HAWASSA UNIVERSITY

COLLEGE OF EDUCATION AND BEHAVIOURAL STUDIES

SCHOOL OF TEACHERS EDUCATION

PRACTICES AND CHALLENGES OF IMPLEMENTING COOPERATIVE LEARNING METHODS IN CHEMISTRY SUBJECT FOR GRADE 9 - 12 AT BENSA WOREDA SECONDARY SCHOOLS, EAST SIDAMA ZONE, ETHIOPIA

M.A THESIS

BY

TESHOME BEKELE BESHERU

HAWASSA UNIVERSITY, ETHIOPIA

JUNE, 2024

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A THESIS SUBMITTED TO HAWASSA UNIVERSITY, SCHOOL OF TEACHER EDUCATION, SCHOOL OF GRADUATE STUDIES, THE TEACHER EDUCATION PROGRAM, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ART IN CURRICULUM AND INSTRUCTION

ADVISOR: SOLOMON WOLDE (ASSISTANT PROFESSOR)

JUNE, 2024

HAWASSA, ETHIOPIA

Declaration

I hereby declare that this MA thesis entitled "Practices and Challenges of Implementing Cooperative Learning in Chemistry Subject for Grades 9 - 12 at Bensa Woreda Secondary School" is my original work and has not been presented for a degree at any other university, and all sources of material used for this thesis have been duly acknowledged. This thesis is to be been submitted in partial fulfillment of the requirement for an MA degree at Hawassa University and is to be deposited in the library.

Name of the researcher: Teshome Bekele Besheru

Signature _____

Place and date of submission_____

Appendix-1

ADVISORS APPROVAL SHEET

SCHOOL OF GRADUATE STUDIES

HAWASSA UNIVERSITY ADVISORS APPROVAL SHEET

(Submission Sheet 1)

This is to certify that the thesis entitled "**Practices and Challenges of Implementing Cooperative Learning Methods in Chemistry subject for Grades 9 - 12 at Bensa Woreda Secondary School, East Sidama Zone" was submitted** in partial fulfillment of the thesis requirement for the Degree of Master's with Specialization in Curriculum and Instruction, the Graduate Program of School Teacher Education, and has been carried out by Teshome Bekele Besheru ID. No. GPCUINR / 0011 / 15, under my supervision of the Advisor, Solomon Wolde (MA) Therefore, I recommended that the student fulfill the requirements and, hence, submit the thesis to the school of teacher education.

Name of Advisor	Signature	Date

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List of Acronyms and Abbreviations

CL	Cooperative Learning
CBL	Cooperative-Based Learning
CLS	Cooperative Learning Strategy
CLTs	Cooperative learning techniques
FCL	Formal cooperative Learning
GI	Group Investigation
ICL	Informal cooperative learning
MOE	Ministry of Education
SPSS	Statically Package for Social Science
Std.dev	Standard deviation
STLTs	Student Team Learning Techniques
TM	Teaching Methodology
CPD	Continuous Professional Development
WEO	Woreda Education Office
MOE	Minister of Education
BWSS	Bensaworeda Secondary School

Abstract

The main objective of this study was to investigate the practices and challenges of implementing cooperative learning methods in the subject of chemistry at BensaWoreda secondary schools. To achieve these objectives, specific questions were raised regarding the practice of cooperative learning at BensaWoreda Secondary School. The design of this study was a descriptive survey research design. The researcher used both primary and secondary sources of data. The collected data was analyzed using frequency, percentage, mean, standard deviation, and t-test. The study was conducted using quantitative and qualitative methods, in which students, teachers, principals, supervisors, and the department head participated. Students were selected through stratified sampling; teachers were selected through simple random sampling. Additionally, the study was conducted at three secondary schools. These schools were selected through simple random sampling. The study involved 43 students, 91 teachers, 3 principals, and 1 cluster supervisor. The applicable data for the study was collected through questionnaires, interviews, observations, and document analysis. Principals, supervisors, and department heads are selected through available sampling. The findings showed that the implementation plan for cooperative learning methods is generally not being effectively planned in chemistry subjects within the sampled secondary schools in Bensaworeda. The findings showed thepractice of implementing cooperative learning methods generally not being effectively implemented in chemistry subjects within the sampled secondary schools in Bensaworeda. The finding also revealed that there were specific challenges that affect the implementation of cooperative learning in secondary schools.The finding also revealed that there were specific strategies improved to implement cooperative learning in secondary schools.Therefore, the BensaWoreda education department must pay attention to the practice gaps in the implementation of chemistry subjects for grades 9 - 12 in secondary schools. And based on the major findings, the study concluded that cooperative learning implementation was unsatisfactory. Thus, this might affect the teaching and learning process in schools and later affect the implementation of cooperative learning. Finally, the researchers recommend that in order to implement cooperative learning strategies in public secondary schools in the Woreda educational office, supervisors, principals, teachers, and students have to be recommended.

Keywords*: cooperative learning; challenge; practice; chemistry; teaching method*

CHAPTER ONE

1. INTRODUCTION

This chapter describes the background of the study, statements of the problem, objectives of the study, and research questions, significance of the study, scope of the study, operational definitions of the terms.

1.1. Background of the study

Education is foundational for national development, significantly impacting political, economic, social, and law enforcement strategies. Education offers effective teaching strategies that encourage academic accomplishment, such as cooperative learning. In order to satisfy the needs of a wide variety of students in the increasingly diversified global education system, flexible learning approaches are needed The term cooperative learning describes instructional practices in which students assist one another in acquiring academic material by working in small groups under the direction of the teacher (Slavin, 2014).

Cooperative learning is an educational approach that aims to separate classroom activities into academic and social learning. It is underlined that cooperative learning is an essential tactic for developing interpersonal skills, supporting individual and group achievement, and building both personal and professional relationships. Cooperative learning, which is currently widely used to improve teaching and learning, was adopted in Ethiopia at the same time as modern education was introduced in the 20^{th} century.

One of the learning methods educators used to help students develop those necessary skills was the cooperative learning method. The cooperative learning method is a strategy that develops healthy interaction skills, promotes the success of individual students and group members, and forms personal and professional relationships. In light of the above theoretical framework, the focus of these studies is on investigating high school students' attitudes towards cooperative learning methods at BensaWoreda Secondary School in (2023).

In order to adequately educate students for the complicated and quickly evolving 21st-century workplace and society, there is an increasing need to improve their collaboration skills. Because the fundamental work organization in many businesses is team-focused rather than individual-focused, employees must collaborate (Deepa & Seth, Citation 2013). According to researcher, one of the most crucial abilities employers look for in potential hires is the ability to work well in

a team (Burrus et al., Citation 2013; Dixon et al., Citation 2010). Furthermore, in an increasingly globalized society with mediated contacts, the nature of collaboration is changing to require a more sophisticated skill set (Dede, Citation 2010). It has been emphasized that collaboration is a skill that must be developed through consistent practices starting in early childhood and continuing throughout life.

Cooperative learning is one of the important strategies used to maximize students' learning through working together in small groups. Cooperative learning promotes a situation in which students work together in small groups to maximize the learning of all members, sharing their resources, providing mutual support, and celebrating their joint success (David W. Johnson, 2007).

For example, when sodium reacts with chlorine, it produces sodium chloride. This above listed reactionwas a good example of cooperative learning methods, which means that without sodium and chlorine we have not get sodium chloride; to get these products, we must create a chemical reaction between sodium and chlorine. Since chemistry is so fundamental to our world, it plays a role in everyone's lives and touches almost every aspect of our existence in some way. In the context of science, chemistry, as a pure science, is introduced into the content of the secondary school curriculum because of its educational value, suitability for the needs of individual students and society as a whole. Chemistry is essential for meeting basic needs such as food, clothing, shelter, health, energy, clean air, water, and soil.

Cooperative learning methods are an appropriate instructional method. A study conducted by Bensaworeda found that the cooperative learning strategy improved chemistry learning outcomes over traditional teaching methods (Aluko, 2008). Reduces students anxiety in chemistry classes better than the chalk and talk strategy (Oludipe et al. 2010 &Yushf, 2014). However, in the BensaWoreda selected secondary schools have seen still dominated by teacher-centered pedagogy implementing as teaching practices. Chemistry teachers are struggling to find an effective instructional practice that promotes improved learning outcomes in chemistry (Pawlak and Gross, 2019).

Chemistry topics are generally related to or based on the structure of matter, and have proved to be a difficult subject for many students. The cooperative learning approach has been widely recognized for its potential to improve student engagement, critical thinking skills, and academic performance. It encourages active participation, collaboration, and communication among

students, and has been shown to promote positive interdependence and social skills. Students work together to help each other, they share common successes and failures, and they enjoy success because of it Johnson, (2012). It also creates positive interdependence among the group members, (Hanna, 2015).

Cooperative learning approaches focuses on supporting the students, cognitive, affective, and psychomotor behaviors as learners, decision-makers, and community participants, with success measured in terms of the (Yoder &Hochevar, 2005). It is active learning that contributes to bringing about sustainable change in the economic, social, cultural, and political standards of a country since a proper implementation of the cooperative learning method helps the students become problem solvers, citizens who take responsibility, and active participants in social affairs (Feden& Vogel, 2003).

In the traditional method of teaching and learning, only teachers are dominated at the beginning of the instruction, which creates an atmosphere in which learners are not actively competing with each other in the classroom. The traditional teacher-centered approach to learning has limitations in promoting active engagement, understanding chemical concepts, and collaboration among students. The cooperative learning method has different teaching strategies that change depending on the environmental conditions, the number of students, the physical conditions of the class, and the course subject (Maloof and White, 2005; Simsek, Doymus, &Karacop, 2008).

The learning together method is one of these cooperative learning strategies. The cooperative learning method, according to Leu and Price Rom (2006), demonstrates minimal instructor instruction or direct transfer of factual knowledge. In numerous groups, students actively engage in question-asking and discussion while doing investigations or addressing problems.

1.2. Statement of the problem

The challenge in education today is to educate students with diverse abilities and educational levels (Iksan, 2007). Therefore, by not using cooperative learning across multiple educational systems to enhance students learning, schools did not contribute to the growth of the broader community. Cooperative learning strategies can improve students' cognitive development and are a good way to reduce the challenges of teaching subjects in the classroom.Cooperative learning methods, promoted social development such as knowledge construction, met-cognition, self-confidence, and positive peer relationships.

The Ethiopia curriculum has been to face difficulties in terms of relevance, coherence, and effectiveness in a study by Tadesse et al, (2016). The study also emphasized the need for a more student-centered approach and greater alignment with the nation's educational goals. The lack of professional development and teacher training focused on cooperative learning has been identified as major problems in the implementation of cooperative learning in Ethiopia, as a study by Shaw revealed that many Ethiopian teachers lack the support and training they need to effectively implement cooperative learning methods in their classroom. Finally, political influences and changes in government policies have also had an impact on the curriculum.

According to a research by Beyene et al. (2019), changes in cooperative learning have resulted from changes in school leadership and classroom conditions which have inferred and unevenly applied education. Several variables have been identified as contributing to Ethiopia problem with curriculum implementation since 2002.These elements consist of inadequate teacher preparation, a lack of clear guidelines, a shortage of instructional materials, political influence, a lack of motivation, a lack of training and awareness on cooperative learning methods for teachers, anda lack of cooperatively related lessons in the classroom.

There are obstacles in the form of teacher readiness, resource accessibility, and student involvement with the modern cooperative learning method being implemented in Ethiopian schools in general and in this particular study area in particular. Research on the actual implementation of these modern student-centered learning methods is lacking, despite efforts to introduce a more student- centered and practical curriculum.Except for a few comments raised in regard to the study of implementing cooperative learning at secondary schools, no direct study has been conducted on this topic.

For example, Dereje (2023) notes that one of Ethiopia curriculum reform issues is a shortage of teachers with the necessary training, particularly for secondary schools that serves grades 9 through 12. Particularly, science teachers encountered the difficulty of being tasked with teaching in class once more when their experimentation in the chemistry lab was inadequate or they did not participate in practical activities. The results of the study also revealed additional variables that affect how cooperative learning methods are implemented. A lack of time to cover the content, a lack of instructional materials and school facilities, a lack of a practical chemistry lab, a lack of clear guidelines, and teachers who engage in less practical work were some of these factors.

Closing the gap that the previously stated researchers were unable to find is the aim of the current investigation. The methods used by educators to implement student-centered cooperative learning techniques in the classroom. The information that administrators, education offices, and teachers have about using cooperative learning strategies in the classroom and the difficulties that come up when doing so in the study area. This gap differs from the previous researcher's because, even with the same syllabus, schools employ various lesson plans and cooperative learning techniques to get ready for various scenarios.

