefiting from each other.

2.4 Approaches of Active Learning in Chemistry Lessons

According to Berman (1981) and Full an (1982) active learning has its own approach which can be grouped into four broad categories.

1. Characteristics appropriate to the curriculum change being attempted.
2. Local contextual condition at the school district and school level.
3. External factors affecting the lively hood of implementation.
4. Strategies at the district and school levels used to promote the development.

Moreover; Berman (1981) and Fullan (1982) suggested that regardless of its approach, no one curriculum is out of the form of curriculum approach, student centered approach is being affected by one or more combination of the above factors in its implementation.

In addition Rogers (1983) describes all people learning being the goal of student- centered teaching as “significant learning combines the logical and institutive, the felling, the concept and the experience, the idea and meaning” When we learn in that way we are whole, utilizing all our masculine and feminine capacities.

2.5 Importance's of Active Learning in Chemistry Lessons

Different experts claim that students learn best when they engage with course material and actively participate in their learning. The active learning method makes the teaching- learning process effective, because students learn well when they take responsibility for their learning which encourages them to reflect their idea on what they are learning.

This method clearly addresses the different learning styles of the students which many educators have realized. The method prepares students to solve problems and to use information from their environments and other sources to make a better life for themselves, their families and their communities (Silber man, 1996).

Active learning instructional strategies include a wide range of activities that share common elements of involving students in doing things and thinking about the things they are doing (Bowell and Eison, 1991).

These strategies can be created and used to engage students in thinking critically or creatively, speaking with a partner in a small group or with the entire class, expressing ideas through writing, exploring personal attitudes and value, giving and receiving feedback and reflecting upon the learning process. It should also be noted that active learning instructional strategies can be completed by students either in-class or out-of-class, done by students working either as individuals or in group and done either with or without the use of technology tools.

2.6 Factors Affecting the Implementation of Active Learning in Chemistry Lessons.

The implementation of active learning can be affected by several factors (internal and external) those, either facilitate or hinder its effectiveness.

Regarding this Mohamed and Waheed,(2011) mentioned that the implementation of active learning can be affected by one or more of the following, facility of teaching materials, appropriateness of the curriculum, teaching method used by teachers, teachers' background, students 'readiness, societal attitudes, and support given in the process of implementation.

2.6.1 Appropriateness of the curriculum prepared for the level.

A well-developed curriculum includes strong and functional assessment components aligned with the curriculum's goals which are integrated with its contents, instructional methods and learning activities, and designed to evaluate progress towards its major intended outcomes (Aggarwal, 2008)

The Educational and Training Policy of Ethiopia noted that the absence of interrelated contents and modes of presentations were one of the major challenges of educational system of the country (MoE, 1994).

In response to these challenges, recent educational reforms proposed changes in the school curriculum, mode of delivery, teacher education programs and the assessment technique used (MoE, 2002) reforms proposed strategies that assumed to make education system more responsive to social needs. The recommendations give greater emphasis on problem solving mode of delivery at all levels, enhancing the quality of teachers, employing effective teaching methods, assessment techniques and disseminating science and technology (MoE, 2007).

2.6.2 Teachers' competence in the implementation of active learning during chemistry lessons.

It has been stated that recruitment, training professional competency, and poor working conditions of teachers have contributed a lot to the crisis of education in Ethiopia (MoE, 1994). It is obvious that improving the quality of teacher is a pre-requisite of the improvement of the standard education and above all the realization of the curriculum in line with the educational objectives set out in the education training policy.

Several research findings pointed out that teachers are not competent enough and they employ the traditional teaching learning system and use chalk and talk method of teaching in which teachers are active and the students are passive. This leads the students to the memorization of information and facts from their textbook and notes which was considered to be the most effective method of teaching (ICDR, 1999).

A teacher can teach any way he or she wants, deliver the content in a variety of ways and use a variety of methods because some students may be unmotivated and not willing to learn. If this is the case, teachers need to work effectively on problems with the students' motivational level.

In a study done by Santos and Mortimer (2003) they found that chemistry is not a very popular subject among secondary school students in Brazil in the 1980s, there was even song that was titled *I hate chemistry*. The reason was that, a majority of students did not like chemistry because they were not motivated to learn.

To make chemistry lesson more motivational for the students, the subject needs initially, observing phenomena, doing an experiment or talking about every day experience followed by discussion by each group of students around issues.

Good teacher develop positive atmosphere in the class room to make the teaching-learning process effective that means, there is strong correlation between favorable condition, motivation and achievement in the teaching learning process. Because motivated students have positive attitude towards school subject and achieve good results (Callahan and Clark, 1998),

Accordingly, good teacher should develop the following key points in the class room to make the teaching learning process attractive and smooth.

- Try to make attention to the class room physical appearance, pleasant, neat, comfortable and bright to provide a climate that is favorable and discipline for the learners.
- Try to produce a happy relationship with the students to make what you have taken a teacher seems attractive funy.
- Try to encourage students' high level of aspiration and self-esteem.

The fact that teaching is a public profession which places teachers in the spotlight of societal expectations of continually finding ways to improve student learning. The way to make this possible was by enabling teachers to continue and evolve in the use, adaptation and application of their art and craft through ongoing, relevant professional development activities were necessary for teaching force to be effective (Craig *et al.*, 1993).

Science is one of the major subjects currently taught in secondary schools around the world. So, teachers need to be aware of the fact that scientific concepts are often quiet abstract and foreign to students thus, teachers should be sensitive to the culture of their students as studied by (Cobern, W.1999). Therefore science concepts need to be presented to students in a manner that makes sense to students. Chemistry is often a very challenging subject for students and multiple studies that have been demonstrated the concepts in chemistry are very difficult for students to grasp.

There are many options open to the teacher takes as role of the facilitator of learning that ensures students are proceeding in the current way and in the right direction, helping students to prioritize and organize their learning group which can adjust the public presentation to the class of the task and can suggest sources for consultation, encouraging and supporting the learning process, guide and direct as required and provide critical feedback.

According to Fiseha (2001) the teacher tasks in active learning approach is to use class room methods that encourage the learners to be as active as possible by analyzing and interpreting knowledge through the use of higher order of thinking skills.

2.6.3 Students readiness in the implementation of active learning during chemistry lessons.

In active learning approach, it is the students themselves who were responsible for the success of their own learning.

In active learning method, students not only receive information from lectures and books, they also collect information, record it systematically, discuss it, compare it, analyze it, draw conclusions from it and communicate about it (ICDR, 1999).

Regarding this Silber man, (1996) states, during active learning the learner is seeking something to answer a question, information to solve problems, or to do tasks with one another by making the students ‘participant in different activities through motivation.

In order for students to be effective teachers must employ different strategies towards motivating the students in the teaching-learning of chemistry lessons to make them effective in their lessons (Brown, 1994).

2.6.4 Availability of adequate facilities used during chemistry lessons.

Instructional material is one of the factors that either facilitate or influence the implementation of active learning. Such materials are all those materials that the teachers and students utilize in classroom and out of classroom, like text books supplementary books and like.

Instructional material is one of the factors that either facilitate or influence the implementation of active learning. Such materials are all those materials that the teachers and students utilize in classroom and out of classroom, like text books supplementary books and like.

According to Douglass and Kristis (2000), teachers should use manipulative materials in chemistry instruction more regularly in order to give students hands on experience that help them construct useful meanings for their learning.

Such materials are critical ingredients in learning and the intended curriculum cannot be implemented without them (Amare, 2000).

Generally the shorter or the lack of teaching facilities can be a barrier to the use some active learning strategies but certainly not at all. For example, asking students to summarize in writing the material they have read or to form pairs to evaluate statements or assertions does not require any equipment.

2.6.5 The impact of class size on implementation of active learning.

The class size has its own impact in facilitating or influencing activities of teaching and learning. Large class size leads to disciplinary problems, less participation of students in different activities during the lesson and restrict the use of certain active learning instructional strategies (e.g., it is difficult to involve all students in class discussion in groups larger than 40) but certainly not all (Tozedv, Violsen and Sense, 1993).

In fact there are arguments, which support the idea, that the class size by itself has nothing to affect teaching and learning if teacher selects appropriate methods of teaching.

For example, dividing large classes into small groups can allow for productive in-class discussion activities. Heppner (2007) and Weimer (1987) each offer excellent ideas on how to teach large classes well.

2.6.6 The role of educational leaders towards implementation of active learning.

A school administrator is an educational leader who promotes the success of all students by collaborating with families and community members they responding to diverse community interests and needs, and mobilizing community resources. A school administrator promotes the success of all students by acting with integrity, fairness, and in an ethical manner.

Students do best when they were supported in the teaching-learning process. For example they do best when parents and teachers understand each other's expectations and stay in touch with one another regarding the students learning habits, attitudes towards school, social interactions and academic progress (Aggarwal, 2008).

2.6.7 Societal attitudes towards chemistry lessons.

An attitude is a central part of human identity. Every day people love, hates, oppose, agree, disagree, argue, and persuade etc. (Bohner and Wanke, 2002).

Attitudes are important in science because students' attitude carries mental state of readiness with it. With appositve attitude a student will perceive science objects, topics, activities and like. The processes of science work best when people who use them are disposed to act in harmony with the process (Gega, 1994).

For effective learning students, teachers, societies need to have positive attitude towards various activities because it is our attitude that at the beginning of a task which, more than anything else, will affect its successful outcome. (Davies,1981).Attitude of teachers towards activity-based learning is an issue in education of students because if the teacher is not positively disposed to activity-based learning, he/she would not achieve the purpose and its objectives of the lesson in school. According to Lue (2000) teacher's attitude towards active learning largely depends on the validity they adhere.

The role of teacher is making teaching effective, developing good attitude in his/her students by using different strategies, treating all students equally, encouraging, participating and involving learners in the teaching-learning process.

The study of academic motivation of the students is now becoming a series issue in school. It is an important to examine and follow up the state of students' motivation and what efforts exert in school task in order to succeed, i.e. we have to look our students' attitudes towards the subject (Amare, 2001).Generally factors from home environment like, educational background of parents, occupation of parents and parental expectation affect students' attitude towards the subject matter (Mohamed and waheed, 2011).

2.6.8 Influence of assessment methods used by chemistry teachers.

Assessment is an integral part of teaching and learning process that can be used at different stages in the provision of instruction.

Assessment is a systematic process for gathering data about student achievement "which has strong relationship with the method of teaching" (Dhindsa, Omar, and Wald rip,2007).