Researcher conducted a study on cooperative learning methods in chemistry classes in BensaWoreda secondary schools to address challenges in implementing these methods. Currently, there are no professional teachers in Ethiopia who have completed a cooperative learning method trainer, leading to disengagement, lack of motivation, and lack of clear guidelines. The study aims to explore alternative teaching methods, such as cooperative learning, which has been shown to enhance learning outcomes, improve social skills, and promote classroom equity.

1.3. Research Questions

Therefore, this study assessed the practice and challenges of implementing cooperative learning methods in chemistry for grades 9-12at BensaWoreda public secondary schools to address the following research questions:

1. How does the school plan to implement cooperative learning methods in the chemistry subject for grades 9-12 at BensaWoreda Secondary School? Do you have a plan?
2. To what extent is being implemented cooperative learning methods in chemistry subject for grades 9-12 at Bensa woreda secondary schools?
3. What was a challenge to implementing cooperative learning methods in their chemistry for grades 9-12 at Bensa woreda secondary schools?
4. What strategies have been used to improve the implementation of cooperative learning in chemistry for grades 9-12 at Bensa woreda secondary schools?

1.4. Objectives of the study

The objectives of this study were grouped into general and specific objectives.

1.4.1. General objective of the study

The general objective of this study was to investigate the practices and challenges of implementing cooperative learning methods in chemistry for grades 9 - 12 at BensaWoreda Secondary School, East Sidama Zone, Ethiopia.

1.4.2. Specific objectives of the study

The specific objective of this study was:

- To develop a comprehensive implementation plan for implementing cooperative learning methods in chemistry for grades 9-12 at BensaWoreda Secondary School.
- To explore the extent of cooperative learning being implemented inchemistry subject for grades 9-12 at BensaWoreda Secondary School.
- To identify the challenges of implementing cooperative learning in the chemistry subject for grades 9- 12 at Bensa woreda secondary
- Find out strategies improved to implement cooperative learning approaches effectively in chemistry subject for grade 9-12 at Bensa Woreda secondary school.

1.5. Significance of the study

This study was expected to have the following significance for different stakeholders, such as students, teachers, principals, supervisors, and educational officials at the Region, Zone, and Woreda levels.

Cooperative learning strategies are beneficial for students, as they help them become more motivated, perform better academically, and develop stronger social skills. Teachers report that these strategies create a dynamic and engaging learning environment, providing customized instruction and student-specific support. Principals report that these strategies enhance student results, foster a positive school climate, and promote a supportive and collaborative learning environment. Ministers of Education should encourage student participation, foster a positive school culture, and improve academic achievement by providing a supportive and engaging

learning environment. Cooperative learning strategies foster interethnic connections, academic attainment, and social skills development, ultimately contributing to a more inclusive and effective education.

Consequently, one of the most crucial concerns in elementary and secondary education is the development of high-quality student interactions, the promotion of optimal learning and interpersonal relationships, and the acquisition of knowledge as the aim of effective cooperation at all levels. It is often acknowledged that cooperative learning is important in the classroom; good group collaboration can boost students' engagement and participation as well as enhance a range of abilities, technical knowledge, and conceptual understanding.

In conclusion, cooperative learning strategies foster good interethnic connections, raise academic attainment in diverse classrooms, and give students access to learning settings where they can develop their social skills and sense of responsibility.

1.6. Delimitation of the study

In order to make the study more manageable, it was limited to investigating practices and challenges of cooperative learning in chemistry classroom, which may require a wider coverage of the population by including other schools in the country. It was clear that conducting a study in all secondary schools of the zone was advantageous in order to have a complete picture of the practices and challenges of cooperative learning in the chemistry classroom. However, due to time, and resource constraints, this study is limited of to one sampled woreda and three selected secondary schools in BensaWoreda Secondary Schools, namely BansaKawado, Wochabo, and Alo secondary schools. This study was conducted in BensaWoreda Secondary School InEast Sidama Zone. It is located in the eastern part of Ethiopia. The Sidama region is part of 10 regional states in Ethiopia. It is one of the most highly populated areas in Ethiopia. The Sidama land was one of the most ever green and fertilized in Africa. The Sidama region is currently divided into four different administrative zones, namely the Northern Sidama Zone (Hawassa), the Central Sidama Zone (Wondo), the Eastern Sidama Zone (Daye), and the Western Sidama Zone (Yirgalem). Geographically, Bensaworeda is located 130 km northeast of Hawassa and 420 km southeast of Addis Ababa. Bensa is bordered on the south and north by the Oromia Region, with the Bona area on the west, Arbegona on the northwest, Chere on the east and Aroresa on the southeast. The district is predominantly rural, encompassing 6 urban and 24 rural kebeles, for a total of 30kebeles. Bensa woreda is one of the Wored, as in Bensaworeda, which was found in east Sidama Zone and has five governmental high schools.

1.7. Limitation of the study

This research was not totally free from limitations. One of the limitations of this research was the unwillingness of some teachers and students to fill out and turn back the questionnaires on time. One teacher and three students refused to return the questionnaires. The absence of electricity and broad band network connections around the study area was a challenge the researcher encountered to search information; however, the researcher dealt with this limitation by traveling to the area where the network was available. Data collection faced challenges from teachers and principals refusing questionnaires due to time constraints and sensitivity concerns. Researchers addressed these limitations by ensuring confidentiality and clarifying the study's purpose.

1.8. Operational definitions of the terms

Cooperative learning methods: refer to instructional strategies that involve students working together in small groups to achieve a common goal, with each member contributing to the overall success of the group.

Student-centered: although this places the student at the center of the learning process, the teacher's role is still very important.

Teacher-centered: learning typically takes place in a traditional classroom context, with lectures, taking notes, and memorization of material for subsequent recognition or replication.

Woreda: the term "Woreda" refers to the several Kebeles, or government administrative entities, that are under the jurisdiction of the Zone and are home to numerous urban residents and peasant associations.

School leaders: the group of school leaders comprises the principals and supervisors of selected secondary schools.

Traditional learning: regressive (irrational) beliefs or behaviors held by a person in an institution over a sizable amount of time.

The teaching-learning process is a systematic, sequential, and planned course of action on the part of both the teacher and learner to achieve the outcomes of teaching and learning.

Secondary schools: educational institutions that provide education for students in the age range of 14-18 years, typically covering grades 9-12 or equivalent levels of education.

1.9 Organization of the study

This research thesis is organized into five chapters. The first chapter holds the introductory part of the study, which consists of the background of the research, statement of the problem, significance, delimitation, limitation, and operational definition of terms. The second chapter deals with a review of literature pertinent to the research. The third chapter discussed research methodology. The study's data is meticulously analyzed and interpreted in the fourth chapter, followed by a summary, conclusion, and recommendations in the fifth chapters, along with references and an appendix.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

This chapter describes concepts of cooperative learning, the practice of cooperative learning methods, the implementation of cooperative learning in grade 9 - 12 chemistry classrooms, strategies and techniques for effective cooperative learning, the roles of teachers in facilitating cooperative learning activities, and challenges and considerations in using cooperative learning methods.

2.1. Concepts of cooperative learning

Cooperative learning methods is a specific type of active learning in which students work together in small groups to achieve a learning goal. The concept of cooperative learning is based on the idea that students learn best when they are actively involved in the learning process, rather than passively receiving information from a teacher or textbook (Princes, 2004). Cooperative learning is a teaching technique in which students collaborate in groups of varied sizes to achieve common goals (Esan, 2015). In cooperative learning, teachers divide students into groups to complete academic and social activities. Students focus on the task assigned to them to support their learning and membership. Cooperative learning is a teaching method in which students work together in small teams and use several activities to achieve academic objectives to

According to Johnson, Johnson, and Monson (2012), as cited in Berhanu (2013), cooperative learning is also conceptualized as a new paradigm of the teaching and learning process that establishes the conditions for learners to actively discover and develop their knowledge, they also develop social skills, all students' abilities and competencies are developed, and internal motivation is created. According to Eslamian and Aref (2012), cooperative earning is a novel technique to teaching. In cooperative learning, interaction and communication between students are important. The origins of cooperative learning are based on social interaction, cognitive development, and behavioral learning theory.

Some studies provide strong evidence that cooperative learning result in a greater effort to achieve more positive interpersonal relationships and greater psychological health than competitive or individualistic learning. In a cooperative learning environment, the student's role is to fulfill a group role and cooperate with other students to achieve discussion learning, and problem-solving goals. Cooperative learning provides both a pleasant and effective instruction strategy, and it results in higher learning uses and very good learning experiences. It provides the

students with the opportunity of interaction with peers and within sense of unity and takes care of other students (Ahmed & Mahmoud, 2010).

The fundamental tenet of them is cooperative learning, which an essentially student is working individually and in a sort of mutual aid group to accomplish a shared learning objective. According to Hijazi and Al-Natour (2012), cooperative learning is a method of instruction where students are more likely to meet learning objectives, focus longer on assignments, form friendships with people of different ethnic backgrounds, improve their self-esteem, develop lifelong interaction and communication skills, become critical thinkers, develop creative minds, and contribute positively to society. According to Cheong (2010), cooperative learning aids in the development of students' interpersonal skills as well as their academic performance. Gaining social skills through group projects and education is essential for high

According to Frantz, (2003), cooperative learning focuses on students working collectively in groups, thus allowing them to simultaneously learn the chemistry classes effectively as well as practice interpersonal skills. This requires students to actively participate in the process through discussions, problem-solving activities, and practical skills. From the above definitions, it is clear that learning methods include many practices targeted towards cooperative learning in secondary schools.

The authors of the definitions of cooperative learning shared common ideas among themselves to explain the main principles of the approach, which we can explain as follows: cooperative learning approach is a student-centered instruction where small groups of students with varying ability levels (high, medium, and lower achievers) work together to achieve a common goal. The approach aimed to organize classroom activities into academic and social learning experiences. The authors also conceptualized cooperative learning as enabling students to think critically and enabling students to be productive, problem solvers independently. Cooperative learning is the method of instruction that boosts academic achievement

2.2. Attitudes of teachers and students toward cooperative learning

According to Johnson and Johnson (2011), cooperative learning groups develop positive student-teacher attitudes. This is because when teachers understand more about the behaviors of their students, they have opportunities to create more rapport with learners for further actions in cooperative learning groups. As a result, the lines of communication are opened and encouraged, and the empowerment created through interpersonal interactions can lead to a favorable predisposition by all parties engaged.

Studies indicated that teachers perceive cooperative learning as having learners sit in juxtaposition around a table and be able to talk to each other as they do individual assignments. However, the goal of cooperative learning is not allotting a task to a group of learners where one learner does all the work and others write their names on the final document. As indicated by Seid (2012), teachers may be shy or lose control of their teaching routines due to a lack of confidence. Thus, it is necessary to build their knowledge and confidence through mentoring and training. Galton et al. (2009) stated that giving up the opportunity for a variety of training may discourage teachers from using cooperative learning in their classroom.

Vaughan (2002) argued that initially, some learners and teachers express cynicism about the value of cooperative learning, or feel that class time is best spent while hearing from the teacher rather than working with students who, they believe and recognize as little as themselves. Similarly, Hailm (2019) argued that most students who came to school expecting the conventional classroom arrangement with the teacher in front of the class and students in straight rows listening and watching the teacher are confused and hesitate when these expectations are not met. Machemer and Crawford (2007) found that unless cooperative learning is related to examinations, students value it less than lectures or other forms of student-centered learning.

Hillyard et al. (2010) claimed that students' attitudes towards cooperative learning were highly related to their perception of the value of peer teamwork and their experiences with working in teams. In this regard, teacher's clarity in explaining the pursuit of group work is highly emphasized and can negatively influence students' active engagement in cooperative learning.
Hammond, Bithell, Jones, and Bidgood (2010) explained that students valued the social dimensions of working with peers yet; they were less likely to agree that cooperative learning helped them perform better in assessed tasks. Students perceive cooperative learning group work as a classroom management technique employed by teachers mainly to reduce their load in assessment and of little or no benefit to students (Siegel, 2005). Overall, one of the solid concerns that learners have about cooperative learning is the likelihood that group assessment may not objectively assess individual contributions. In general, since attitudes of teachers and students toward cooperative learning are concerned with the improvement of instruction, it needs to be strengthened at the school level, provide equal opportunities to support all teachers, be conducted frequently to optimize teachers' competency, and also a collaborative activity.