Supporting this, the Ministry of Basic Education and Culture of Namibia expressed their relation as: “*Like a design that is woven in to a fabric by a weaver, instruction and assessment are seamless*” they are parts of the teaching-learning process and one naturally leads to the other (MOBECN, 1999). Many scholars indicated that, traditional way of assessing students (giving examination at the end of terms) doesn’t represent the students overall performance properly (Capper and Nekton, 1996).

In addition administering one test at the end of a term, or semester is not advisable and will not be free from errors, because of this, experts in the area come with the concept of continuous assessment, which is a daily process by which teachers should gather information about learners’ progress in achieving the learning targets (ICDR, 1999).

Generally effective learning occurs when correspondence exists between teaching, evaluation and results. If evaluation is correctly done it should enhance the interest of students towards learning because it aids both the teacher and the students in teaching-learning process (Calhan and Clark, 1998).

2.7. Conceptual Frame Work

Implementation of active learning method and the basic factors affecting it.

Characteristics of Active Learning and Passive Learning

Active Learning	Passive Learning
It gives greater emphasis on problem solving, enhancing quality of teachers, and employing different effective teaching methods, disseminating science and technology.	It gives emphasis on the presentation of the contents and the approach is least practical, more theoretical and memorizing which does not apply activity based learning to encourage students to learn real life problems based on applied knowledge.
Students are initiated to work effectively to together.	Cooperative learning and group approaches are limited (Leu,2000)
With the advent of the concept of discovery learning, many scholars today widely adopt more supple active learning methods to enhance active learning (Greitzer, 2002). Most teachers today apply the active learning approach to promote interest, analytical research, critical thinking and enjoyment among students.	The students simple obtain information without building their engagement level with the subject being taught (Boud, and Feletti, 1999).

3 .RESEARCH METHODOLOGY

Once the title of the research got acceptance and target of the study chosen, the next phase in research process is reviewing related literatures that relate with the title of the research then the researcher needed to think about the constraints, dilemmas and ethical choices within the research. In this section, the researcher discussed research strategy, different research methods, and techniques, as well as ways of collecting and analyzing data.

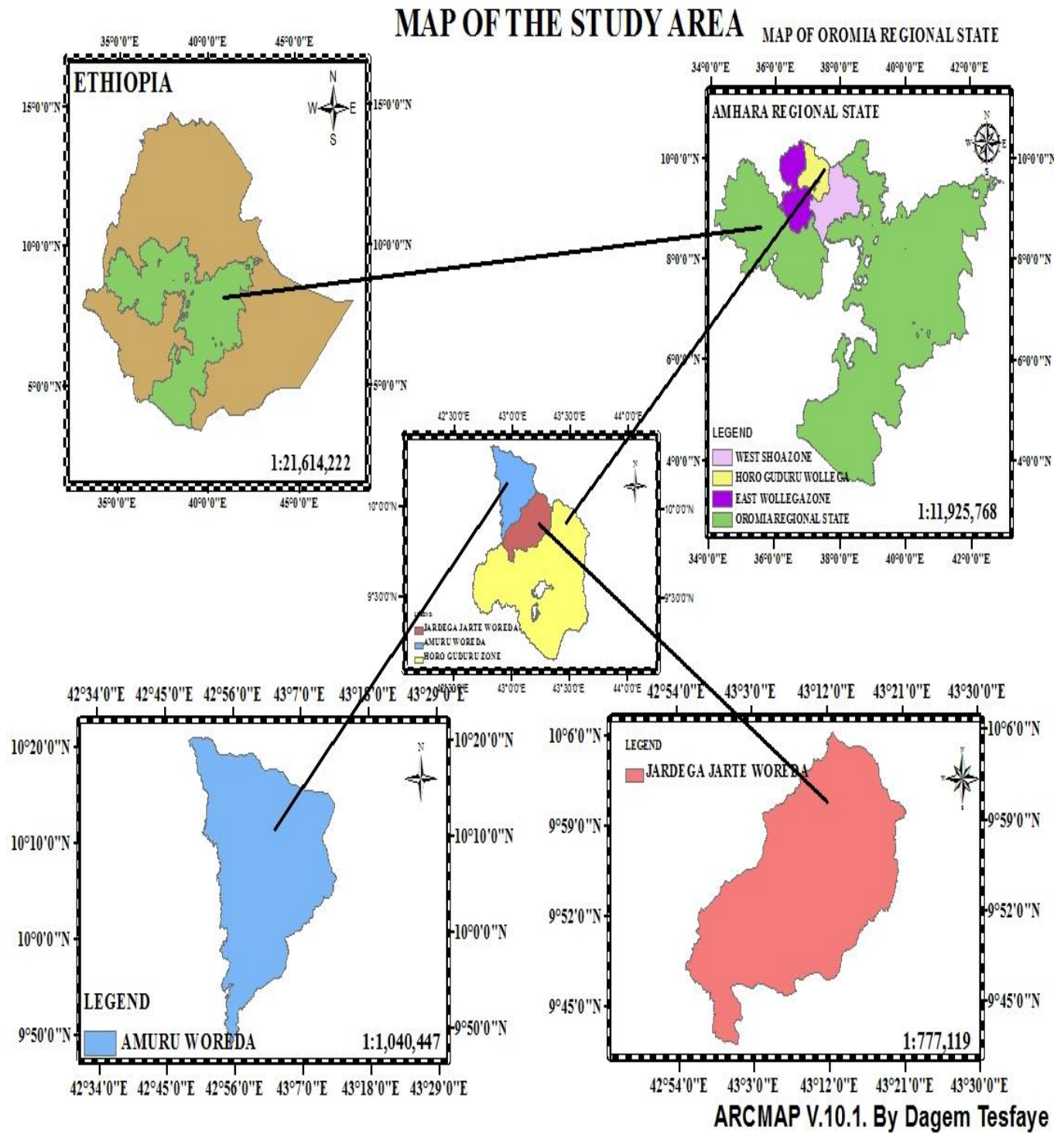
3.1 Research Design

The study adopts descriptive survey design. Descriptive research is a study designed to depict the Participants in an accurate way and a method are appropriate which enables to make an assessment and investigation of the events (Wiersma, 1999).

Hence, the present study employed multi-method research (both quantitative and qualitative methods) to assess factors influencing the implementation of active learning in chemistry in preparatory schools of Horo Guduru Wollega Zone. In order to strengthen the gathered data, the study was complemented using qualitative approach (Gay Asrarian *et.al.*, 2000).

3.2 Study Area and the Sampling Sites

The study was conducted in Horo Guduru Wollega Zone in Oromia Regional State, Ethiopia, particularly at Amuru Woreda in (Amuru and Agemsa Preparatory Schools) and Jardega Jarte Woreda in (Alibo preparatory school).



Source: Horo Guduru Wollega Zone Agricultural Office.

3.3 Data Types and Sources

The primary data was obtained from grade 11 natural science students, chemistry teachers and director/vice directors' of the schools. Whereas, the secondary data sources were obtained from record offices of the schools, written documents or records such as previously done research papers.

3.4 Sampling Techniques and Sample size Determination

Even though the sample schools include grade 11 and grade 12 students, the researcher took grade 11 natural science students, chemistry teachers and the school directors/vice directors of Amuru, Agemsa and Alibo preparatory school found in Horo Guduru Wollega Zone.

The study was employed using random sampling techniques which is the most popular and rigorous form of sampling (Cress Well, 2012).

Horo Guduru Wollega Zone has a total of 12 preparatory schools; but the researcher took Amuru, Alibo and Agemsa preparatory schools using purposive sampling techniques. Because these preparatory schools have long years' experience in the zone and the researcher also familiar to the research sites, that helps him to get the required data or information in detail.

The total population of grade 11 natural science students were 1139 (584 males and 555 females), but the researcher took 20% of total students 228 (116 males and 112 females) students using stratified sampling with simple random sampling method.

The sample of the students was drawn proportionally from each school. In addition 7 chemistry teachers and 3 school directors were taken using availability sampling techniques since they were available in the study.

Table: 1 Sampled preparatory schools and the sample size taken for the study.

No.	Name of preparatory schools	Total population (students)			Sample size taken		
		M	F	T	M	F	T
1	Amuru	212	151	363	43	30	73
2	Agemsa	176	171	347	34	35	69
3	Alibo	196	233	429	39	47	86
Total	3	584	555	1139	116	112	228

Source: Record office of the schools (2009)

3.5 Instrumentation and Validation

In order to gather information, the researcher used multiple methods of data collecting instruments, quantitative and qualitative. To secure quantitative data questionnaire was used, whereas interview and class room observation were used to obtain qualitative data.

3.5.1 Questionnaire

A questionnaire is an essential sources consisting of a series of questions sent or given to an individual or group of individuals, with the objectives of obtaining data with regard to some problems under investigation. Therefore the researcher was prepared (organized closed and open-ended type) in English which was self-administered for 228 grade 11 natural science students of the schools.

3.5.2 Interview

In qualitative case study, interviewing is the major source of data needed for understanding the phenomenon under case (Cohen et .al.and Lytle, 2002) stated that this live form of data collection involves recording data as the interview takes place or shortly afterwards.

This method enables an interviewer to get information concerning feelings, attitudes or emotions in relation to certain questions. It is an essential source to get greater depth of response, which is not possible through other means. Based on this the researcher held a semi-structured interview with chemistry teachers and school directors of the schools and collected data for further analysis.

3.5.3 Class room observation

Literature showed that application of teaching skills in general and application of training skills into real life class assessed better through classroom observation (Ottevanger, 2001).

Observation involves gathering information mainly by watching what people do and what exist concerning the observed phenomena using observation format module (MoE, 2010). The method gives direct experience to the researcher. So, the researcher held classroom observation of “4” individual chemistry teachers once for one period to see how chemistry lesson is implemented in the class room using observation check list.

3.6 Procedures of Data Collection

As long as the procedure of data collection is concerned, the researcher got through the following steps, so as to collect the relevant data. The first thing he done is getting permission from the director/coordinator of the school. After the researcher got permission, he distributed the questionnaires to the respondents, after precise introduction so as to let them to know the purpose of the study. Next, the researcher was observed classroom activities, then the researcher were interviewed chemistry teachers and the schools directors by preceding smooth introduction to create clear/good relation and got very relevant data. Finally, after data collected from respondents, the researcher addresses his acknowledge for all people those corporate him.

3.7 Methods of Data Analysis

Descriptive statics method was employed to analyze data. In the process multiple data analysis were used. The quantitative data was analyzed using statistical techniques in percentage, mean, standard deviation, and one-sample T-test Pearson correlation and regression analysis.

The qualitative data was analyzed on thematic basis by considering the research questions.

Finally based on the analysis, the results obtained were summarized; conclusions were made and recommendations' for warded.

3.8 The issue of Validity

Ethical concerns make the study valid and useful. The quality & appropriateness of the tools prepared and grammatical clarity of the items constructed were checked by thesis advisors and the comment given corrected before the data was collected.

3.9 Ethical Considerations

There are several ethical considerations that considered when designing research that will utilize participants. The primary concern of the investigator should be the safety of the research participants. This was accomplished by carefully considering the risk/benefit ratio, using all available information to make an appropriate assessment and continually monitoring the research as it proceeds. The study was conducted based on the consent of the school community explaining the objective of the study which was purely academic, and of course supported by the official letter of the University.

4. PRESENTATIONS AND ANALYSIS

This part focus on data analysis and interpretations'. Based on this the data collected were analyzed using descriptive statistics in terms of the frequency of number of respondents' in percentages, means, standard deviations, T-test, Pearson correlation and regression analysis. Finally the presentations of the findings were done in the order in which the research questions were presented.

Table.2 Sampled preparatory schools with sample size taken for the study.

S/N	Schools	Students					
		M	%	F	%	Total	%
1	Amuru	43	58.9	30	41.1	73	32.02
2	Agemsa	34	49.3	35	50.7	69	30.26
3	Alibo	39	45.35	47	54.7	86	37.72
Total	3	116	-	112	-	228	100

As indicated in the table “2” above, concerning students back ground 73 (32%), 69 (30.35%) and 86 (37.7%) of the students from Amuru, Agemsa and Alibo preparatory schools respectively included in the study.

Table.3 Distributions of students (respondents') according to their sex and age.

Age	Male	%	Female	%	Total	%
17-18years	48	21.1	53	23.2	101	44.3
19-20 years	36	15.8	35	15.4	71	31
21-30years	28	12.3	22	9.6	50	22
31 and greater	4	1.8	2	0.9	6	2.7
Total	116	51	112	49	228	100

As shown in table “3” above concerning students sex, 116 (51%) and 112 (49%) of them were males and females respectively. In other hand regarding their age, 101 (44.3%) were between the 17-18 years, 71 (31%) 19-20 years, 50 (22%) 21-30 years and 6 (2.7%) of them were 31 years older and greater. The sampled chemistry teachers were 7 (3 from Amuru, 1 from Agemsa and 3 from Alibo preparatory schools) those were males and degree holders.

4.1 Analysis of Data obtained from Students' Questionnaire.

Table.4 Views of students towards their chemistry teachers' competence (subject matter knowledge and teaching skills) in the implementation of active learning.

S/N	Items	Students responses					
		Agree		Dis agree		No opinion	
		No	%	No	%	No	%
1	My chemistry teacher talks less than his/her students while teaching.	119	52.2	103	45.2	6	2.6
2	My chemistry teacher motivates his/her students in the teaching-learning of chemistry lessons.	111	45.7	108	47.4	9	3.9
3	My chemistry teacher makes his/her lesson clear and easily understandable.	158	69.3	66	28.9	4	1.75
4	My chemistry teacher uses different Instructional materials to make his/her lesson more practical.	98	42.9	121	53	9	3.9
5	My chemistry teacher provides equal opportunities for each of the student to reflect their ideas.	86	37.7	131	57.5	11	4.8
6	My chemistry teacher knows his/her lesson very well.	169	74.1	55	24.1	4	1.75
7	My chemistry teacher uses different strategies to check the level of his/her students	121	53	90	39.5	17	7.5
8	My chemistry teacher participate almost all students in different activities of chemistry lessons.	96	42.1	129	56.6	3	1.3

Average: - **Agree** (52.1%, Mean=119.75, St.d=29.6), **Disagree** (44. 2%, Mean= 100.4 St.d=28.3)

No opinion (3. 7%, Mean=7.9, St.d=4.7)

As indicated in table “4” above concerning the views of students towards chemistry teachers’ competence, affecting the implementation of active learning in the teaching-learning of chemistry lessons in preparatory school regarding item “1” 119 (52.2%) of the students agreed in that their chemistry teacher talking less than his/her students while teaching chemistry in the class room.

Whereas 103 (45.2%) of them disagreed and the rest 6 (2.6 %) said no opinion about it.

On the same table of item’2’ 111 (45.7%) of the respondents’ agreed in that their chemistry teachers’ motivating his/her students in the teaching-learning of chemistry lessons. Whereas, 108 (47.4%) of them disagreed and 9 (3.95%) of them were without opinion.

As depicted on item’3’ 158 (69.3%) of the learners agreed on their chemistry teacher’s making his/her lessons clear and understandable for the students during the lesson. However; 66 (28.9%) of them disagreed with it. Whereas the rest 4 (1.75%) have them no opinion about it.

Concerning using instructional materials in the teaching learning of chemistry lessons, on item ‘4’ 98 (42.9%) of the students agreed in that their chemistry teacher use different instructional materials while teaching chemistry to make the lesson more effective and understandable. Whereas 121(53%) of the learners disagreed in that their teachers never use such materials in the teaching learning process and the rest 9 (3.9%) of the students said no opinion regarding it.

On item ‘5’ of the same table 86 (37.7%) of students agreed that, their chemistry teacher provides equal opportunities’ for all students to reflect their own idea while teaching chemistry. Whereas, 131(57.5%) them disagreed. But the rest 11(4.8%) of the students were without opinion.

Regarding, item’6’ 169 (74.1%) of the learners agreed on their chemistry teacher’s mastering his/her lesson very well to teach chemistry. Whereas, 55 (24.1%) of the respondents disagreed with it. But the rest of 4 (1.75%) of them said pinion about it.

In addition on item’7’ of the same table 121(53%) of the students agreed and 90 (39.5%) disagreed on chemistry teacher’s using different strategies and checking the level of students understanding while implementation active learning. Whereas the rest 17 (7.5%) of the students were with no opinion about teacher’s using different strategies in the teaching learning process.

Concerning the last item 96 (42.1%) of the students agreed in that their chemistry teacher participate almost all students in different activities of chemistry lessons while implementing active learning. Whereas; 129 (56.6%) of them disagreed with the idea and the rest respondents' 3 (1.3%) were without opinion.

Generally the average views of students towards chemistry teachers' competence affecting the implementation of active learning revealed that, 52.1%, with average mean of 119.75 and standard deviation 29.6 agreed on teachers' competence affecting the implementation of active learning. In opposite the respondents expressed the view that they disagreed with the assertion that teacher's competence affecting the implementation of active learning accounting 44.2%, in the mean of 100.4 and standard deviation of 28.3. The rest respondents' (3.7% with a mean of 7.9 and standard deviation of 4.7) said no opinion about it. The result obtained from students' questionnaire was synomous the result obtained by class room sessions, but lack of motivating, participating students, lack of using different instructional strategies by chemistry teacher was observed in the teaching learning process.

Supporting this Brown, H.D. (1987) states the best teacher is who devise class room methods and techniques effectively.

Table.5 Views of students towards appropriateness of the curriculum prepared for grade 11 for the implementation of active learning

S/N	Items	Students responses					
		Agree		Dis agree		No opinion	
		N ₀	%	N ₀	%	N ₀	%
1	The chemistry text book prepared for grade 11 students help to reflect their own idea freely in the class room.	154	67.5	67	29.4	7	3.1
2	The chemistry text book prepared for grade 11 assists me to actively participate in teaching learning process.	158	69.3	63	27.6	7	3.1
3	The chemistry text book prepared for grade 11 encourages learning through active learning approach than learning via the lecture method.	157	68.9	67	29.4	4	1.75
4	The chemistry text book prepared for grade 11 gives adequate opportunities for students to work in groups and carry out group projects.	182	79.9	43	18.9	3	1.3
5	The curriculum designed for grade 11 helps to apply there by developing critical and problem solving skills of the learners.	128	56.1	93	40.8	7	3.1
6	The chemistry text book prepared for grade 11 encourages sustainable interaction between the teacher and the students.	150	65.8	67	27.6	11	4.8

Average:-Agree (67.9%, Mean=154.8, St.d=17.3), **Disagree** (28.9%, Mean=66.7, St.d=15.9)

No opinion (2.96%, Mean=6.5, St.d=2.8)

As shown in the table '5' above regarding appropriateness of the curriculum prepared grade 11, of item '1' 154 (67.5%) of students agreed on the idea that the text book prepared for this level helps students to reflect their own idea freely in the class room. Whereas, 67 (29.4%) of them disagreed. But the rest 7 (3.1%) were without opinion.

On the same table of item '2' 158 (69.3%) students agreed on the text book prepared for the level make students to actively participate in their lesson. Whereas, 63 (27.6%) of them disagreed.

But the rest 7 (3.1%) were with no opinion about it.

As depicted on item '3' 157 (68.9%) of the students agreed on grade 11 chemistry text book encouraging students learning through active approach via the lecture method. Whereas, 67 (29.4%) of the learners disagreed in that, the text books encouraging active learning and the rest 4 (1.75%) of them no opinion regarding it.

Regarding item '4' 182 (79.9 %) of the respondents' agreed on chemistry text book prepared giving adequate opportunities for the students to do in a group and carry out group projects. Whereas, 43 (18.9%) of the learners disagreed. The rest 3 (1.3%) said no opinion about it.

In addition concerning the curriculum designed for this level, 128 (56.1%) of students agreed on that the curriculum prepared helps students to develop critical and problem solving skills. Whereas, 93 (40.8%) of them disagreed. The rest 7 (3.1%) no opinion regarding it.

Lastly, concerning the existence of sustainable interaction exist between the teacher and the students in the teaching-learning of chemistry lessons, 150 (65.8%) of the respondents' agreed that there was interaction between them. Whereas, 67 (27.6%) them disagreed. The rest 11 (4.8%) were with no opinion.

Generally the average data obtained from the views of students concerning appropriateness of the curriculum towards active learning revealed that, 67.9 % of the students with a mean 154.8 and standard deviation of 17.3 agreed that the curriculum prepared for grade 11 level is appropriate to implement active learning which was synonyms with the data obtained from interview questions and class room observations.

Supporting this ICDR (1991) stated, active learning method encourages students to use the higher level of thinking skills, analyzing and comparing what they have learned. In addition Bonwell and Eison, (1991) proved that active learning makes students to do meaningful activities and think about what they are doing.

Table.6 Views of students towards their own readiness in the implementation of active learning.