2.3. Benefits of the cooperative learning method

The effects of cooperative learning strategies on secondary school student results have been the subject of empirical studies and researcher findings that have been reviewed in this section. Academic success, student motivation, the growth of social skills, and critical thinking are the main topics of the review. Researchers and education specialists support the idea that by fostering a cooperative learning culture where "we are all in the same boat together," students' learning can be increased and academic performance improved (Akhtar, 2012). This section also examines how cooperative learning strategies might affect classroom dynamics, school culture, and teacher-student interactions. Improved learning: Cooperative learning strategies encourage students' active participation, critical thinking, and problem-solving abilities, which improves their learning results. Enhanced social abilities: Pupils acquire critical social skills including as cooperative learning exercises that foster cooperation, communication, and teamwork. Enhanced motivation: Students' interest and involvement in the learning process can be raised by collaborating with peers in a positive setting. Positive interdependence: Through the use of cooperative learning strategies, students are encouraged to support one another's academic and professional endeavors. Equity in learning: By giving every student the chance to participate and help the group succeed, cooperative learning strategies support equity in the classroom. As can be seen from the definitions above, it is crucial for all parties involved, including principals, instructors, and students.

2.4. Implementation of cooperative learning in Ethiopian secondary schools

This section has to discuss factors that influence the successful implementation of cooperative learning methods in secondary education setting. The review examined teacher training and professional development, classroom management strategies, and organizational support as key components of effective implementation. In Ethiopia, cooperative learning is one of the five elements of the education system. The groups have a leader that facilitates the group's participation in all activities (MOE, 2012).

The teachers have a great role in practicing cooperative learning, such as selecting tasks and activities, organizing groups, and not dominating the whole activity of the lesson. On the other hand, the primary role of leaders is to plan, follow, evaluate, and give valuable feedback to practitioners. However, Ethiopian schools have guidelines that indicate the role of education stakeholders (supervisors, principals, and teachers), but they do not organize cooperative learning well Tolina, (2015).

2.5. Role of students and teachers in the cooperative learning method

In cooperative learning, both students and teachers play important roles in the teaching and learning process. In cooperative learning methods, the teacher's role is to create an environment conducive to learning, and facilitators and peers do not just provide information, but expect students to actively participate in their own learning and use their previous experiences to create new knowledge.

2.5.1. Role of students in the cooperative learning method

Students are involved in cooperative learning practice through planning and organizing their learning to improve academic achievement (Good and Brophy, 2006). Therefore, the engagement of students in their instruction is crucial to its success. The students have a decisive role in contributions to the group's effort, encourage each group member to participate, help one another, work cooperatively towards common goals, solve problems that arise in the team, and respect each other's (Duxbury, 2010). Students actively participate in the learning process, collaborating to achieve common goals, sharing ideas, and supporting each other's learning. They take responsibility for their own and their group's success, and communicate effectively.

2.5.2. Role of teachers in the cooperative learning method

Teachers should facilitate cooperative learning in the classroom mainly by motivating students to engage in it. Charles (2007) said that teachers should monitor the groups by moving among them to check that they are actively and properly working on the material provided to them. And also, teachers should intervene when it is necessary to promote positive interdependence among teammates. Hord and Hirsh (2008), state that teachers should assess and evaluate the group mates to ensure that discussion is ongoing properly and the instruction achieves the targeted goal. Then they decided on cooperative learning practices. Therefore, the activities of teachers had an effect on proper cooperative learning practice. The teacher acts as a facilitator, guiding students through the learning process and providing support and resources as needed. The teacher monitors the progress of the groups, provides feedback, and ensures that all students are actively participating and contributing to the group's success. The teacher organizes the cooperative learning activities, assigns group roles, and sets clear expectations for the students. The teacher evaluates the effectiveness of the cooperative learning activities and provides assessment and feedback to students.

2.6. Types of cooperative learning methods

2.6.1. Formal cooperative learning

This type of cooperative learning involves structured group activities with specific roles and guidelines for interaction. It often includes formal assessments and clear learning objectives. In formal cooperative learning, teachers do the following: Johnson et al, (2008), make a number of pre instructional decisions, explain the task, and foster positive interdependence. Monitor students' learning and intervene in groups to provide task assistance or to increase students' interpersonal and group skills evaluate students' learning, and help students process how well their group's special purpose.

2.6.2. Informal cooperative learning

This type of cooperative learning occurs spontaneously and informally, such as through peer discussions, collaborative problem-solving, or group projects. It may not have specific guidelines or assessments. According to Johnson and Johnson, (2009), informal cooperative learning groups are small groups that last from a few minutes to one class period.

2.6.3. Cooperative-based learning

This type of cooperative learning involves the use of cooperative structures and strategies to facilitate learning and collaboration among students. It focuses on creating a supportive and inclusive learning environment. This type of group is especially heterogeneous in membership, meets regularly (daily, biweekly), and last for at least one year (Johnson and Johnson, 2009).

2.7. Structure and key components of cooperative learning

The structure of cooperative learning typically involves the formation of small groups, the assignment of specific tasks or roles to each group member, and the facilitation of group discussions and activities. Cooperative learning principles involve students working together in small groups to achieve a common goal. Key components of cooperative learning include positive interdependence, individual accountability, face-to-face interaction, and group processing.

2.7.1. Positive interdependence

Positive interdependence in cooperative learning is a concept where group members' work together to achieve common goals, with each member's success linked to the group's overall success. This is achieved through cooperative learning tasks and mutual support, where members believe working together benefits both personally and collectively. When students think they can only succeed academically if other students in their cooperative group also succeed, they have positive dependence (Johnson and Johnson, 1987, as cited in Alkhtar, Preveen, Kiram, Rashid Satti, et al, 2012).

2.7.2. Individual accountability

Each group member is accountable for their learning and contribution, demonstrating mastery of the material and their contribution to the group, aiming to strengthen individual skills.

The concept of "equal participation" is also the foundation of individual accountability (Johnson & Johnson 1998 model, as quoted in Felder $ Brent, 2007). Individual accountability is the practice of holding each student in a group responsible for completing their share of the assigned tasks and demonstrating mastery of all required curriculum (Johnson and Johnson, 1998 model, as cited in Laguador, 2014).

2.7.3. Face-to-face interaction

This involves direct communication and interaction between group members, allowing for discussion, collaboration, and the exchange of ideas and information. Cooperative learning is promoted by interaction, preferably face-to-face. Each activity can be structured into group task directions and procedures. Learners are expected to help each other and share resources, and they explain how to solve problems, sharing one's knowledge, checking for understanding, discussing concepts, and connecting present with past learning (Felder &Brent, 2007).Face–to- face interaction although, some of the group members provide one another with feedback, challenging reasoning and conclusions, and perhaps most importantly, teaching and encouraging one another (Laguador, 2014).

2.7.4. Social skills

These are the skills and behaviors that enable people to work effectively in groups, including communication, active listening, problem solving, and decision making. Through cooperative learning, students acquired academic knowledge. Additionally, according to Johnson, and Smith (2000), they learn the interpersonal and small group skills necessary to work in teams. By

working in teams, they learn skills to accept and tolerate others' perspectives, build trust, and provide mutual support and encouragement (Xuan, 2015).

2.8. Structures and techniques of cooperative learning

Cooperative learning involves small groups, specific tasks, and facilitation of discussions and activities, using techniques like think-pair-share, jigsaw, and group investigation.

According to Slavin, (2000), as cited in Yeabsira, (2015), cooperative learning techniques (CLTs) refer to practical chemistry classroom mechanisms teachers were using daily to assist learners in objectives, from basic skills to complex problem solving. Different activities and mechanisms have appeared in the field of cooperative learning.

2.8.1. In think-pair-share

Students individually think about a topic, pair up to discuss their thoughts, and finally share their ideas with the whole class. Students are able to rehearse mentally and verbally, and whole classes have an opportunity to reflect on their thinking. Both students and teachers have high opportunities to think and be engaged in groups' discussions, (Bayat, 2004).

2.8.2. In the jigsaw technique

Each group member becomes an expert on a specific topic and then teaches their peers about it. This technique involves dividing a larger task or topic into smaller parts, with each group member becoming an expert on one part and then teaching it to their peers in order to complete the whole task or understand the entire topic. In addition to that, the method helps to develop cooperation among students and the knowledge of students, is improved in-depth (Berhanu, 2013).

2.8.3. Group investigation

It involves students working together to study solve a problem, or complete a project. These techniques promote active engagement, collaboration, and critical thinking skills. In summary, the literature may provide definitions of cooperative learning, including discussing various cooperative learning structures and techniques, such as think-pair-share, jigsaw, and group investigation, and their applications in different subject areas and grade levels.

2.9. Perception of school leaders and teachers towards cooperative learning

Principals and teachers in BensaWoreda secondary school lack understanding of cooperative learning and teaching practices to improve student academic performance. School leaders motivate good behavior and reward quality teaching, but do not play a role in cooperative education. (Bottery, 2004). School leaders did not abdicate their responsibility to facilitate learning, respect the ideas of others along the way, and encourage teachers (Tolina, 2015). They do not play any role in the important teaching and learning methods of BensaWoreda secondary school cooperative education teachers. Despite guidelines, educational stakeholders, including supervisors, principals, and teachers, are not implementing cooperative learning and teaching practices. Teachers' perceptions are focused on stress over implementing school rules.

Table 1Difference between traditional group work and cooperative group learning

Traditional Learning Groups	**Cooperative Group Learning**
Social skills assumed: social skills are not systematically	Social skills are taught and practiced teachers teach, social skills needed for successful group work
Homogeneity of group members	Group membership is heterogeneous
Individuals are accountable for self: some students let others do most or all of the work, then copy	Individuals are accountable for self and group members: each learner must master the material
Positive interdependence is not structured, students work on their own, often or occasionally checking their answers with students	Positive interdependence is structured: students sink or swim together. Face -to –face oral interaction is emphasized.
Emphasis is on academic development of students only	Social development is as important as academic development
Emphasized the positive aspects of learning	Emphasized the experiential process of learning
Focus is on learning a body knowledge	Learning to learn is the focus
Knowledge is constructed by authoritative figure and organizations	Learners construct knowledge through collaboration with peers and teacher
The teacher does not monitor group work or provide group functioning. No discussion of how well students work together, other than general comments.	The teacher continually monitors group work and provides feedback on group functioning. Feedback and discussion of students‟ behavior is an integral part of ending the activity before moving on to another

2.10. Challenges of cooperative learning methods in the teaching and learning process in chemistry subject

Training instructors in the cooperative learning process is one of the most important obstacles to the effective implementation of chemistry education. Lou et al. (2000) stated that instructors who participated in this type of training were more equipped to convey their instructions to the buzz group, resulting in increased performance. According to Gillies (2003), in order for teachers and students to successfully handle the demands of small group work, training is necessary. Pupils

must get specific instruction in small-group and interpersonal skills that promote cooperation. According to Liang (2002), in order to successfully execute cooperative learning, teachers must receive preparatory training in order to acquire the necessary knowledge, abilities, and mindset for content delivery. Likewise, Seid (2012) pointed out that inadequate training or a lack of orientation may have a negative impact on how well cooperative learning is implemented in the classroom. The most important components of an effective cooperative learning implementation are teachers who have been trained in the cooperative learning concept, administrative support, and teacher group meetings for support and idea sharing (Jolliffe and Hutchinson, 2007).

Meanwhile, Aronson (2000) emphasized teachers to use optimum time and experience to effectively accomplish cooperative learning strategies. Researchers in the area of cooperative learning uncovered the fact that the lack of information about cooperative learning with a variety of assessment methods is a concern repeatedly mentioned by teachers who are inexperienced with cooperative learning (Law, 2011). In this regard, chemistry teachers are lack appropriate knowledge of how to assess group efforts and fix grades for groups. Teachers assume that individual responsibility will be eroded or that one student can dictate the group or carry on the overall assignment of the group.

Ogunleye (2011) recommended methods appropriate for assessing cooperative learning groups. For Ogunleye, teacher observation during group work; group grading for projects; peer evaluation, measuring the extent of contribution of each group member and individual quizzes, exams or assignments are indispensable approaches for assessing cooperative learning groups.

Students in cooperative learning require sufficient time for discussions on issues to achieve the expected behavioral change. According to Materu (2007), individual students and group members need to have appropriate time to learn the required knowledge and skills to the extent they are expected to acquire. Similarly, Sezer (2010) emphasizes the importance of sufficient time for students to engage in cooperative learning teams, as insufficient time can lead to discouragement and difficulties in integrating concepts. Teachers must adapt to unique contexts and be adaptable to obstacles like student conduct, age, and class size (Hennessy, 2013). Ethiopian teachers should prioritize theoretical knowledge and classroom management skills in teacher training (Seid (2012).

Cooperative learning is influenced by students' transformational experiences, incorporating theoretical and practical knowledge into daily life, and can be influenced by factors like desire, age, affiliation, accomplishment, attitude, and prior.

2.11. Theoretical framework of the study

Cooperation has been a central theme for several of the 20th century's best thinkers. The development of cognitive-developmental learning theories and social interdependence is the source of cooperative learning in chemistry classes. Cooperation is seen by cognitive-developmental theory as a necessary precondition for cognitive development. Many people believe that Piaget's theories encourage the development of educational environments in which students actively participate in real-world or at least realistically achievable tasks (Wang, 2009).