S/N	Items	Students responses					
		Always		Sometimes		Not at all	
		No	%	No	%	No	%
1	I participate of in different activities of chemistry like group Work and group discussions.	64	28.1	132	57.9	32	14
2	Attending chemistry lesson in the class room.	88	38.6	118	51.75	22	9.6
3	Spending on studying chemistry lessons.	83	36.4	122	53.5	23	10.1
4	Doing the given chemistry home work.	89	39	96	42.1	43	19
5	Asking chemistry teacher freely that is not clear in the teaching-learning process.	74	32.5	86	37.7	68	29.8

Average:--Always (34.9%, Mean=79.6, St.d=10.55) **Sometimes** (48.6%, Mean=110.8, St.d =10.6),
Not at all (16.5%, Mean=37.60, St.d=18.9)

The table '6' above concerning students readiness including their participations in the teaching learning of chemistry lessons regarding item "1" 64 (28.1%) of the students responded as they always participate in doing different activities of chemistry lessons like group work and group discussions.

Whereas 132 (57.9%) of the learners as they sometimes participate and 32(14%) not at all participate. Regarding this, Silber man (1996) states, during active learning the learner are seeking something to answer a question, information to solve problems, or to do tasks with one another. In addition on item '2' of this table, 88 (38.6%) students responded as they always attend chemistry lessons. Whereas 118 (51.75%) of them sometimes attend and 22 (9.6 %) not at all attend.

As depicted on item'3' 83 (36.4%) of the students always spend their time on studying chemistry lessons. Whereas, 122 (53.5%) said sometimes study and 23 (10.1%) not at all spend their time on studying chemistry lessons.

Regarding item 4' of this table 89 (39%) of the students always did the homework given by their teacher. Whereas, 96 (42.1%) sometimes and the rest 43 (19 %) never.

Finally, 74 (32.5%) of the learners always ask their teacher that was not clear for them freely in the teaching-learning process. Whereas 86 (37.7%) of them sometimes ask and the rest 68 (29.8%) never.

To summarize the views of students towards their readiness ‘ in the implementation of active learning an average of, 34.9% of respondents’ accounting a mean value of 79.6 and standard deviation 10.55 always participate in activities of chemistry lessons while implementing active learning. Whereas, 48.6% with a mean value equals 110.8 and standard deviation 10.6 responded, they sometimes participate and the rest 16.5% not at all interested to participate in different tasks of chemistry lessons. This shows that, the participation of students during teaching-learning of chemistry lesson is not much expected even though the participation of students plays a crucial role in the implementation of active learning. According to Aaronson (1996) even beyond learning what they need to know, students benefits from the method of teaching and they learn how to feel good about themselves and take on new responsibilities and succeeded with the responsibilities they come to gain confidence in themselves as competent problem solvers.

Table.7 Views of students towards availability of adequate facilities in their schools for the implementation of active learning.

S/N	Items	Students responses			
		Yes		No	
		No	%	No	%
1	Appropriateness of physical condition of the class room for effective implementation of active learning method of teaching chemistry.	76	33.3	152	66.7
2	Presence of enough and suitable chairs and tables in the class room for effective implementation of active learning.	91	39.9	137	60.1
3	There were enough chemistry text books for each of the student in the class room.	175	76.6	53	23.3
4	The tables and the chairs are easily movable to apply group discussions in my class room.	85	37.3	143	62.7
5	There is/are appropriate library which has/have adequate books in my school.	126	55.3	102	44.7
6	Availability of accesses computers in the school to use.	77	33.8	151	66.2
7	The chemistry teacher support chemistry lesson by an experiment to make practical.	36	15.8	192	84.2

Average:-Yes (41.7%, Mean= 95.1, St.d= 44.0) **No** (58.3%, Mean= 132.8, St.d = 44.05)

The above table “7” shows the impact of availability of adequate facilities on effective implementation of active learning in preparatory school particularly on grade 11. Concerning this on item “1” of this table 76 (33.33%) of the students responded that, the physical condition of the class room was appropriate to implement active learning. Whereas, 152 (66.7%) of the students never share the appropriateness of the class room to implement active learning.

Regarding this Mutassa and Wills (1995) explained that, the class room condition should be conducive enough, so that students feel free and comfortable to learn.

On the same table of item '2' 91 (39.9%) of the learners replied that there was enough and suitable chairs and tables in the class. But 137 (60.1%) of them said no suitable facilities.

Regarding chemistry text book 175 (76.7%) students had chemistry text book. But, only of 53 (23.3%) of students had not.

On the same table of item '4' 85 (37.3%) of the students responded that, the chairs and tables are easily movable to arrange for group discussion. However, 143 (62.7%) of the students said despite of their presence the chairs and the tables are not movable which was proved during class room observation sessions.

As depicted on item '5' 126 (55.3%) of the students replied that there was appropriate library with adequate books in their school, whereas, 102 (44.7%) of them said that, no such appropriate library exist in their school to use.

In addition on item '6' concerning the presences of access computer (33.8%) of the students agreed in that there were facilities of computer in their school to use. Whereas, 151 (66.2%) of them responded no enough computers to use in their school.

More over concerning the presence of laboratory, 36 (15.8%) responded that despite of absence of laboratory room their chemistry teacher try to make his/her lesson practical as much as possible, whereas, almost all of the students 192 (84.2%) of them replied that no activity was there concerning laboratory in their school.

In general the average views of students towards availabilities of facilities present to implement active learning, the data revealed that, 41.7% with a mean of 95.1 and standard deviation of 44.0 believed there was adequate facilities to implementing active learning in the teaching-learning of chemistry lessons in their school. Whereas more than the average students 58.3% of them with a weight mean of 132.3 and standard deviation 44.05 no such adequate facilities in their school.

To sum up the lack of adequate facilities was mainly the problem of Agemsa preparatory school that was checked during class room observation and interviews sessions.

Table.8 Views of students towards class size in the implementation of active learning.

S/N	Items	Students responses			
		Yes		No	
		No	%	No	%
1	My class room is appropriate for the teaching-learning of chemistry.	78	34	150	66
2	There is enough space between the tables for the free movement of chemistry teacher to check students work.	91	39.9	137	60.1
3	The chemistry teacher can check the activities of all students in a period during chemistry lessons.	85	37.3	143	62.7
4	The number students in my class are ≤ 42 .	108	47.4	120	52.6
5	Each of students has his/her own chemistry text book in the class room.	172	75.4	56	24.6

Average: - **Yes** (46.8%, Mean=106.80, St.d=38.1), **No** (53.2% , Mean=121.2, St.d=38.0)

As shown in the table ‘8’ above regarding the impact of class size on implementation of active learning, during chemistry lessons, 78 (34%) of the students replied that the class size was appropriate to the number of students to implement active learning in their school. whereas, 150 (66%) of them never share this idea.

On the same table of item ‘2’ 91 (39.9%) of the learners responded that there was enough space between the table for the free movement of chemistry teacher while checking all students work. Whereas 137 (60.01%) of them responded the absence of enough space between the tables makes difficult to check all the activities of students work.

As depicted on item ‘3’ 85 (37.3%) of the students responded that it is possible for chemistry teacher to check the work of the students with in a period, whereas, 143 (62.7%) of the students said it is difficult to check all the activities of the students in a period, due to the presence of large number students in the class.

In addition as indicated on item'4'108 (47.4%) of the students replied that the number of students in the class room is ≤ 42 . Whereas, the rest 120 (52.6%) students responded that there were greater than > 42 students in the class room which was supported by class room observation.

Concerning the ratio of chemistry text book exist to the total number of students in the class, 172 (75.4%) of the students responded that each student has his/her own chemistry text book in the class room. Whereas 56 (24.6%) of students hadn't.

In general the views of students towards the impact of class size on implementation of active learning in the teaching learning of chemistry lessons, the average data revealed that, 46.8 % of students with a mean of 106.8 and standard deviation of 38.1 believed in that no problem exist concerning class size in the implementation of active learning in the class. In opposite of this view 53.2% with a mean 121.2 and a standard deviation of 38.0 students said there were problems related to class size to implement active learning in the teaching learning of chemistry in their schools. Regarding this class room observation result showed the average number of students in single class were 67 which lead to difficult in managing and disciplinary problems.

In the teaching learning process dis advantage comes as a result of large size, like individualization of instruction is limited; instruction to be lecture without group participation, oral communication in the class room is dominated (Smith, 1996).

In addition Benbow *et.al.*, (2007) recommended that increasing the number of qualified teachers, increasing or improving facilities, and adding additional resources are some of the ways of addressing the issues of large class size in the school.

Table.9 Views of students towards the roles of educational leaders in the implementation of active learning.

S/N	Items	Students responses			
		Yes		No	
		No	%	No	%
1	There is a special program(tutorial program) adjusted by the school in addition to regular class room to make chemistry lesson practical.	68	29.8	160	70.2
2	The school principals support the teaching-learning of chemistry lessons as a subject of science.	115	50.4	113	49.6
3	The school supervisors support, give advice and continuously follow all the activities of teaching-learning process of Chemistry lessons.	55	24.1	173	75.9
4	The school principals work with the nearby societies concerning implementation of active learning.	88	38.6	140	61.4
5	I get adequate support from the respects in the teaching learning of chemistry.	78	34.2	150	65.8

Average:-Yes (35.4, Mean=80.8, St.d=22.7) No (64.6%, Mean=147.2, St.d=22.6)

As shown in the table ‘9’ above concerning the roles of educational leaders towards effective implementation of active learning, 68 (29.8%) of the students said that there was a program adjusted by the school in addition to regular class to improve students learning. Whereas 160 (70.2%) of them replied no such program adjusted to help students’ in their lesson.

On the same table of item’2’ 115 (50.4%) students responded that the school support the teaching-learning of chemistry lessons by considering it as a science subject. Whereas 113 (49.6 %) said no much attention was given.

As depicted on item’3’ concerning the roles of school supervisors, 55 (24.1%) of the learners said, the school supervisors follow the daily activity of implementation of active learning in their school. Whereas, 173 (75.9%) of the students replied that no much role played by the school supervisors concerning the implementation of active learning.

In addition on item '4' 88 (38.6%) of the students responded that the school principals work with the all concerned bodies concerning active learning. But the majority of them 140 (61.4%) never share this idea.

Finally on the last item of this table 78 (34.2%) of the learners responded as they get adequate support from respected bodies of the school what they need in the teaching-learning of chemistry lessons. But the rest 150 (65.8) of them can't get such adequate support from their respects because no such conditions adapted in their schools.

Generally the average data obtained from the views of students towards educational leaders, showed that 35.4% respondents' (students) of with a mean value 80.8 and standard deviation of 22.7 responded the role of educational leadership towards implementation of active learning was satisfactory in the teaching-learning of chemistry lessons. But the majority of students, 64.6% of them with mean of value of 147.2 and standard deviation 22.6 responded that no much support from educational leaders and the entire groups concerning effective implementation of active learning even though they are school managers and facilitators. Regarding this Aggarwal (2008) stated that, students do best when they were supported in the teaching-learning process.

Table.10 Views of students towards societal attitude in the implementation of active learning.

S/N	Items	Students response			
		Yes		No	
		No	%	No	%
1	The societies have awareness about active learning method of teaching chemistry lessons.	65	28.5	163	71.5
2	My parents encourage me to study and do different activities of chemistry at home.	103	45.2	125	54.8
3	Chemistry teacher well interested towards student-centered method while teaching chemistry.	125	54.8	103	45.2
4	Societies know learning chemistry leads to the development of a given country.	102	44.7	126	55.3
Average: - Yes (43.3%, Mean=98.75, St.d=24.87), No (56.7%, Mean=129.25, St.d= 24.8)					

As shown in the table '10' above regarding the impact of societal attitudes towards chemistry lessons concerning item '1', 65 (28.5%) of the learners replied that the societies' have had awareness about active learning method of teaching chemistry lessons, whereas 163 (71.5%) of them said they did not have much awareness.

On the same table of item '2' 103 (45.2%) of the students responded that their parents encourage them to study and do different activities of chemistry. Whereas; the rest 125 (54.8%) of them replied that their parents never encourage them to study and do different activities of chemistry.

In addition under item '3' of the same table, 125 (54.8%) of students responded that their chemistry is interested towards student centered (active learning) approach while implementing active learning in the teaching learning of chemistry. Whereas 103 (45.2%) of them said not much interested.

On the last item of this table concerning the awareness of societies towards learning chemistry in the development of country, 102 (44.7%) of the students responded that the societies know the role of chemistry in the development of country. Whereas 126 (55.3%) of the learners said no much awareness observed by the society concerning the role of chemistry in developing country. To sum up, the average analyzed data concerning the impact of societal attitude in the implementation of active learning-method of teaching chemistry lessons 43.3% of the learners with a mean of 98.75 and standard deviation 24.87 responded that no such negative approach was there towards chemistry and the active learning method of its implementation. Whereas; the majority of the students 56.6% of them with a mean of 129.5 and standard deviation 24.8, the societal attitude towards the implementation of active learning of chemistry lessons was not much expected it needs much awareness in order to develop positive attitude towards active learning method of teaching chemistry.

According to Mohamed and waheed (2011) mentioned factors from home environment societies affect students' learning.

Table.11 Views of students towards assessment method used in the implementation of active learning.

S/N	Items	Students responses					
		Always		Sometimes		Not at all	
		No	%	No	%	No	%
1	Chemistry teacher follows attentively the students work daily.	90	39.5	100	43.9	38	16.7
2	Continuous assessment improves students learning.	79	34.6	112	49.1	37	16.2
3	The main objective of continuous assessment is to make the students busy.	67	29.4	75	32.9	86	37.7
4	I know why and what I am assessed.	96	42.1	80	35.1	52	22.8
5	I Prefer getting feedback on my chemistry lessons on daily bases.	87	38.2	90	39.5	51	22.4

Average:-Always (36.8%, Mean=83.8, St.d=11.21) **Sometimes** (40.1%, Mean=91.4, St.d=14.9) **Not at all** (23.1%, Mean=52.8, St.d=19.8).

As depicted in the table'11'above, concerning item '1' 90 (39.5%) responded their chemistry teacher always follow the daily activities of students while implementing active learning. Whereas, 100 (43.9 %), of them said the teacher sometimes follow and the rest 38 (16.7%) said not at all.

On the same table of item'2'79 (34.6%) of the respondents' know that continuous assessment always improve students learning. Whereas 112 (49.1%), of them said it sometimes improve and the rest 37 (16.2%) of responded it never at all improve students learning.

In addition on item'3' 67 (29.4%), of the students responded the main objective continuous assessment is to make students busy. Whereas; 75 (32.9%) of them said it makes some times busy but not always.The rest 86 (37.7%) of the learners said it never make busy rather improve the students.

On item “4” of the same table 96 (42.1%) of students responded they always know why they tested in the teaching-learning of chemistry lessons. Whereas, 80 (35.1%), of the learners sometimes know and the rest 52 (22.8%) not at all know why they continuously tested.

Finally regarding item ‘5’ 87 (38.2%) of the students always prefer getting feedback on their lessons on daily bases. Whereas, 90 (39.5%) of them sometimes prefer and 51 (22.4%) not at all prefer.

Generally the value average value concerning the assessment method used by chemistry teachers showed that, 36.8% of the students responded continuous assessment is always applicable in the teaching learning of chemistry lessons, whereas; 40.1% as it is sometimes applicable and the rest 23.1% responded that is not at all applicable during chemistry lessons.

Regarding this, Calhan and Clark (1998) stated if evaluation is correctly done it should enhance the interest of students towards learning because it aids both the teacher and the students in the teaching-learning process.

Concerning an open-ended question the students responded, chemistry lesson become practical when chemistry teachers participate students in practicing simple projects using resource materials from the environment.

In addition the government collaborating with the school should give attention for teaching-learning of chemistry to make it practical by establishing laboratory class room considering preparatory is apre-university level.

Table. 12 One sample T-test analysis of implementation of active learning and the basic factors affecting it.

S/N	Variables	Test values			Mean difference	95% confidence interval	
		t	d.f	Sig.(2.t)		Of the difference.	
						Lower	Upper
1	Teacher competence	66.8	227	.000	2.49	2.42	2.57
2	Curriculum	75.7	227	.000	2.65	2.58	2.72
3	Students readiness	47.7	227	.000	2.18	2.10	2.28
4	Adequate facility	43.3	227	.000	1.41	1.35	1.48
5	Class size	42.3	227	.000	1.47	1.40	1.53
6	Educational leaders	42.7	227	.000	1.35	1.29	1.42
7	Societal attitudes	43.6	227	.000	1.43	1.37	1.50
8	Assessment method	42.2	227	.000	2.14	2.04	2.24

The above table “12” shows, the appropriateness of the curriculum and teachers’ competence was statistically significant ($t = 75.7$, $d.f = 227$, $P < 0.05$ and $t = 66.8$, $d.f = 227$, $P < 0.05$) respectively towards implementation of active learning in the teaching-learning of chemistry lessons which was evidenced by comparing their means.

In the same manner students’ readiness or their participations during implementation of active learning and the availability of adequate facilities in the teaching-learning of chemistry was statistically significant

($t = 47.7$, $d.f = 227$, $P < 0.05$ and $t = 43.3$, $d.f = 227$, $P < 0.05$) respectively which was supported by teachers interview sessions. In fact on the challenge part the respondents’ response indicated that there was lack of full and adequate provision of teaching materials in the schools which was checked by class room observation. More over the table shows that, the roles of educational leaders and societal attitudes towards implementation of active learning were significant ($t = 42.7$, $d.f = 227$, $P < 0.05$ and $t = 43.6$, $d.f = 227$, $P < 0.05$) respectively.

As the result of interview obtained from the teachers showed, the roles of educational leaders towards supporting the teaching-learning of chemistry lessons as science subject was not much expected. In addition to this no more positive attitude developed by the societies towards active learning methodology of teaching-learning of chemistry lesson.

Finally, the assessment methods used by chemistry teachers during implementation of active learning in the teaching learning of chemistry was also significant ($t= 42.2$, $d.f =227$, $P < 0.05$).

Table.13.Correlation analysis of Implementation of Active Learning methodologies and the basic factors.

Descriptions	Active learning	Teachers competence	Appropriate Ness of the curriculum	Students readiness	Adequate facility	Class size	Roles of leaders	Societal attitudes	Assessment Method
Pearson correlation (r)	1	.693	.506	.840	.840	.912	.963	.880	.861
Sig.(2 tailed)	—	.000	.000	.000	.000	.000	.000	.000	.000
N	227	227	227	227	227	227	227	227	227

Correlation is significant at the 0.05 level (2-tailed).

The above table “13” shows the correlation (linear association) between active learning and the basic factors affecting its implementations (low, moderate to high correlations). Based on this the implementation of active learning was significantly (strongly) correlated with the roles of educational leaders in the teaching-learning of chemistry lessons ($r=.963$, $P < 0.05$) which was evidenced by the data obtained from the interview.

In the same manner the implementation of active learning was significantly correlated with other factors at different values of “r” as shown in the same table above.

Table. 14. Regression analysis of Implementation of Active Learning method to the basic factors affecting it.

Factors	Un standardized coefficients		Standardized coefficients	t	Sig.	R	R ²	F
	B	Std.Error	Beta					
Teacher.	.031	.029	.055	1.1	.288	.976	.995	5156.2
Competence								
Appropriateness of Curriculum	-.027	.022	-.050	-1.2	.211			
Students readiness	-.089	.030	-.140	-2.9	.004			
Adequate facility	.256	.061	.264	4.2	.000			
Class size	-.034	.045	-.036	-.75	.453			
Roles of leaders	.703	.039	.694	18.1	.000			
Societal attitude	-.014	.066	.000	.000	1.00			
Assessment method	.138	.027	.027	5.0	.000			

As it indicated in table “14” the inter-correlations among the variables treated, the study had the purpose of investigating the combined effect of teachers’ competence, appropriateness of the curriculum, students’ readiness, adequate facility, and class size, roles of educational leaders, societal attitudes and assessment method used on effective implementation of active learning methods, multiple linear regressions was conducted.

Specifically the intention was to determine the predictor variables to the dependent variable and to identify those independent variables that best explained the variances in the implementation of active learning methods in the teaching learning of chemistry lessons.

The results shows that, the combined effect of all the independent variables on dependent variable were statistically significant ($R = .976$, $R^2 = 0.995$, $F = 5156.250$, $P < 0.05$).

This means that the independent variables together explained about 99.5% of the variance in implementation of active learning method.

Concerning the independent contribution of each predictor variable on dependent variable, students' readiness, the presence of adequate facility, the role of educational leaders and assessment method used on the dependent variable were statistically significant at different values of t.

However, teachers competence, the curriculum prepared, class size and societal attitudes were not statistically significant.

Table.15 Step wise multiple regression of Implementation of Active learning on independent variables treated.

Factors	Unstandardized coefficients		Standardized coefficients	t	R	R ²	Adjusted R square	F(ΔR^2)	Sig.
	B	Std.Error	Beta						
Educational leaders	.67	.040	.660	16.5	.963	.927	.927	2660.8	.000
Adequate facilities	.24	.032	.248	7.6	.973	.946	.946	1879.3	.000
Assessment method	.17	.030	.274	5.8	.974	.949	.948	1315.0	.000
Students readiness	-.09	.030	-.128	-3.0	.976	.952	.951	1044.0	.003
Appropriateness of Curriculum	-.07	.023	-.072	-2.8	.976	.953	.952	864.6	.005

The table "15" above indicates that important variables that significantly predicated on implementation of active learning methods. The variables were roles of educational leaders, adequate facility, and assessment method used, students' readiness and appropriateness of the curriculum, were statistically significant at different values of t, ($P < 0.05$).