The social constructivism theory, which holds that children's speech shifts from communicative social to inner egocentric, is the other theory that informs cooperative learning. According to Vygotsky, the main external influences on cognitive development are cultural, historical, andsocial contact as opposed to personal creation. According to him, social development is the initial stage of cognitive development before it can happen within an individual. Learners are able to relate to situations by building knowledge on a social level and making sense of others (Amineh&Asl, 2015). According to social constructivist theory, "group-learning," in which the teacher acts as a facilitator and guide, is the most effective approach since learning is social, contextual, and active. Modern learning is becoming more student-centric, nonlinear, individualized, and learner-directed than it was in traditional classrooms, where teachers employed a linear paradigm and one-way communication (Blake & Pope, 2008).

Piaget and Vygotsky's theories complemented one another. While the latter encouraged active learning, the former supported social contact in the classroom. In order to implement cooperative learning in a real classroom, both are necessary. Cooperative learning cannot be implemented in a way that is fully explained by one theory. Cooperative learning was inherently student-centered, and constructivism was greatly credited for this. Constructivism, often known as the constructivist approach, is a comprehensive method of teaching and learning that was created by fusing ideas from Bandura, Vygotsky, and Piaget (Liang, 2002). It is not a completely new theory.

2.12. Conceptual framework of the study

The researchers have developed the conceptual framework for this study. Cooperative learning is the dependent variable whereas practices of cooperative learning and challenges of cooperative learning were the independent variables of the study. A successful implementation of cooperative learning depends up on the extent to which elements of cooperative learning are applied. Thus the five elements of cooperative learning are the independent variables of practices of cooperative learning. Students' and teachers efforts are assess to investigate the practices of cooperative learning in the school.

The independent variables of challenges of cooperative learning include variables such as class size, perception towards cooperative learning, organization of the curricular material, Lack of clear guidelines and resources. Hence, the following figure is believed to properly show the conceptual framework of the study. From the above discussions on theories related to cooperative learning, Vygotsky‟s social constructivism seems more appropriate theory for the proposed study. Cooperative learning requires students to interact each other for improving their academic achievement, and social constructivism also supports construction of knowledge by students through social interaction. This makes the theory preferable for this study.

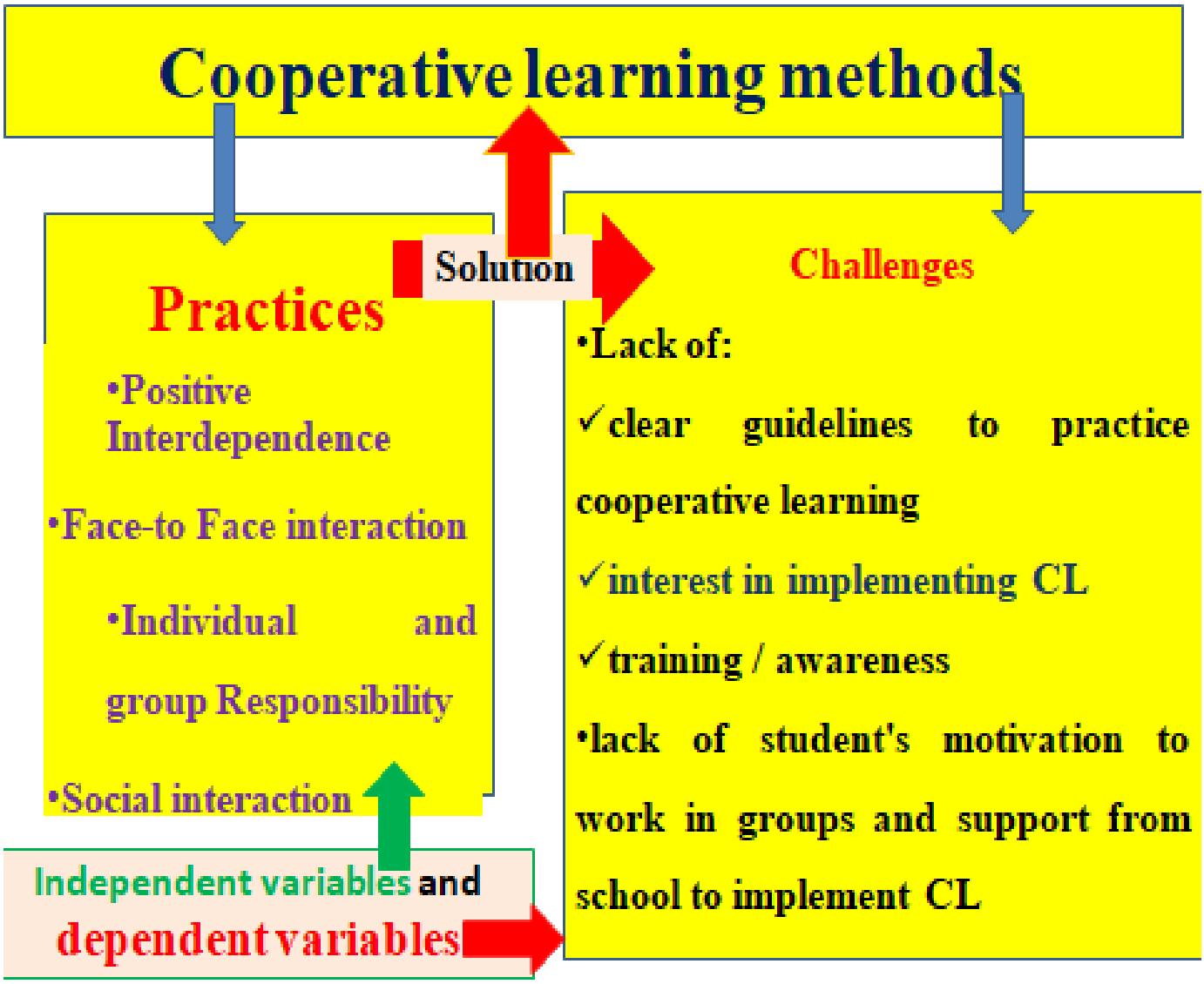

Figure 1Graphical representation of conceptual framework of the study

As stated above the independent variables are practices of cooperative learning which incorporate the five elements (positive interdependence, face-to-face interaction, individual and group responsibility, social skills and group processing) and challenges of cooperative learning such as class size, lack of clear guidelines to practice cooperative learning, lack of better time, lack of cooperative based lesson plan in chemistry classes, problem of group organization and suitable classroom, group composition and resources. Using different literature, these variables are elaborated as follows.

CHAPTER THREE

3. MATERIALS AND METHODOLOGY

3.1.INTRODUCTION

The study was intended to investigate the practices and challenges of implementing cooperative learning method in chemistry subjects at the BensaWoreda secondary school, East Sidama Zone Public secondary schools. This chapter provides an over view of the basic research design and methods that were used to carry out the study. In this overview, the basic research design, research methods, source of data, population, samples and sampling techniques, data collection instruments, procedure of data collection, pilot test method of data analyzing and ethical consideration are discussed in detail.

3.2. Description of the study area

This study was conducted in Bensa woreda secondary school in East Sidama zone. It is located in Eastern part of Ethiopia. The Sidama region is part of 10 Regional state of Ethiopia. It is one of the highly populated areas in Ethiopia. The Sidama land was one of the most ever green and fertilized land in Africa. Sidama region were currently divided in to four different Administrative Zone and Woredas. Bensa is located 130 km North-East of Hawassa and 420 km South-East of Addis Ababa. Bensa is bordered on the South and North by Oromia Region, with Bona area on the West, Arbegona on the North-West, Chere on the East and Aroresa on the South-East. The District is predominantly rural encompassing 6 urban and 24 rural kebeles with total 30 kebeles. Bensaworeda is one of the Wored as in Bensaworeda which was found in east sidama zone and has five governmental high schools

3.3. Research design

Throughout the investigation, a mixed-methods descriptive survey design was employed to accomplish the objectives. The pragmatic movement that challenged the paradigm and provided a reasonable and useful substitute was philosophy, a mixed method (Creswell, 2014). This made it possible for the mixed method, which is typically seen in the discussion part, to really emphasize the data results that were obtained.

Descriptive survey is a research design in which quantitative and qualitative data are simultaneously collected, combined, and analyzed to gain a deeper understanding of a research problem. The basic reasoning behind this design is that the strengths of one data collection form counterbalance the weaknesses of the other, and that collecting both types of data leads to a more comprehensive understanding of the research problem (Thanavathi C. 2017). Additionally, the researcher converges or merges the data to provide a thorough analysis of the research problem (Creswell 2018).

According to John Best (2008) and Creswell (2012), descriptive survey designs were more effective practice in describing and interpreting the current situation. In supporting to John Best (2008) and Creswell (2012) idea, Abiy et al., (2009) suggested that descriptive survey was used to gather data at a particular point in time with the intention of describing the nature of existing conditions or identifying standards against which existing conditions can be compared or determining the relationships that exist between specific events. In other words, the descriptive survey was more effective in assessing the current practices in its natural setting. It is something that actually exists, such as a learning condition, practice, situational, or events.

This approach was allowed for a comprehensive exploration of the practice and challenges of cooperative learning methods in the chemistry classroom at Bensa woreda secondary school. This qualitative data was providing insight into the dynamics of cooperative learning and how students interact with each other during these activities. Qualitative research approaches was using interviews, and observation to explore the experiences and perspectives of students and teachers involved in cooperative learning activities in the chemistry classroom. For quantitative research approaches, academic performance assessment was used to measure the practice of cooperative learning methods on student learning outcomes.

3.4. Sources of data

The researcher was used both primary and secondary sources of data.

3.4.1. Primary sources of data

Primary source of data are original source that was provided firsthand information about a topic. This was including interviews, and observations. They are created at the time of the event or phenomena being studied and are considered to be the most reliable and credible source of information. The primary data was collected from public schools, head of department, teachers, students, school administration, and education office within the sampled schools.

3.4.2. Secondary sources of data

Secondary data was collected from published and unpublished documents such as books, journals, the internet, different articles, plans and some checklist related to cooperative learning, to cross-check data was obtained through the mentioning instruments (questionnaire and interview). Studying questions are discussed based on primary source, and secondary source data is analyzed to develop a discussion on primary data. Therefore, this study will explore and solve problems by utilizing primary and secondary data sources to achieve the research objectives and answer the research questions. That means using a secondary source of data focused on the grade nine students' chemistry textbook and teacher guides to compare classroom teaching and learning process using observation data collection instruments.

3.5. Population, sample, and sampling techniques

3.5.1. Population

The study's target population consisted of students in grades 9 through 12 at BensaWoreda secondary schools. Students in natural science focused particularly on chemistry class, but for grades 9 through 12, another teacher (i.e., without chemistry teachers) had to be used as data collection instruments giving by prepared questionnaires and interviews for target responses. BensaWoreda consisted of five secondary schools, from which three schools were randomly selected: BansaKawado, Wochabo, and Alo secondary schools. The total populations of BensaWoreda secondary schools for grades 9 through 12 consisted of 3748 students and 118 teachers, 8 principals, and 2 supervisors. In their three selected schools, there were 2502 students overall, of which 993 Alo secondary school students, 808 students of BensaKabado secondary schools and 701 pupils from Wochabo secondary schools and schools. Additionally, there were

2502 pupils from three chosen secondary schools that offered grades nine through twelve. Out of a total population of 118 instructors, 1545 pupils, 8 principals, and 2 supervisors, the target populations under consideration are 91 teachers, 43 students, 3 principals, and 1 supervisor. Lists of house numbers and the names of the corresponding house holders (heads of households) were obtained at each of the chosen schools.

3.5.2. Sampling techniques and Sample size

BensaWoreda used purposive sampling for a study of secondary schools, availability sampling for principals and supervisors, stratified sampling for students, and simple random sampling for teacher respondents. These techniques were chosen for their manageability and sufficient information, ensuring equal chances for each teacher. This techniques is use in order to give equal chance of being select for all secondary school. From each school, the researcher was selected 43 students of focused classroom observation in cooperative learning methods of 13 students from Bensa Kawado, 15 students from Alo, and 15 students from Wochabo through stratified sampling techniques based on their grade level. From each selected three schools, the researcher was selected 91 teachers focused implementation of cooperative learning of 34 teachers from Bensa Kabado, 28 teachers from Wochabo, and 29 teachers from Alo through simple random sampling techniques selected based on your qualification.3 principals and 1 supervisor were selected from the three schools through availability sampling techniques based on your experiences. In this study sampling size have determined using a simplified provided by (Yeman, 1967 cited in Mesfin, 2006). To determine the required sample size at 95% confidence level, degree of variability = 0.05 and level of precision = 8% (0.08), From 118 teachers from the sampled school 91 will be select through simple random sampling techniques by using Yemane formula to get teachers selected sample size as follows: $n = \frac{N}{1+N(e)2}$, where e is statistical error, its value is 0.05, where N is target population, n is sample size.$n = \frac{118}{1+118(0.05)2} = \frac{118}{1.295} = 91.11969$ approximately, n = 91And by using Cohan allocation formula researcher will has try to allocate those total sample to each sampled schools.$Ps = n * \text{total number teachers in each sample}/N$

The study focuses on three secondary schools in Bensa Kabado, Alo, and Wochabo, each with a target population of 1545 students and 118 teachers in grades nine through twelve. The target population is determined using data from students, teachers, supervisors, and principals, establishing the sample size in each district. To determine the sample size's target population, the researcher used stratified sampling techniques and Kothari's (2004) algorithm below to get

students sample size. n = $\frac{Z2\ PqN}{e2(N-1) + Z2\ Pq}$ where n= sample size, Z =value of standard at 95% confidence interval (Z= 1. 96), p =population of sampled population (0.03), q = 1-p, N =the total number of household in the in the three selected district of selected school, 0.03 (the estimate should be within 3% of the true values).n = $\frac{(1.96)^2\ (0.03)(0.97)(1545)}{0.05^2(1545-1)+1.96^2(0.03)(0.97)} = \frac{172.7}{4} =$ 43.175

Approximately, n = 43

Table 2 summary of target population sample and sampling techniques

S	Name of Selected Secondary School	Number of students	Number of Teachers	Number of school leaders	
				principals	superviso
1	BensaKabado	13	36	1	1
2	Wochabo	15	28	1	
3	Alo	15	29	1	
	Sample Size	43	91	3	1
	Sampling Techniques	Stratified sampling techniques	Simple random sampling techniques	Availability sampling techniques	

Source of data 2016 E.C

3.6. Instruments of data collection

This study utilized questionnaires, interviews, observations, and document analysis to gather information on the implementation and challenges of cooperative learning methods in chemistry for grade 9-12.

3.6.1. Questionnaire

Close-ended and open-ended questionnaires were prepared to collect data from students, chemistry department heads, and teachers. Closed-ended questions were chosen because it was become easy to fill out, take relatively little times, keep the respondents on the subject, are relatively objective, and easy to tabulate and analyzed. The open- ended questions, on the other hand, gave respondents the opportunity to respond relatively freely in their own words (Best & Khan, 2005). According to Cohen etal (2007), there were many advantages to collecting data using questionnaire. In addition to its being flexible and low cost, survey questions were preferred to ensure anonymity and confidentiality of study participants. A five-point Likert scale was used to evaluate the attitudes of chemistry department chairs and teachers towards cooperative learning practices, ranging from strongly agree to strongly disagree.

3.6.2. Interview

An interview was conducted with teachers who are implementing of cooperative learning methods to understand their experience, challenges, and successes with these approaches. Teachers can have asked about their experiences with using cooperative learning methods in their classrooms, while students can have asked about their level of engagement and satisfaction with these methods. Principals can have asked about the overall approach to cooperative learning within the school and any challenges or successes they have observed. Teachers can have provided valuable insights into benefits and limitations of cooperative learning methods, as well as their strategies for implementation and classroom management.

3.6.3. Observation

In terms of observation, a researcher was directly observing the chemistry classroom environment to measure student participation and behavior during cooperative learning activities. And also, researchers can visit classroom where cooperative learning methods are being planning and implemented and take note of the interactions between students, the level of engagement, and the overall classroom environment. This have to be providing valuable insights into how these methods are being used in practice and their on student behavior and learning outcomes.

3.6.4. Document Analysis

Document review was other essential data-collecting tool various documents like records and minutes concerning in the built observation format and lesson plan in selected secondary schools. This method was used to validate and substantiate the information gathered by the questionnaire and semi-structured interview.

3.7 Data Collection Procedure

After the first drafts of all tools were prepared in English, they were commented on by the advisor. Based on these comments and suggestions on the format and items, necessary modifications would be made, especially to the questionnaire. Then, based on modifications made and pilot study results, the instruments were developed for the main study. The study involved distributing questionnaires to 43 students, 91 teachers, 3 principals, and 1 supervisor, as well as conducting semi-structured interviews with 12 secondary school teachers, principals, and experts.

3.8Pilot study

3.8.1. Validity Test

Validity is an integral mandatory component for any type of measurement, test or instrument. It indicates the degree to which a test measurements and equipment can achieve specific goals. For this study, researchers delegated the survey questions to two measurement and evaluation experts to ensure clarity, logical order, and wording. Additionally, the researcher's advisor provided input on the comments. Finally, the relevance of the content, the length of the items, and the clarity of the items, the structure of questionnaire were evaluated and feedback was received. Based on their reflections, the tools was refined before being presented to key study participants. As a result of the comment some irrelevant comments were removed and many long objects and several unclear objects.

3.8.2. Reliability Test

Franken and Walten, (2003) reported that Reliability refers to the consistency of scores obtained from a test. A reliable test is more valid data. A questionnaire was designed to measure cooperative learning practices and implement solutions. The reliability coefficient of opinion items, teachers' utilization, and challenges in implementing cooperative learning in chemistry at BensaWoreda Secondary School were measured using Crobnach's alpha method by the help of SPSS version 26.Reliability refers to the consistency of scores obtained from a set of items. A more reliable test is more valid data. The study evaluated cooperative learning in chemistry at BensaWoreda Secondary School, using Crobnach's alpha method and SPSS version 26, and distributed a questionnaire to 12 teachers.

Table 3 Reliability Test Results with Cronbach's Alpha

No	Items of type	No of items	Reliability coefficient
1	Implementation plan for implementing cooperative learning methods in chemistry for grades 9 - 12 at BensaWoreda Secondary School.	10	.927
2	Extent of cooperative learning being implemented in chemistry subject for grades 9-12 at BensaWoreda Secondary School.	6	.764
3	Challenges to implementing cooperative learning methods in their chemistry for grade (9-12) at Bensa woreda secondary school and potential solution to address them.	10	.932
4	Strategies improved to implement cooperative learning approaches effectively in chemistry subject for grade 9-12 at BensaWoreda secondary school.	6	.814
	Over all Reliability coefficient	32	.859

3.9. Techniques of data analysis

The study collected data on cooperative learning in BensaWoreda government secondary schools using both quantitative and qualitative data analysis methodologies. Questionnaires, frequency percent, and mean scores with a standard deviation were used to examine the data. The properties and correlations between the variables were described using descriptive statistics. A Likert scale was also used in the study to gauge respondents' agreement or disagreement. Narration and description were used to examine the qualitative data, with an emphasis on the respondents' relative positions, the state of cooperative learning, and its difficulties. The study's conclusions, key findings, and potential recommendations many of which were presented in narrative form were included.

3.10. Ethical considerations of the study

Cooperative learning activities were used in the study, and participants were given information on the goals, privileges, and advantages of the activities. All subjects gave their informed consent, guaranteeing the researcher's identity and confidentiality. With an emphasis on reducing any harm, the research was carried out in an impermissible and kind manner. Informed consent, confidentiality, equity, respect, inclusivity, safety, professional conduct, and assessment are important ethical factors for cooperative learning. All information regarding the activities, rights, and possible dangers or benefits was provided to the participants. Throughout the activities, confidentiality was upheld, and issues pertaining to cultural sensitivity were resolved. The study also emphasized the roles that educators and researchers play in supporting cooperative learning initiatives.

CHAPTER FOUR

4. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

The background of this study was presentation, analysis and interpretation of the data collected from respondents. The data for this study were from supervisor, principals, teachers and students through questionnaire, interviews, observation and documents. The questionnaires were distributed to 91 teachers and 43 students of secondary schools. In addition to questionnaire, 91 teachers, 3 principals and 1 supervisor were interviewed and their responses were used as supplementary points to confirm responses. The study analyzed the practices and challenges of implementing cooperative learning in chemistry subjects at BensaWoreda Secondary Schools. Data was collected from 43 students, 91 teachers, 3 principals, and 1 supervisor through questionnaires and interviews. A response rate of 93.4% was obtained from teachers, while 6.6% were rejected due to incomplete responses. All responses were analyzed and interpreted, with 95% of interviews filled and returned.

4.1 Analysis of the major data

In analyzing the data, different statistical techniques and procedures were used. Initially, the data collected through questionnaire were coded and inserted in to SPSS for analysis. Accordingly, descriptive statistics such as frequency count and percentage were computed to indicate the background characteristics of the respondents whereas means core and independent test values (t-value and p-value) were computed to show the distribution and statistical response difference of the views of the two groups of respondents (students and teachers) and (teachers and school leaders) up on the practice of cooperative learning. To this end, a test of significance has been carried. Accordingly, if a calculated value is greater than 0.05 significance levels, there is no significance difference between the views of the two groups of respondents, while the calculated value is less than the 0.05 significant values, there is significant difference between the views of the two groups of respondents.

4.2 Demographic characteristics of participants

Table 4 Sex of respondents

Sex of respondents for teachers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	84	92.3	92.3	92.3
	female	7	7.7	7.7	100.0
	Total	91	100.0	100.0	
	sex of respondents for students				
	male	24	55.8	55.8	55.8
	female	19	44.2	44.2	100.0
	Total	43	100.0	100.0	

As shown in Table 4: item 1, the students' respondent of 24(55.8%) males and 19(44.2%)females which show the existence of wider gender imbalance among students of sampled secondary schools. Female students are very low in number as compared to the male students. Regarding the teacher respondent consist of 84(92.3%) males and 7(7.7%) females. Here also the number of female teachers is very low. This wider gender gap among students and teachers participating may be due to historical gender inequality in access to education and position.

Table 5 Ages of respondents

Age of respondents for teachers					
		Frequency	Percent	Valid Percent	Cumulative Percent
	below 20 years	1	1.1	1.1	1.1
	21-30 years	31	34.1	34.1	35.2
	31-40 years	38	41.8	41.8	76.9
	41-50 years	21	23.1	23.1	100.0
	Total	91	100.0	100.0	
	Age of respondents for students				
	20 and below years	25	58.1	58.1	58.1
	21-30 years	18	41.9	41.9	100.0
	Total	43	100.0	100.0	

As shown in Table 4: item 1, regarding the age of the students, teachers and school leaders respondents 25(58.1%) had an age 20 and below, 18(41.9%) of students and 60(65.9%) of teachers had an age of 21-30 years, 27 (29.7%) had an age of 31-40 years, and 4(4.4%) respondents had an age of 41-50 years. The age of respondents was suitable for the study to give the response easily.

Table 6 Qualification of respondents

Qualification of respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	diploma	35	38.5	38.5	38.5
	degree	55	60.4	60.4	98.9
	MSC/MA	1	1.1	1.1	100.0
	Total	91	100.0	100.0	

As shown in Table 4: item 1, When we see the qualification of respondents, the data show that almost all respondents 56(61.5%) were degree holders whereas only 34 (37.4%) were diploma holders and 1(1.1%) were second degree holders. This implies that almost all sampled secondary school leaders (supervisor and principals) and teachers and students were qualified enough to lead and teach and learn in the given grade levels.

Table 7 Education level of respondents

Education level of respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Teachers	91	95.8	95.8	95.8
	Principals	3	3.15	3.15	3.15
	Supervisor	1	1.05	1.05	1.05

As shown in Table 4: item 1, When we see the Educational level of respondents, the data show that almost all respondents 91(95.8%) were teachers whereas only 3(3.15%) were principals holders and 1(1.05%) were second supervisor holders.

Table 8 Experience of respondents

experience of years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5 years	38	41.8	41.8	41.8
	5-10 years	44	48.4	48.4	90.1
	10-15 years	9	9.9	9.9	100.0
	Total	91	100.0	100.0	

Their work experience also mostly falls in the category of 5 years 14(15.4%), 5-10 years 34(37.4%), 11-15 years 32(35.2%), and 16-20 years 11(12.1%). Totally, 43(31.1%) of the respondents were students, 91(65.9%) of the respondents were teachers, 3(2.8%) of the respondents were principals, and 1(0.7%) of the respondents were supervisor of sampled secondary schools of BensaWoreda.

4.6How does the school plan to implement cooperative learning methods in chemistry subject for grades 9-12 at BensaWoreda Secondary School? Do you have a planned plan?

Table 9 the students responses of the respondents on to develop a comprehensive implementation plan to implementing cooperative learning methods in chemistry subject for grades 9-12 at Bensa Woreda Secondary School.