But the roles of educational leaders play statistically significant role (Beta=0.67) on implementation of active learning in the teaching-learning of chemistry lessons.

4.2 Analysis of Data obtained from Class room Observations.

Class room observation was another important method that the researcher used to collect data.

So, to obtain the responses concerning investigation of factors affecting the implementation of active learning in the teaching-learning of chemistry in preparatory schools, the data obtained was analyzed below.

Table.16 Class room conditions to implement active learning.

S/N	Items	Observation result			
		Yes		No	
		Observed class	%	Observed class	%
1	Is the number of students appropriate according to Educational policy to implement active learning approach?	2	50	2	50
2	Are the chairs and desks easily movable to arrange the students for group work in the class?	2	50	2	50
3	Is the physical condition of the class room conducive to implement active learning approach?	2	50	2	50

The data obtained from class room condition proved that among 4 of the observed classes 2 (50%) of the class room had students who were appropriate with the class size to implement active learning whereas; in the rest classes not (In which there are an average of 67 students in a single class room). Large class size was the problem of Agemsa and Alibo preparatory schools. Concerning item '2' in observed class rooms, 2 (50%) of the class room have had chairs and the desks which were easily movable to arrange students for group discussions. Whereas, in the rest not.

In addition 2 (50 %) of the physical condition of the class room was appropriate to implement active learning and the rest not even though the students responded below the average.

In general the result of observation revealed that almost half of the class room condition was not appropriate to implement active learning which mainly the problem of Amuru preparatory school.

Table.17 Chemistry teachers' competence to implement active learning.

S/N	Items	Observation result			
		Yes		No	
		Observed classes	%	Observed classes	%
1	Teacher's having lesson plan in addition to preparing himself/herself while teaching chemistry lessons.	4	100	-	-
2	Teacher's organizing the students in the class room while implementing active learning.	2	50	2	50
3	Teachers motivating the students during chemistry lessons.	2	50	2	50
4	Teacher's introducing the previous chemistry lessons before starting the day's lesson.	3	75	1	25
5	Teacher's giving equal opportunity for all students' to raise their needs in the teaching learning of chemistry lessons.	2	50	2	50
6	Teacher's using cooperative method of teaching while teaching chemistry.	1	25	3	75
7	Teacher's summarizing the day's chemistry lessons to make clearer for the students.	3	75	1	25

The competence of teacher (subject matter knowledge and teaching skill.) is very important in the implementation of active learning.

As the result of class room observation showed that in 4 (100%) of the observed classes, chemistry teachers prepared themselves and their own lesson plan while implementing chemistry lessons. But regarding organizing and motivating the learners, in half of 2 (50%) of the observed class rooms the teachers organized and motivated the students in the teaching learning process and the data obtained from observation was synonyms with the students responses.

Regarding introducing the previous lesson, almost in all of the observed classes 3 (75%) of chemistry teachers' introduced the previous lesson to link with the day's lesson. In addition in 2 (50%) of the class rooms the teachers gave equal opportunities for all students to raise their needs while teaching the lesson but the rest not. Concerning using cooperative method only in (25%) of the observed class room the teacher implement the method. But almost in all classes 3 (75%) of the class observed the chemistry teacher gave summary at the end of the lesson.to make the lesson clearer.

According to Fiseha (2001) the teacher tasks in active learning approach is to use class room methods that encourage the learners to be as active as possible by analyzing and interpreting knowledge through the use of higher order of thinking skills.

Table.18 Implementation of the curriculum in the teaching-learning process

S/N	Items	Observation result			
		Yes		No	
		Observed class/s	%	Observed class/s	%
1	Teachers and students understanding themselves when active learning is implemented during chemistry lesson.	3	75	1	25
2	Chemistry teacher's talking less than his/her students while implementing active learning during chemistry lesson.	2	50	2	50
3	Teacher's employing different instructional materials while active learning implemented.	2	50	2	50

For effective implementation of active learning, the curriculum designed must be clear to the learner. So based on this, the result of observation proved that almost in 3(75%) of the observed classes the teachers tries to make clear the strategies not.

Regarding how active learning was implemented while teaching chemistry lessons, the method was implemented effectively in 2 of the observed classes but not in the rest classes.

Concerning using instructional materials during implementation of active learning in 2 (50%) of the classes, teachers use different instructional materials to make the lessons more effective in the rest not. Collette and Chiappetta (1994), modify “the context within which the subject matter is taught so that it connects with what students know and perceived to be relevant, yet in a manner that relates to the curriculum”.

Generally the result of observation revealed that the magnitude of implementation of active learning in the teaching-learning chemistry lessons was not sufficiently implemented which synonyms with the result obtained from students, chemistry teachers and school directors/vice directors.

Table.19 Students’ readiness during implementation of active learning.

S/N	Items	Observation result			
		Yes		No	
		Observed class/s	%	Observed class/s	%
1	Equal participation of students in the class room when the teacher teaches chemistry as much as possible.	1	25	3	75
2	Involvement of students’ in group discussions and group work during chemistry lessons.	2	50	2	50
3	Students raising their needs and feelings freely in the class room during chemistry lessons.	1	25	3	75
4	Favorability of students discipline to implement active learning during chemistry lessons.	2	50	2	50

Concerning the roles of students when the teacher teaching chemistry, the result of observation showed that even though there was some participation of students in the class room, the teacher never participate all students equally,i.e Only in (25%) the observed class the students equally participated but in 3 (75%) the attention of the teacher was only the cleaver students. In addition in half of the observed classes the students involve in group discussion and group work actively but in the rest not. Concerning the activities of students in the class room and the discipline they have, the result of observation showed 2 (50%) of the observed classes had favorable discipline while the teacher teach chemistry.

Regarding this Silber man (1996) states, during active learning the learner is seeking something to answer a question, information to solve the problems, or to do tasks with one another by machining the students ‘participant in different activities through motivation

Table.20 Availability of adequate facilities to implement active learning.

S/N	Items	Observation result			
		Yes		No	
		Observed class/s	%	Observed class/s	%
1	Existence of enough chairs and tables those easily movable in the class room to arrange students for group discussion.	2	50	2	50
2	Presence of enough chemistry text books for students to use in the class room.	3	75	1	25

Regarding the availability of adequate facilities needed for effective implementation of active learning, the result of observation showed that, 2 (50%) of the class rooms had chairs and tables which are easily movable to arrange for group discussions. Regarding chemistry texts book to use almost all students have their own chemistry text book.

Table.21 Assessment related activities in the teaching-learning of chemistry lessons.

S/N	Items	Observation result			
		Observed classes		Observed classes	
		No	%	No	%
1	Teacher’s using different techniques to assess the students while teaching chemistry.	2	50	2	50
2	Checking the given homework and exercises by chemistry teacher regularly.	1	25	3	75
3	Teacher’s giving constructive feedback for the students work in the class room during chemistry lessons.	1	25	3	75

As shown in the table the result of observation proved that in 2 (50%) of the observed classes, the chemistry teachers assess students understanding using different techniques and the students work was continuously checked in one of the class room. In only (25%) of the observed class the teacher check students work and giving constructive feedback for them during the lesson.

4.3 Analysis of Data obtained from Interview Questions.

The researcher held an Interview with 7 chemistry teachers and 3 school directors and the data obtained was analyzed as follows.

4.3.1 Analysis of data obtained from Interview of chemistry teachers.

In order to get information as much as possible concerning the study the researcher held an interview with grade 11 chemistry teachers of the schools .The result of Interview showed that:-

- Concerning the advantage of active learning, the teachers said, active learning has many advantages for students learning like making the students actively participants in the teaching learning process and becoming self-confident.
- Chemistry teachers should play crucial role during implementation of active learning like preparing conducive atmosphere for the class room, organizing, motivating, and participating students in different tasks by giving feedback for them.
- During chemistry lesson the students should attend their lesson carefully, participating in different tasks, asking their respects when they need help in the teaching-learning process.
- In the process of implementing active learning to make the students participants in their lesson the teacher should use different strategies like problem solving,demonstration and cooperative learning in the teaching-learning of chemistry.

Generally the interviewed teachers responded that low support given from educational leaders, large class size, lack of facilities of instructional materials, lack of laboratory room, and lack of continuous training of chemistry teachers are problems in the teaching learning of chemistry.

4.3.2 Analysis of data obtained from school directors.

According to Weimer (2002:174) as cited in Birhanu (2010), for the effective implementation of active learning approaches the school leaders need to recognize active learning approaches as building blocks for lifelong learning. School director can be considered as a prominent person in the school system as far as he/she is the one who is assigned to lead all activities that go on in the school environment. It's a common experience that a school director is responsible for both academic and administrative affairs in the school (Yonas.A. 2006).

Accordingly, the result interview with the school directors revealed:-

- Active learning approach have many advantages for students learning, it makes students active participants in the teaching-learning process, it develops self-confident learners, makes the students to learn from each other and improve students' discipline.
- Still there were some teachers who are not very well accustomed to the new active learning approach and still using the usual method during chemistry class.
- Even though effective implementation of active learning needs different facilities' and appropriate class room conditions , the school directors responded that, there were lack of sufficient teaching class rooms for the students, instructional materials, laboratory room for practical application, lack of using strategies of active learning approach properly and lack of access computers to use.
- Concerning the role of active learning to students' achievement and discipline, the school directors said, there was some improvement but not much expected.
- Educational offices support the implementation of active learning to a lesser extent.

5. SUMMARY, CONCLUTIONS AND RECOMMENDATIONS

For effective teaching learning process, chemistry teachers should employ different active learning strategies because the current thinking and practice in education highly advocates the need to actively involve the learners in different active learning techniques. Based on the research questions, data obtained from different sources were analyzed.

5.1 Summary

Based on the data collected and analyses made the findings were summarized as:

- Active learning strategies were not properly implemented in preparatory schools of Amuru, Agemsa and Alibo. the results obtained
- The result obtained from analysis of questionnaire, observation and interview reveal that there are scarcities of instructional materials in the teaching learning of chemistry.
- The availability of these instructional materials in encouraging students to enhance their knowledge and skills more tend to ‘poor’ in all three schools.
- The main challenges faced in the implementation of active learning during chemistry class includes, large number of students in a single class room (the average of 67 students in a single class), unequal participation of students, lack of adequate facilities, lack of continuously assessing students work in the teaching learning of chemistry lessons which are highly indispensable in active learning class room.
- School based supportive services other than classroom instruction to assist students’ success in their chemistry lessons were found to be low.