SN	Descriptive Statistics						
	Items	**SD F (%)**	**DA F (%)**	**U F (%)**	**A F (%)**	**SA F (%)**	Mean	Std. Deviation
1	In our school, there is a planned cooperative learning		16(37.2%)	15(34.9%)	11(25.6%)	1(2.3%)	2.93	.856
2	The cooperative learning method actively works in the chemistry teachers practice during my class.		18(41.9%)	13(30.2%)	9(20.9%)	3(7.0%)	2.93	.961
3	Students in a group share materials / resources to accomplish task while working in a group for a common goal		17(39.5%)	15(34.9%)	11(25.6%)		2.86	.804
4	Students tutor each other until each group members understand the materials		20(46.5%)	13(30.2%)	10(23.3%)		2.77	.812
5	Each group member takes responsibility for the success or failure of the group.		15(34.9%)	18(41.9%)	10(23.3%)		2.88	.762

6	The teacher informs students what the standards of success are for the whole group and individual members before starting the group work	14(32.6%)	15(34.9%)	11(25.6%)	3(7.07%)	3.07	.936
7	Students in a group freely share their views, ideas and feelings	17(39.5%)	18(41.9%)	8(18.6%)		2.79	.742
8	Teachers encourage students to actively engage in group discussion	20(46.5%)	17(39.5%)	6(14.0%)		2.67	.715
9	Students perform their group activities together and facilitate their social interaction.	19(13.9%)	17(12.4%)	7(5.1%)		2.72	.734
10	Teachers check active interaction in cooperative learning activities	13(30.2%)	16(37.2%)	14(32.6%)		3.02	.801
Average mean)	**Averages for Students**					**2.864**	

The initial entry in Table 5 According to the report, chemistry classes at BensaWoreda secondary schools use cooperative learning. Only one student (2.3%) strongly agreed, compared to 11 (25.6%) who agreed99999, 16 (37.2%) who disagreed, and 15 (34.9%) who were unsure. Most students expressed dissatisfaction with the practice. According to the computed score results for pupils (M =2.93, SD =.856), cooperative learning is practiced once a week in the secondary schools in BensaWoreda. This implies that a considerable proportion of pupils lack confidence in their comprehension of the learning objectives.

With respect to item 2 of table 5, the computed student means (M= 2.76, SD=.886) showed that, in my chemistry class, the cooperative learning approach is used relatively infrequently by the teachers. According to the survey, cooperative learning is actively used by chemistry teachers. Nineteen percent (20.9%) of the students who responded agreed that cooperative learning is

actively used in the classroom by chemistry teachers. On the other hand, 18(41.9%) students disagreed, and 13(30.2%) students were unsure. The differences between teachers and department leaders were negligible. Therefore, when it comes to the cooperative learning approach that the chemistry teachers actively use in my class, there is no discernible difference between the three respondents who were chosen at random.

Table 5, item 3 shows that teachers do not set up structures for cooperative learning assignments; instead, they foster a culture of mutual support among group members, encouraging students to share resources and materials in order to complete tasks and work together toward a common objective. The computed mean results for students (M= 2.86, SD=.804) This demonstrates how poorly all teachers set up cooperative learning assignments and foster a culture of mutual support among group members so that students can share resources and tools to complete tasks while collaborating to achieve shared objectives. 11 (25.6%) of the respondents' pupils agreed that not all teachers design cooperative learning assignments with a structure, and by creating a culture of mutual assistance among group members so that they can exchange resources and materials to complete tasks while collaborating to achieve shared objectives. Of the respondents, 15 students, or 34.9%, were unsure about the item. 17 (or 39.5%) of the respondents' students disagreed with this statement.

It is expected that instructors will assist students in tutoring one another until all members of the group understand the material in item 4 of table 5, and the students' computed mean scores (M = 2.77, SD =.812) indicated poor performance on the task. Consequently, there is a noticeable disparity in the answers provided by the students. This indicates that teachers were not promoting positive interdependence in the learning environment. Of the total, ten students, or 23.3%, strongly agreed with this statement. Of the students, 20 (46.5%) disagreed. Thirteen (30.2%) of the student replies expressed a lack of clarity on this idea. The researcher's conclusions indicate that there is gaps on the regional education office experts, as indicated by the WEO experts, are trying to prepare tutors for students and teachers but it is not enough. During the interview, the supervisors development unit, department heads, school principals, and woreda education officers told that cooperative learning does not effectively prepare students to tutor each other until each group member understands the materials.

As shown in item 5 of table 5, respondents were requested to each group member takes responsibility for the success or failure of the group, the computed mean for students (M = 2.88, SD = .762) perceived low level on the issue. In addition to this, 10(23.3%) of students were agreed that teachers and students takes responsibility for the success or failure of the groups and

there is an individual accountability in the cooperative learning classroom in the school. 18(41.9%) of the student respondents undecided on the idea. 15(34.9%) of students respondents were disagreed on the idea. This ensured that each group members was not responsible for the group's success or failure

With regard to item 6 of table 5, the teacher informs students what the standards of success are for the whole group and individual members before starting the group work. Consequently, the mean scores of the (M=3.07, SD= .936) of students showed that low level. As a result, 11 students (25.6%) agreed with this idea. 15 (34.95) of students were undecided on the item. 14 (32.6%) of students were disagreed on the item. 3 (7.0%) of students were stronger agreed on the item. Thus, from the given responses, it was concluded that teachers did not inform students what the standards of success are for the whole group and individual members before starting the group work.

As shown in item 7 of table 5, respondents were requested to rate the students in a group freely share their views, ideas and feelings, the mean score of students (M=2.79, SD= 0.742) showed moderate level about students in a group freely share their views, ideas and feelings. 17 (39.5%) of students were disagreed that teachers and students were not in a group freely share their views, ideas and feelings to participate in the implementation of cooperative learning practice actively. In addition to this, 8 (18.6%) of students respondents were agreed with the idea. 18 (41.9%) of students respondents were not decided on the item. From the above ideas, it was understood that there was a gap in the implementation of cooperative learning in face-to-face interactions. Teachers and students were unable to effectively practice cooperative learning through face-to-face interactions in schools.

As shown in item 8 of table 5, respondents were requested to rate teachers encourage students to actively engage in group discussion. In this regard, the calculated mean d students (M=2.67, SD=.715) perceived that the teachers' desire students to actively engage in group discussion were moderate. In addition was this, 6(14.0%) of student respondents were agreed on the idea. 20(46.5%) of students were not agreed with. 17(39.5%) of student respondents were not decided on this idea. From this result, it is possible to understand that there was face-to-face interaction implementation gap of cooperative learning.

As indicated by table 5, item 9, respondents were requested to rate students perform their group activities together and facilitate their social interaction. In this regard, the calculated mean of

students (M=2.72, SD=0.734) indicated that the students perform group activities together and promote social interaction. It showed that students perform their group activities together and facilitate their social interaction was low. Additionally, 7students (5.1%) respondents were agreed on the idea. 19(13.9%) of students were not agreed on the item. 16(37.2%) of student respondents were not decided on this idea. Through the above thoughts, we can understand that there was a gap in the implementation of social interaction in cooperative learning. Teachers and students were unable to effectively practice social interaction and cooperative learning in school.

As indicated table 5, item 10, respondents were requested to rate teachers check active interaction in cooperative learning activities. In this regard, the calculated mean of students (M = 3.02, SD = 0.801) perceived that the searchers check active interaction in cooperative learning activities were moderate. It showed that students perform their group activities together and facilitate their social interaction was low. In addition to this, 14(32.6%) of students respondents were agreed on the idea. 13(30.2%) of students were not agreed on the item. 16(37.2%) of student respondents were not decided on this idea. From the above listed ideas, it is possible to understand that there was social interaction implementation gap of cooperative learning. The teachers and students failed to social interaction practice cooperative learning effectively in their schools.

Table 10 the teachers responses of the respondents on to develop a comprehensive implementation plan to implementing cooperative learning methods in chemistry subject for grades 9-12 at BensaWoreda Secondary School.

SN	Descriptive Statistics						
	Items	SD F (%)	DA F (%)	U F (%)	A F (%)	SA F (%)	Mean	Std. Deviation
1	In our school, there is a planned cooperative learning		30(33.0%)	38(41.8%)	21(23.1%)	2(2.2%)	2.95	.808
2	The cooperative learning method actively works in the chemistry teachers practice during my class.		26(28.6%)	38(41.8%)	27(29.7%)		3.01	.767

3	Students in a group share materials / resources to accomplish task while working in a group for a common goal	1((1.1%)	34(37.4%)	31(34.1%)	25(27.5%)		2.88	.828
4	Students tutor each other until each group members understand the materials		38(41.8%)	34(37.4%)	19(20.9%)		2.79	.768
5	Each group member takes responsibility for the success or failure of the group.	2(2.2%)	27(29.7%)	37(40.7%)	24(26.4%)		2.95	.835
6	The teacher informs students what the standards of success are for the whole group and individual members before starting the group work		22(24.2%)	37(40.7%)	32(35.2%)	-	3.11	.767
7	Students in a group freely share their views, ideas and feelings	1(1.1%)	33(36.3%)	35(38.5%)	22(24.2%)		2.86	.797
8	Teachers encourage students to actively engage in group discussion	1(1.1%)	38(41.8%)	36(39.6%)	16(17.6%)		2.74	.758
9	Students perform their group activities together and facilitate their social interaction.		34(37.4%)	38(41.8%)	19(20.9%)		2.84	.749
10	Teachers check active interaction in cooperative learning activities		19(20.9%)	35(38.5%)	37(40.7%)		3.20	.763
	Average mean)	**Averages for Teachers**					**2.933**	

The first item in Table 5 The study found that cooperative learning is practiced in BensaWoreda secondary schools in chemistry classes. However, only 2 (2.2%) of teachers stronger agreed, 21 (23.1%) agreed, and 30 (33.0%) disagreed. The remaining 38 (41.8%) of teachers and

respondents were undecided on the practice. Overall, the study highlights the need for further research and implementation. Accordingly, the computed score findings for instructors (M = 2.95, SD =.808) indicated that cooperative learning is practiced for a week in the secondary schools of BensaWoreda. In this regard, the computed score results for teachers (M =2.95, SD =.808) showed that there is week practice of cooperative learning in the BensaWoreda secondary schools. This suggests that a significant number of teachers do not feel confident in their understanding of the objectives.

With regard to item 2 of table 5, the computed mean of teachers (M= 3.01, SD= .767) showed that the cooperative learning method actively works in the chemistry teachers practice during my class is very minimal. The study found that the cooperative learning method actively works in chemistry teachers' practice, with 27(29.7%) of teachers agreeing. However, 30.2% of students and 38(41.8%) of teachers were undecided, and 26(28.6%) of teachers disagreed. There was no significant difference between department heads and teachers. Therefore, there is no significance difference between department heads and teachers respondents about the cooperative learning method actively works in the chemistry teachers practice during my class.

As it can be seen in table 5, item 3, teachers do not create structure for cooperative learning tasks and by building a spirit of mutual support within the group, students in a group share materials / resources to accomplish tasks while working in a group for a common goal, the computed mean results for teachers (M= 2.88, SD= .828). 27.5% of teachers agreed, while 1.1% disagreed. 34.1% were not sure, and 37.4% disagreed. The results indicate that teachers need to improve their teaching methods to foster a sense of shared resources and tasks among students for a common goal.

With regard to item 4 of table 5, teachers are prepare students tutor each other until each group members understand the materials, the computed mean score for teachers (M= 2.79, SD = .768) respectively indicated low on the issue. 38(41.8%) of teachers were not agreed with. 36 (39.6%) of teachers respondents were not decided on this idea. The researcher concluded that, there is a gap on the student evaluation in the sample schools.

As can be seen in item 5 of table 5, when respondents were asked to assume accountability for the group's success or failure, the computed mean for instructors (M = 2.95, SD =.835) indicated a low level of perception of this matter. Furthermore, 1 (1.1%) of the instructors strongly agreed that there is individual accountability in the cooperative learning classroom at the school and that both teachers and students bear responsibility for the success or failure of the groups. According

to 24 instructors, or 26.4% of the total, there is individual accountability in the cooperative learning classroom at the school and that both teachers and students bear responsibility for the success or failure of the groups. The survey revealed that 40.7% of teachers were unsure about the concept, 2.2% disagreed, and 2.2% strongly disagreed, ensuring no group member was accountable for its success or failure. With regard to item 6 of table 5, the teacher informs students what the standards of success are for the whole group and individual members before starting the group work. Consequently, the mean scores of the teachers (M =3.11, SD =.767) showed that low level. As a result, 32 teachers (35.2%) agreed with this idea. 37 (40.7%) of teachers were undecided on the item. 22 (24.2%) of teachers were disagreed on the item.. Thus, from the given responses, it was concluded that teachers did not inform students what the standards of success are for the whole group and individual members before starting the group work.