5.2 Conclusions

Active learning is a process that involves investigating, formulating, reasoning and using appropriate strategies to solve problems. Students build a better understanding of the main concepts more effectively when they are engaged to solve problems during class activities. Based on the summary of the major findings the following conclusions were drawn:

- The findings of study revealed that, most of roles and activities which are expected from chemistry teachers do not implemented. Thus this may happen due to less attention of teachers on their roles and about implementation of active learning
- A great number of educators have stressed that conduciveness and availability of instructional materials play a crucial role for effective implementation of active learning. But the result of the study revealed that, there were no adequate facilities and equipment's in the school for effective implementation of active learning in the teaching-learning of chemistry.
- Large class size impacts negatively on students' academic achievements and its quality, the researcher observed that most students who sit at the back in the class neither participate nor pay attention to whatever goes on, but engage themselves in arguments and gossips.
- The educational leaders and the societies not much work co-corporately concerning effective implementation of active learning.

5.3 Recommendations

Based on the findings of study, the following recommendations are forwarded, that might help to promote the implementation of active learning and as a means to alleviate the problems encountered in the process of implementing active learning methods in those preparatory schools.

- Most strategies of active learning which are expected from chemistry teachers were not implemented during chemistry lessons and this happen due ineffective use of active learning strategies by chemistry teachers ,so chemistry teachers should give attention mainly on how the content of chemistry lesson deliver in the class room.
- Teachers should create an atmosphere conducive and the class room conditions appropriate to students learning and should minimize the problem of large class size as much as possible by dividing the class students in to many smaller groups.
- The school should make efforts to fully supply teaching materials in order to sustain and customize the implementation of active learning in the teaching-learning of chemistry lessons and do everything possible to facilitate active learning. This involves allocating funds and other instructional materials like laboratory equipment's to satisfy students' need in the teaching learning process .Even though teachers are facing lack of adequate facilities they should press on their culture of implementing active learning strategies in their classes as much as possible.
- Administration of the school and educational office has to arrange periodic trainings for all concerned bodies, making consistent evaluation and provision on time and giving feedback for teachers' consistently. In addition they should work co-operatively with all concerned bodies regarding effective implementation of active learning in the teaching learning of chemistry lessons.

REFERENCES

- Aaronson (1996). *Going Against the Grain Supporting the Student Conferred Teachers*. Thousand Oaks and Darwin presses.
- Adunola (2011). “*The Impact of Teachers’ Teaching Methods on the Academic Performance of Primary School Pupils in Ijebu-Ode Local cut Area of Ogun State*,” Ego Booster Books, Ogun State, Nigeria.
- Aggrawal (2008). *Principles, Methods and Techniques of teaching*; Vial publishing House put New Delhi.
- Amare (2000). *Communication and media studies in curriculum studies, a study Guide* AAU Addis Ababa.
- Amare (2001). *Distance educational material for teaching in secondary school*.
- Ayeni (2011). “*Teachers professional development and quality assurance in Nigerian Secondary Schools*,” World Journal of Education, 1(2):143-149.
- Azamat (2013). *Traditional vs. Modern Teaching Methods. Advantages and Disadvantages*. 3rd International Conference on Foreign Language Teaching and Applied Linguistics
- Benbow *et.al.*, (2007). *Large class sizes in the developing world: What do we know and what can we do?* Educational Quality Improvement Program (EQUIP) and USAID.
- Berman (1981). *Educational change: an implementation California*, California University press.
- Birhanu (2010). *Active learning approaches in mathematics education at Universities in Oromia, Ethiopia*. Unpublished PhD Dissertation. Submitted in accordance with requirements for the doctor of education. University of South Africa.
- Bohner and Wanke, (2002). *Attitudes and attitude change*. Psychology press.
- Bonwell & Eison. (1991). “*Active Learning: creating Excitement in the classroom*,” ASHERIC Higher Education Report no.1, George Washington University, Washington, D.C 1991.
- Boud & Feletti, (1999). “*The challenge of problem-based learning*,” (2nd Ed.), London, Kogan.
- Brown, H. (1994). *Teaching by principle of an active approach to language 4thed*. London practice hall.
- Brown (1987), *Principles’ of learning and teaching (2nded.)*. Engle Ward Chiffs: Preotice Hall reagents.
- Calhan & Clark (1998). *The quality of teaching in Oxford University press*.
- Caplet. *et.al.* (1995). *Learning to teacher in the secondary schools*. London Rutledge.
- Capper (1996). *Testing to Learn Learning to Test*. Washington Academic for Educational Development.
- Chet *et.al.* (1993). *promoting active learning strategies for high school classrooms*, San

Francisco josses, Base Science instruction in the middle and secondary schools (3rd ed.). New York: Merrill.

Craig, Cobern, W. (1999). *Alternative Constructions of Science and science education*.

Cochenh & Lytle (2002) *Teacher development making an impact*. washinton, D.C

Collette & Chiappetta, (1994) *Teacher Development: Making an Impact*. Washington DC. World Bank.

Cress well (2012). *Educational research: Planning, Conducting and evaluating quantitative and qualitative research* (4th ed) Pearson.

Davies (1981) *Introduction to measurement and evaluation in Psychology*.

Derebsa (2001). *Factors affecting the implementation of the current curriculum in Ethiopia: Implication for quality*: In Amare Asgedom et.al .*Quality of primary education in Ethiopia AAU*.

Dhindas, Omar & Waldrip (2007). *Upper Secondary Burneian Science students' perceptions of assessment* .International Journal of science Education.

Douglass & Kristis (2000). *Improving student's achievement in mathematics*. Brussels: LAE.

Fiseha (2001). *Active learning*: MA Thesis (Unpublished) Materials, AAU.

Full an (1982). *The meaning of educational change*: The teachers college press, New York.

Gay Asrarian (2000). *Educational Research: Competencies for Analysis and Application* (6th ed). New Jersey: Prentice-Hall.

Gega (1994). *How to teach Elementary School Science*.

Greitzer (2002). "Cognitive Approach to Student-Centered E-Learning, Human Factors and Society," 46th Annual Meeting, Sept 30 – Oct 4.

Hargreaves, A. (1993). *Understanding Teacher Development*. Newyork: Teachers Colleges press, Columbia University.

Heppner (2007). *Teaching the large college class: A guidebook for instructors with multitudes*. San Francisco: Jossey-Bass.

Hightower, (2011). "Improving student learning by supporting quality teaching: Key issues, effective strategies," Editorial Projects in Education

ICDR (1991). *The teacher Education Hand book*. Addis Ababa, Finfinne printing and publishing S.C.

ICDR (1999). *The Teacher Hand Book*. Addis Ababa, Finfinne printing and publishing S.C.

Institute of Curriculum Development Centre. (2005). *Integrated curriculum for secondary schools curriculum*.

- Leu (2000). *The New Curriculum: Issues of Theory and Practice for Teacher Educators*. Beso Project (unpublished)
- Meyer & Jones (1993). *promoting active learning: Strategies for the college classroom*. San Francisco: Jossey-Bass.
- MOBECN (1999). "Towards Improving Continuous Assessment in Schools: A policy and Information Guide".
- MoE (1994). *The New Education and Training Policy*. Addis Ababa.
- MoE (2002). *The education and training policy and its implementation*, Addis Ababa.
- MoE (2003). *Teachers Education System Overhaul Hand Book*. Addis Ababa.
- MoE (2007). *General education quality improvement program*.
- MoE (2010). *Higher diploma program for teacher educators: teachers' handbook*. Addis Ababa. Ethiopia.
- Mohammed & Wheed (2011). *Secondary students' attitude towards mathematics in a Selected School of Maldives*; Institute of Education International Islamic University. Malaysia.
- Mutassa and Wills, (1995). *Modern practice in education and science*, Gaborone; Botswana.
- Nekton (1996). *Educational Assessment of Student*. Engle wood Cliffs, Prentice-Hallinc.
- Okpala (2006). *Toward effective teaching of Music in Nigerian Schools*. International Journal of Research in Education, 3(1), 157-163.
- Ottevanger (2001). *Teacher support materials as a catalyst for Science Curriculum Implementation in Namibia*. Doctoral Dissertation.
- Roggars (1983). *Educational psychology, the science of instruction* New York, need and Company.
- Santos and Mortimer (2003). *How emotions shape the relationship between a chemistry teacher and the high school students*.
- Saul and Kikas (2003). *Difficulties in acquiring theoretical concepts: case of high school chemistry*.
- SIDA (2000). *Teacher Education, Teachers Condition and Motivation*. Addis Ababa.
- Silber man (1996). *Active learning: 101 Strategies to teach and subject*, Boston: Allyn and Bacon.
- Smith & Boyer (1996). *Designing in-class simulations*. Stanley, C. A. and Porter, M. E. (2002). *Engaging large classes: Strategies and techniques for college faculty*. Bolton, MA: Anker Publishing.

- Tebabal & Kahssay (2011). *“The effects of student-centered approach in improving students’ graphical interpretation.*
- Tozedv, Violsen & Sense (1993). *School and Society: Educational Practice as Social Expression.* New York: McGraw Hill Inc.
- Weil-Barais (2001). *Constructivist approaches and the teaching of science.*
- Wilson & Corpus (2005). *The effects of reward systems on academic performance.* Middle School Journal Research Articles.
- Weimer (1987). *teaches large classes well.* New Directions for Teaching and Learning, Number 32. San Francisco: Jossey-Bass.
- Wiersma W. *Research method in education an introduction* (6^{edth}), London sage publication, 1999.
- Yonas. A. (2006). *Factors affecting the implementation of active learning,* (MA Thesis), AAU.

APPENDICES
APPENDIX.A
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SCHOOL OF NATURAL SCIENCE
PROGRAM OF APPLIED CHEMISTRY
Questionnaires' to be filled by the Students

Dear Student.

The main objective of this questionnaire is to collect data regarding “Factors Affecting the Implementation of Active Learning in Teaching of Chemistry Lessons in some Preparatory Schools” in Horo Guduru Wollega zone. So that the result will help to make further improvement. Thus, your information found will be essential for the success of the objectives intended.

Note: The information you give will be used only for academic purpose. So, you are kindly requested to respond honestly.

General Directions:-

Put an “X” for your appropriate response.

Write short and precise response for open-ended items.

Back ground information's

Part one

Name of the school _____

- | | | | | | |
|----|--------------|--------------------------|------|--------------------------|---------------------------------------|
| 1. | Sex. | ☐ | Male | ☐ | Female |
| 2. | Age. | | | | |
| A. | 17-18 year's | ☐ | | C. | 21-30 year's ☐ |
| B. | 19-20 year's | ☐ | | D. | 31 and older ☐ |

Part two

Instruction.1 Students opinions towards their chemistry teachers' competence (mastery of subject matter knowledge and teaching skills).So, using likert scale give your appropriate response for each item.

Note: 1=strongly disagree, 2=Disagree, 3=No opinion, 4=Agree, 5=strongly agree.

S/N	Items	Options				
		1	2	3	4	5
1	My chemistry teacher talks less than his/her students while teaching chemistry lessons.					
2	My chemistry teacher motivates his/her students before starting teaching chemistry lessons.					
3	My chemistry teacher makes his/her lesson clear and easily understandable for the students.					
4	My chemistry teacher uses different instructional materials to make his/her lessons more practical.					
5	My chemistry teacher provides opportunities for each of the student to reflect his/her own idea during implementation of active learning method.					
6	My chemistry teacher knows his/her lesson very well.					
7	My chemistry teacher uses different strategies to check the level understanding of his/her students.					
8	My chemistry teacher attempts to participate almost all students in the class room in different activities of chemistry lessons.					

Instruction2.Grade 11 students’ opinion towards appropriateness of the Curriculum prepared for the preparatory level. .

Note: 1=strongly disagree, 2=Disagree 3=No opinion 4=Agree 5=strongly agree

S/N	Items	Options				
		1	2	3	4	5
1	The chemistry text book prepared for grade 11 students helps students to reflect their own idea freely in the class room.					
2	The chemistry text book prepared for grade 11 assists me to actively participate in teaching learning process.					
3	The chemistry text book prepared for grade 11 encourages learning through active learning approach than learning via the lecture method.					
4	The chemistry text book prepared for grade 11 gives adequate opportunities for students to work in groups, carry out group projects, and different activities.					
5	The curriculum prepared for grade 11 chemistry helps to apply thereby develops critical and problem solving skills of the learners.					
6	The chemistry text book prepared for grade 11 encourages sustainable interaction between the teacher and the students.					

Instruction.3 Grade 11 students' readiness to effectively learn chemistry lessons.

S/N	Items	Options			
		Not at all	Rarely	Sometimes	Always
1	Participation in different activities of chemistry lessons like group work and group discussions in chemistry lesson.				
2	Attending chemistry lessons.				
3	Spending time on studying chemistry lessons.				
4	Doing the given chemistry home work.				
5	Asking chemistry teacher freely that is not clear in the teaching-learning process.				

Instruction.4 Grade 11 students’ opinion towards availabilities of adequate facilities in their respective schools to implement active learning.

S/N	Items	Options	
		Yes	No
1	Appropriateness of the physical condition of the class room for effectively implementation of active learning method of teaching Chemistry.		
2	Presence of enough and suitable chairs and tables in the class room for effective implementation of active learning.		
3	There was enough chemistry text books for each of the student in the class room.		
4	The tables and the chairs are easily movable to apply group discussions in my class.		
5	There is/are appropriate library which has/have adequate books in my school.		
6	Presence of access of computers in the school to use.		
7	My chemistry teacher supports his/her lesson by an experiment to make the lesson practical.		

8. If your response for Item”7” above is “**No**” how chemistry lesson become more practical?

Instruction.5 The impact of class size on implementation of active learning?

S/N	Items	Options	
		Yes	No
1	My class room is appropriate for the teaching learning of chemistry.		
2	There is enough space between the tables for the free movement of chemistry teacher to check students work in my class.		
3	It is possible for chemistry teacher to check all the activities of students in a period during chemistry lessons.		
4	The number students in my class are ≤ 42 .		
5	Each of the students has his/her own chemistry text book in my class room?		

Instruction.6 The role of educational principals (directors, vice directors, supervisors, unit leaders and department heads) of the school in teaching-learning process of chemistry lessons.

S/N	Items	Options	
		Yes	No
1	There is a special program adjusted by the school in addition to regular class room to make chemistry lesson effective in my school.		
2	The school supports the teaching-learning of chemistry lessons as a science subject.		
3	The school supervisors support, give advice and continuously follow all the activities of teaching-learning process of chemistry lessons.		
4	The school principals' work with the nearby societies concerning the implementation of active learning in the teaching-learning of chemistry.		
5	I get adequate support from the respects in the teaching learning of chemistry lessons.		

Instruction.7 Societal attitudes towards teaching-learning process of chemistry lessons.

S/N	Items	Options	
		Yes	No
1	The societies have awareness about active learning method of teaching chemistry lessons.		
2	My parents encourage me to study and do different activities of chemistry lessons at home.		
3	The school societies have positive attitude towards student-centered method of chemistry lessons.		
4	Societies know learning chemistry leads to the development of a given country.		

Instruction.8 Influence of assessment methods used by chemistry teacher.

S/N	Items	Options		
		Alw ays	Somet imes	Not at all
1	My chemistry teacher follows the students work daily.			
2	Continuous assessment improves students learning.			
3	The main objective of continuous assessment is to make the students busy.			
4	I know why and what I am assessed.			
5	I prefer getting feedback on my chemistry lessons on daily bases.			

Thank you!

APPENDIX.B

ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SCHOOL OF NATURAL SCIENCE
PROGRAM OF APPLIED CHEMISTRY

Class room observation check list

General information's

School_____

Grade and section_____

Number of students in the class room. Male_____Female_____Total _____

Duration of observation_____

Date of observation_____

1. Class room size and class room conditions to implement active learning.

1.1 Is the number of students appropriate according to Educational policy to implement active learning approach?

☐Yes

☐No

1.2 Are the chairs and desks easily movable to arrange the students for group work in the class?

☐Yes

☐No

1.3 Is the physical condition of the class room conducive to implement active learning approach?

☐Yes

☐No

2. Chemistry teachers' competence to implement active learning.

2.1 Teacher's preparing himself/herself in addition to preparing lesson plan to teach the lesson effectively.

☐Yes

☐No

2.2 Teacher's organizing his/her students in the class room for group discussion.

☐Yes

☐No

2.3 Teacher's motivating his/her students during the lesson to make the students participant in their lesson.

☐Yes

☐No

2.4 Teacher's introducing the previous chemistry lessons before starting the new lesson?

☐Yes

☐No

2.5 Teacher's giving equal opportunities for all students 'to raise their needs in the teaching learning of chemistry lessons.

☐Yes

☐No

2.6 Teacher's using cooperative method of strategies to implement active learning.

☐Yes

☐No

2.7 Teacher summarizing the day's chemistry lessons to make clearer for his/her students?

☐Yes

☐No

3. Implementation of the curriculum by chemistry teacher.

3.1 Teachers and students understanding themselves when active learning is implemented during chemistry lesson.

☐Yes

☐No

3.2 Chemistry teacher's talking less than his/her students while implementing active learning during chemistry lesson.

☐Yes

☐No

3.3 Teacher's employing different instructional materials while active learning implemented.

☐Yes

☐No

4. Students' readiness during implementation of active learning.

4.1 Equally participation of students in the class room when the teacher teaches chemistry as much as possible.

☐Yes

☐No

4.2 Involvement of students' in group discussions and group work during chemistry lessons.

☐Yes

☐No

4.3 Students raising their needs and feelings freely in the class room during chemistry lessons.

☐Yes

☐No

4.4 Favorability of students discipline to implement active learning during chemistry lessons.

☐ Yes

☐ No

5. Availability of adequate facilities to implement to implement active learning.

5.1 Existence of enough chairs and tables those easily movable in the class room to arrange students for group discussion.

☐Yes

☐No

5.2 Presence of enough chemistry text books for students to use in the class room.

☐Yes

☐No

6. Assessment related activities in the teaching-learning of chemistry.

6.1 Teacher's using different techniques to assess the students while teaching chemistry.

☐ Yes

☐ No

6.2 Checking the given homework and exercises by chemistry teacher regularly.

☐ Yes

☐ No

6.3 Teacher's giving constructive feedback for the students work in the class room during chemistry lessons.

☐ Yes

☐ No

Thank you!

APPENDIX.C
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SCHOOL OF NATURAL SCIENCE
PROGRAM OF APPLIED CHEMISTRY

Interviews questions for Chemistry teachers

The main objective of this Interview is to collect data regarding “Factors Affecting the Implementation of Active Learning in Chemistry Lessons in Some Preparatory Schools” in Horo Guduru Wollega Zone. So that the result will help to make further improvement.

Thus your information found will be essential for the success of the objectives intended. So, you are kindly requested to respond honestly.

Name of the School_____.

Qualification_____Teaching Experiences_____.

Date of interview_____.

1. What is an active learning is, and what contribution it has for students’ learning?

2. What are the roles of chemistry teachers during implementation of active learning method of teaching chemistry lessons?

3. What are the roles of students during implementation of active learning method of teaching chemistry lessons?

4. What methods should be used to make the students more participants in their lesson?

5. What assessment methods do you use to assess your students while teaching chemistry lessons?

6. To what extent do the school principals support you in the implementation of active learning?

7. What are the main factors that can affect the implementation of active learning of chemistry lessons?

8. Explain how these hindering factors can be minimized?

Thank you in advance for your cooperation!

APPENDIX.D
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SCHOOL OF NATURAL SCIENCE
PROGRAM OF APPLIED CHEMISTRY
Interview questions for the School Directors/vice directors.

The main objective of this Interview is to collect data regarding “Factors Affecting the Implementation of Active Learning in Chemistry Lessons in Some Preparatory Schools” in Horo Guduru Wollega Zone. So that the result will help to make further improvement.

Thus your information found will be essential for the success of the objectives intended. So, you are kindly requested to respond honestly.

Name of the school_____

Respond ant’s: Qualification_____Position_____

Experiences_____

Date of interview_____.

1. What is an active learning is, and what contribution it has for students’ learning?

2. Why the new educational policy gives great emphasis to active learning strategies?

3. Would you explain chemistry teachers’ competence in the implementation active learning in your school?

4. What facilities are not adequate to implement active learning in the teaching learning of chemistry lessons in your school?

5. To what extent do the educational offices, school supervisors' and students' parent encourage the implementation of active learning in your school in the teaching-learning of chemistry lessons?

6. What changes did you observe on students achievement and academic discipline as a result of active learning in your school?

7. What are the basic factors that affect the implementation of active learning in the teaching-learning of chemistry lessons in your school?

8. Explain how these hindering factors can be minimized?

Thank you in advance for your cooperation!!