As shown in item 7 of table 5, respondents were requested to rate the students in a group freely share their views, ideas and feelings, the mean score of teachers (M=2.86, SD= 0.797) showed moderate level about students in a group freely share their views, ideas and feelings. The study found that 36.3%) of teachers disagreed that students and teachers were not in a group freely sharing their views, ideas, and feelings to actively participate in cooperative learning practices. 24.2% agreed, while 38.5% were not sure, and 1.1% strongly disagreed. This suggests a gap in implementing cooperative learning in face-to-face interactions in schools.

As shown in item 8 of table 5, respondents were requested to rate teachers encourage students to actively engage in group discussion. In this regard, the calculated mean of teachers (M=2.74, SD=.758) was perceived that the teachers ‘desire students to actively engage in group discussion were moderate In addition was this, 16(17.6%) of teachers respondents were agreed on the idea. 38(41.8%) of teachers were not agreed with. 36 (39.6%) of teachers respondents were not decided on this idea. From this result, it is possible to understand that there was face-to-face interaction implementation gap of cooperative learning.

As indicated by table 5, item 9, respondents were requested to rate students perform their group activities together and facilitate their social interaction. In this regard, the calculated mean of teachers (M = 2.84, SD = 0.749) perceived this issue as low. It showed that students perform their group activities together and facilitate their social interaction was low. Additionally, 19teachers (20.9%) respondents were agreed on the idea. 34(37.4%) of teachers were not agreed on the item. 38(41.8%) of teachers respondents were not decided on this idea. Through the above

thoughts, we can understand that there was a gap in the implementation of social interaction in cooperative learning. Teachers and students were unable to effectively practice social interaction and cooperative learning in school.

As indicated table 5, item 10, respondents were requested to rate teachers check active interaction in cooperative learning activities. In this regard, the calculated mean of teachers (M = 3.20, SD = 0.763) perceived that the searchers check active interaction in cooperative learning activities were moderate. It showed that students perform their group activities together and facilitate their social interaction was low. The study found that 40.7% of teachers agreed on the idea of cooperative learning, while 20.9% disagreed, 38.5% were not sure, and 1.1% strongly disagreed, indicating a gap in effective social interaction implementation.

The interview conduct with the secondary school teachers, and school leader's shows to explore the extent of cooperative learning being implemented in chemistry subject for grades 9-12 at BensaWoreda Secondary School. In this case the government secondary teachers said:-

In our school, there was no enough planed cooperative learning. Therefore, we have not done actively works in the chemistry teachers practiced adequately, because Why not use cooperative learning methods in your daily lesson periods in your class? Chemistry teachers (2024) said that, "yes, there is a planned lesson plan on cooperative learning methods but," in the case of lack of class size, in the case of time was limited, lack of training about cooperative learning, we have not used cooperative learning methods in our schools.

"In our school, cooperative learning methods does not implemented because of there is no clear guidelines, lack of training and awareness about cooperative learning, there is no enough time, existences of a large number of students in one class, and lack of support from school for teachers in practicing cooperative learning." Also chemistry teachers Tamiru Taye said that, "We have also some problems a lack of time to cover the content, a lack of instructional materials and school facilities, a lack of a practical chemistry lab, a lack of clear guidelines, and teachers who engage in less practical work were some of these factors for the implementing cooperative learning methods in classroom, but in this case we have not implementing cooperative learning methods in the classroom." (SS1, 2024)

Likewise, secondary school leaders said that;

"In our school, there was lack of frequently prepared cooperative learning". In these cases, only a few teachers were do frequently for student-centered teaching learning method especially English teachers teach their students by arranging group occasionally. In addition, the system of monitoring and evaluating by teachers were too weak. Principals and vice principals are given more emphasis to managerial process and administrative activities rather giving more attention for instructional activities in classroom. Here we can understand that most of school leaders and teachers not gave attention for instructional activities. (SS2, 2024)

Furthermore, the researcher observed sense of secondary school students day-to-day activities were not implementing cooperative learning in the classroom because the lack of preparing and organizing cooperative learning plan, a lack of clear guide line students and teachers are not develop communication and collaboration skills, and gain a deeper understanding of the materials. Providing them with training on secondary school students, appropriate teaching and learning activities for secondary school students and good organized and preparing cooperative learning plan can help them understand the importance of implementing cooperative learning methods in any classroom activities and give them the supporting materials they need to do so effectively. (OB, 2024) the researchers have observed the school plan that was not included the cooperative learning practice. And also the students one to five grouping prepare individual learning plan that was not organized. The researcher had observed the lesson plan formats of teachers in most of school that did not have the method that how they practice cooperative learning in their classroom. These all show that the participation of supervisors, principals, department heads and teachers is too weak.

The document analysis reveals that secondary schools in BensaWoreda emphasize the importance of implementing cooperative learning methods in chemistry classrooms. However, the researchers found that there were no frequently prepared lesson plans and that the practice of cooperative learning was not frequently implemented in the three selected secondary schools. The teachers and school leaders were not given clear guidelines to implement cooperative practice, and the lesson plans were not well-organized, indicating that the practice of cooperative learning was not actively practiced.

4. 7to what extent is being an implemented cooperative learning method in chemistry subject for grades 9-12 at Bensa woreda secondary schools?

Table 11 the responses of the respondents to what extent is being an implemented cooperative learning method in chemistry subject for grades 9-12 at Bensa woreda secondary schools?

Group of Statistics

SN	items	G/OF/R	SD F (%)	DA F (%)	U F (%)	A F (%)	SA F (%)	Mean	SD
1	There are daily lesson plans on the cooperative learning method in chemistry classes in my school	teachers	1(1.06%)	34(37.4%)	31(34.1%)	25(27.5%)		2.88	.828
		school leaders		1(25.0%)	1(25.0%)	2(50.0%)		3.25	.957
2	I am do cooperative learning in my class in the twice a week in chemistry subjects in my school	teachers	3(3.3%)	31(34.1%)	38(41.8%)	19(20.9%)		2.80	.806
		school leaders		1(25.0%)	2(50.0%)	1(25.0%)		3.00	.816
3	Teachers frequently check the contribution of each group members	teachers		33(36.3%)	35(38.5%)	23(25.3%)		2.89	.781
		school leaders		3(75.0%)	1(25.0%)			2.25	.500
4	Teachers give group work in every class in chemistry period	teachers		38(41.8%)	34(37.4%)	19(20.9%)		2.79	.768
		school leaders		2(50.0%)	1(25.0%)	1(25.0%)		2.75	.957
5	Students work	teachers	6(6.6%)	31(34.1%)	33(36.3%)	21(23.1%)		2.76	.886

	together in group work in your class in every week	school leaders	1(25.0%)	2(50.0%)	1(25.0%)		2.75	.957
6	Students and teachers share ideas each other in any period	teachers	36(39.6%)	32(35.2%)	23(25.3%)		2.86	.797
		school leaders	3(75.0%)	1(25.0%)			2.25	.500
Average Mean			**Average means for teachers**					**2.83**
			Average means for school leaders					**2.75**

Note: SD = Stronger Disagree, DA = Disagree, U = Undecided, A = Agree, SA = Stronger Agree, N = Number of respondents, F = Frequency, and %= percentage, GOR = Groups of respondents

Table 12 p and t –test value for frequencies of cooperative learning

SN	Teachers and school leaders t-test and p- value	.	
	items	P-value	t-test value
1	There are daily lesson plans on the cooperative learning method in chemistry classes in our school	.817	-.872
2	I am do cooperative learning in my class in the twice a week in chemistry subjects in my school	.477	-.880
3	Teachers frequently check the contribution of each group members	.221	1.620
4	Teachers give group work in every class in chemistry period	.651	.104
5	Students work together in group work in your class in every week	.535	-.535
6	Students and teachers share ideas each other in any period	.149	1.506

As shown in Item 1 of Table 6, respondents were requested to rate there are daily lesson plans on the cooperative learning method in my school. In this regard, the computed score result for teachers (M =2.88, SD = 0.828) and school leader (M =3.25, SD = 0.957) showed that there is week practice of cooperative learning in the BensaWoreda secondary schools I was seen about in the chemistry classes. On the other hand, 25(27.5%) teachers respondents and 2(50%) of school leader respondents were agreed that cooperative learning was practiced in their schools in

chemistry classroom. 34 (37.4%) of teachers and 1(25%) of school leader were disagreed about the practice of cooperative learning in the school. 31 (34.1%) of teachers and 1(25%) of school leader respondents undecided about this idea.1 (1.1%) of teachers respondents stronger disagree on this idea.

With regard to item 2 of table 5, the computed mean of school leader (M= 3.00, SD= 0.816) and teachers (M= 2.80, SD= 0.806) showed that teachers do cooperative learning in my class in the twice a week in my school is very minimal. In addition, one (25%) of principal respondents and 19(20.9%) of the teachers respondents agreed that the principals and teachers at school was provided in cooperative learning in their class in the twice a week. 1(25%) of school leaders and 31(34.1%) of teacher respondents were disagreed with this idea. 2(50%) of school leaders and 38(41.8%) teacher respondents undecided on the item two. 3(3.3%) teacher respondents stronger disagree on the item two.

As it can be seen in table 5, item 3, teachers are not frequently check the contribution of each group members, the computed mean results for teacher (M= 2.89, SD= 0.781) and school leader (M= 2.25, SD = 0.500). This shows that all teachers infrequently check the contribution of each group members.23(25.3%) of teacher respondents were agreed that all teachers not frequently check the contribution of each group members 3(75%) of school leader and 33(36.3%) of teachers respondents were disagreed with in this idea. 1(25%) school leader and 35(38.5%) of teachers respondents were not decided on the item.

With regard to item 4 of table 5, teachers are given group work in every class, the computed mean score for school leader and teachers (M= 2.75, SD= 0.957) and (M= 2.79, SD = 0.768) respectively indicated low on the issue. 1(25%) of school leaders and 19(20.9%) of teacher respondents were agreed that all teachers give group work in every class in chemistry period. 2(50%) of school leader and 38(41.8%) of teachers respondents were disagreed with in this idea. 1(25%) school leader and 34(37.4%) of teachers respondents were not decided on the item. This shows that teachers were not facilitating practices to giving group work in every class for students.

As shown in Table 5, Item 5, respondents were requested to students work together on group activities during each week's class, the computed mean for teachers and school leader (M= 2.76, SD = .886) and (M = 3.00, SD = 0.816) is considered low for this problem. In addition, 21teachers (23.1%) and 1school leader (25%) agreed that each week at school, school leaders

and teachers are responsible for the students work together in group activities of students in their classes. 1(25%) of the school leaders and 31(34.1%) of teachers respondents were disagreed on the idea. 33(36.3%) of the teachers and 2(50%) of the school leader respondents undecided on the idea. 6(6.6%) of the teachers respondents stronger disagree on the idea. Therefore, it is possible to conduct that each group member not takes responsibility for the success or failure of the group.

Regarding item 6 of Table 5, the school leader and teachers exchange opinions from time to time. As a result, the average scores of the teachers (M=2.86, SD= 0.797) and school leader (M=2.25, SD = 0.500) were at this low level. To this effect 36(39.6%) of teachers and 3(75%) of school leader were disagreed. 23(25.3%) of teachers were agreed with this idea. 32(35.2%) of teachers and 1(25%) of school leader said they found difficult to make decisions on this issue (i.e., undecided).

The interview conduct with the secondary school teachers, and school leader's shows to explore the extent of cooperative learning being implemented in chemistry subject for grades 9-12 at BensaWoreda Secondary School. In this case the government secondary teachers said:-

In our school, there was not being practiced at an appropriate level, teachers does not laboratory, and necessary materials to facilitate cooperative learning in your school, teachers did not ways of using frequently of cooperative learning practice based frequently checked the contribution of each group members, teachers did not informs students what the standards of success are for the whole group and individual members before starting the group work, I have asked that, teachers why you have not use frequently implementing cooperative learning methods in the classroom? Teachers said that (2024), "why, because in the case of lack of class size, in the case of time limit, lack of training about cooperative learning we have not use frequently implement cooperative learning methods in our schools.""In our school, cooperative learning methods does not implemented because of there is no clear guidelines, lack of training and awareness about cooperative learning, there is no enough time, existences of a large number of students in one class, and lack of support from school for teachers in practicing cooperative learning."

Also chemistry teachers TamiruTaye said that, "We have also some problems a lack of time to cover the content, a lack of instructional materials and school facilities, a lack of a practical chemistry lab, a lack of clear guidelines, and teachers who engage in less practical work were

some of these factors for the implementing cooperative learning methods in classroom, but in this case we have not implementing cooperative learning methods in the classroom." (SS1, 2024)

Likewise, secondary school leaders said that;

"In our school, there was lack of frequently prepared cooperative learning". In these cases, only a few teachers were so frequently for student-centered teaching learning method especially English teachers teach their students by arranging group occasionally. In addition, the system of monitoring and evaluating by teachers were too weak. Principals and vice principals are given more emphasis to managerial process and administrative activities rather giving more attention for instructional activities in classroom. Here we can understand that most of school leaders and teachers not gave attention for instructional activities. (SS2, 2024)

Furthermore, the researcher observed sense of secondary school students day-to-day activities were not implementing cooperative learning in the classroom because the lack of preparing and organizing cooperative learning plan, a lack of clear guide line students and teachers are not develop communication and collaboration skills, and gain a deeper understanding of the materials. Providing them with training on secondary school students, appropriate teaching and learning activities for secondary school students and good organized and preparing cooperative learning plan can help them understand the importance of implementing cooperative learning methods in any classroom activities and give them the supporting materials they need to do so effectively. (OB, 2024) the researchers have observed the school plan that was not included the cooperative learning practice. And also the students one to five grouping prepare individual learning plan that was not organized. The researcher had observed the lesson plan formats of teachers in most of school that did not have the method that how they practice cooperative learning in their classroom. These all show that the participation of supervisors, principals, department heads and teachers is too weak.

Based on document analysis, secondary schools typical emphasize the importance of implementing cooperative learning methods in chemistry classroom. Cooperative learning is one of the important strategies used to maximize students' learning through working together in frequentlyin classroom. In the document analysis, the researchers observed that there were no frequently prepared lesson plan, but the preparing process of the practice of cooperative learning was not frequently implemented in the three selected secondary schools. Because of school leaders and teachers were not given attention to prepared clear guidelines to implement

cooperative practice. In document also the researcher observed that most of the school plan was not well organized. In most of schools, the students' achievement plan is prepared but it was not organized. The lesson plan format prepared by school did not have the method that use to teach student in the classroom cooperatively. So, this shows that teachers were not facilitating practices to giving group work in every class for students.

4.8 Challenges of cooperative learning of their chemistry classes at Bensa woreda secondary school.

Table 13 the responses of the respondents on what was a challenge to implementing cooperative learning methods of their chemistry classes at Bensa woreda secondary school and how can them are addressed.

SN	Items	Group of Statistics							
		GOR	SD F (%)	DA.F (%)	U .F (%)	A.F (%)	SAF(%)	Mean	SD
1	The existence of a large number of students in one class	Teachers	-	30(33.0%)	38(41.8%)	21(23.2%)	2(2.2%)	2.95	.808
		School Leaders	-	1(25.0%)	2(50.0%)	1(25.0%)	-	2.75	.957
2	Lack of clear guidelines to practice cooperative learning	Teachers	6(6.6%)	31(34.1%)	33(36.3%)	21(23.1%)	-	2.76	.886
		School Leaders	-	-	1(25.0%)	3(75.05	-	2.75	.500
3	Problem of group organization and suitable classroom	Teachers	1(1.1%)	34(37.4%)	31(34.1%)	25(27.5%)	-	2.88	.828
		School Leaders	-	1(25.0%)	1(25.0%)	2(50.0%)	-	3.25	.957
	Lack of awareness about cooperative learning and lack of student's motivation to work in groups	Teachers	-	38(41.8%)	34(37.4%)	19(20.9%)	-	2.79	.768
		School Leaders	-	1(25.0%)	2(50.0%)	1(25.0%)	-	3.00	.816
5	Unwillingness of students to take responsibilities	Teachers	2(2.2%)	27(29.7%)	37(40.7%)	24(26.4%)	1(1.1%)	2.95	.835

	as they are assigned to participate during cooperative learning their work / responsibility	School Leaders	-	1(25.0%)	1(25.0%)	2(50.0%)	-	3.00	.816
6	Unequal sharing of tasks among group members	Teachers	3(3.3%)	30(33.0%)	38(41.8%)	20(22.0%)	-	2.82	.811
		School Leaders	-	1(25.0%)	2(50.0%)	1(25.0%)	-	3.00	.816
7	Lack of training / awareness on cooperative learning	Teachers	1(1.1%)	33(36.3%)	38(41.8%)	36(39.6%)	-	2.86	.797
		School Leaders	-		1(25.0%)	3(75.0%)	-	3.25	.500
8	Lack of interest in implementing cooperative learning	Teachers	1(1.1%)	38(41.8%)	36(39.6%)	16(17.6%)	-	2.74	.758
		School Leaders	-	1(25.0%)	1(25.0%)	2(50.0%)	-	3.25	.957
9	There is no enough time to practice cooperative learning.	Teachers	-	34(37.4%)	38(41.8%)	19(20.9%)	-	2.84	.749
		School Leaders	-	2(50.0%)	1(25.0%)	1(25.0%)	-	2.75	.957
10	Lack of support from school to implement cooperative learning	Teachers	1(1.1%)	32(35.2%)	38(41.8%)	19(20.9%)	-	2.86	.797
		School Leaders	-	1(25.0%)	2(50.0%)	1(25.0%)	-	3.00	.816

Table 14 p-value and t-test values for challenges of cooperative learning

SN	**p-value and t-test values**		
	items	P-value	t-test value
1	The existence of a large number of students in one class	.625	.470
2	Lack of clear guidelines to practice cooperative learning	.117	.018
3	Problem of group organization and suitable classroom	.817	-.872
4	Lack of awareness about cooperative learning and lack of student's motivation to work in groups	.424	-.531
5	Unwillingness of students to take responsibilities as they are assigned to participate during cooperative learning their work / responsibility	.587	-.129
6	Unequal sharing of tasks among group members	.492	-.424
7	Lack of training / awareness	.196	-.975
8	Lack of interest in implementing cooperative learning	.618	-1.315
9	There is not enough time to practice cooperative learning.	.549	.220
10	Lack of support from school to implement cooperative learning	.550	-.424

As shown in item 1 of table 7, respondents were requested to rate is the existence of a large number of students in one class. In this regard, the computed score results for teachers (M = 2.95, SD = .808), and school leaders (M = 2.75, SD = .957) showed that there is week practice of cooperative learning in the BensaWoreda secondary schools. On the other hand, 2(2.2%) teachers respondents were stronger agreed that cooperative learning was the existence of a large number of students in one class. 21(23.1%) teachers respondents and 1(25%) of school leaders respondents were agreed that cooperative learning was the existence of a large number of students in one class.30(33.0%) of teachers and 1(25%) of school leaders were disagreed about the existence of a large number of students in one class. 38 (41.8%) of teachers and 2(50%) of school leaders' respondents undecided on this idea. Consequently, the calculated t-test value (t=.470, p=.625, p>0.05) shows that there is no statistically significant difference between the two respondents about the issue.

With regard to item 2 of table 7, the computed means of teachers (M= 2.76, SD= .886) and school leaders (M= 2.75, SD= .500) showed that the lack of clear guidelines to practice cooperative learning. This is confirmed by t-test value (t = .018, p= .117, p>0.05). In addition to this, 3(75.0%) of school leader respondents and 21(23.1%) of teachers' respondents were agreed that the lack of clear guidelines to practice cooperative learning. 1(25%) of school leaders and 33(36.3%) of teacher respondents undecided on the item two. 31(34.1%) of teacher respondents were disagreed with the idea. 6(6.6%) of teacher respondents were stronger disagreed with the idea.

As it can be seen in table 7, item 3, problem of group organization and suitable classroom, the computed mean results for school leaders (M= 3,25, SD= 0.957) and teachers (M= 2.88, SD= .828). This shows that the group organization and a suitable classroom. This is confirmed by the t-test value (t=-.872, p=.817, p>0.05).1(25%) of school leader respondents were stronger agreed that there was a group organization and suitable classroom problems in Bensa woreda secondary schools. 2(50.0%) of school leaders and 25(27.5%) of teacher respondents were agreed that was a group organization and suitable classroom problems in Bensa woreda secondary schools. 1(25%) of school leaders and 31(34.1%) of teachers respondents were not decided on the item. 34(37.4%) of teachers respondents were disagreed with in this idea. 1(1.1%) of teachers respondents were stronger disagreed with in this idea.

With regard to item 4 of table 7, Lack of awareness about cooperative learning and lack of student's motivation to work in groups, the computed mean score for school leaders and teachers (M = 3.00, SD = 0.816) and (M = 2.79, SD = .768) respectively indicated challenges on the issue. This is confirmed by the t-test values (t =-.531, p =.424, p>0.05). Therefore, there is no significant difference between teachers and students respondents. 1(25.0%) of school leaders and 19(20.9%) of teacher respondents were agreed that was a lack of awareness about cooperative

learning and lack of student's motivation to work in groups in Bensa woreda secondary schools. 2(50%) of school leaders and 34(37.4%) of teachers respondents were not decided on the item. 38(41.8%) of teachers respondents were disagreed and 1(25%) of school leader respondents were stronger agreed with in this idea.

As shown in item 5 of table 7, respondents were requested unwillingness of students to take responsibilities as they are assigned to participate during cooperative learning their work / responsibility, the computed mean for teachers and school leader (M =2.95, SD = .835) and (M = 3.00, SD = .816) perceived low level on the issue. This is confirmed by t-test value (t =-.129, p = 0.587, p>0.05). Therefore, there is no significant difference between teachers and school leader's respondents on the issue. In addition to this, 2(50.0%) of school leader were stronger agreed that unwillingness of students to take responsibilities as they are assigned to participate during cooperative learning their work / responsibility. 24(26.7%)of teachers were agreed that unwillingness of students to take responsibilities as they are assigned to participate during cooperative learning their work / responsibility 37(40.7%) of the teachers and 1(25%) of the school leader respondents undecided on the idea. 27(29.7%) of the teachers and 1(25%) of the school leader respondents were disagreed on the idea. 2(2.2%) of the teachers respondents stronger disagree on the idea.

With regard to item 6 of table 7, unequal sharing was there task among group members in the chemistry classroom. Consequently, the mean scores of the teachers (M = 2.82, SD = 0.811) and (M = 3.00, SD = .816) of school leaders showed that low level. . This is proved by calculated t-test value t=-.424, p=.492 and its p>0.05). This shows that there is no statistically significant difference between teachers and students about unequal sharing was there task among group members in the chemistry classroom. As a result, 20 teachers (22%) and 1 school leader 1(25%) agreed with this idea. 38 (41.8%) of teachers and 1(25%) of school leader were undecided on the

item. 30(33.0%) of teachers were disagreed on the item. 1(25%) of school leader were stronger agreed on the item. 3(3.3%) of teachers were stronger disagreed on the item. Thus, from the given responses, it was concluded that was there unequal sharing task of among group members in the chemistry classroom. Therefore, it was concluded that teachers were not inform students what the standards of success are for the whole group and individual members before starting the group works in the sampled secondary schools.

As shown in item 7 of table 7, respondents were requested to rate the lack of training / awareness the mean score of teachers (M = 2.86, SD = 0.811) and of school leaders (M = 3.25, SD = 0.500) showed moderate level about lack of training / awareness. It was seen that there is no statistically significance difference between the two groups of respondents and the t-test value was employed (t=-1.315, p=.618 andp>0.05). 33 (36.3%) of teachers were disagreed that lack of training / awareness to participate in the implementation of cooperative learning practice actively. In addition to this, 22(24.2%) of teachers and 3(75.0%) of school leaders respondents were agreed with the idea. 35(38.5%) teacher and 1(25%) of school leaders respondents were not decided on the item. 1(1.1%) of teacher respondents were stronger disagreed on the item.

As shown in item 8 of table 7, respondents were requested to rate teacher's lack of interest in implementing cooperative learning. In this regard, the calculated mean of teachers (M = 2.74, SD = 0.758) was perceived to be low on the issue and school leader (M = 3.25, SD = .957) perceived that the lack of interest in implementing cooperative learning were moderate. On the other hand, the calculated t-test value (t=.220, p=.549, p>0.05) showed that there is no statistically significant difference between the teachers and students on the issue. It showed that teachers encouraged students to actively engage in group discussion was low. In addition was this, 16(17.6%) of teachers and 1(25%) of school leaders respondents were agreed on the idea. 2(50%) of school leaders respondents were stronger agreed on this idea. 38(41.8%) of teachers and 1(25%) of school leaders were not agreed with. 36 (39.6%) of teachers and 1(25%) of school leaders respondents were not decided on this idea.1 (1.1%) of teachers respondents were stronger disagreed on this idea.

As indicated by table 7, item 9, respondents were requested to rate there was not enough time to practice cooperative learning. In this regard, the calculated mean of teachers (M = 2.84, SD = 0.749) perceived this issue as low, while school leader (M = 2.75, SD = 0.957) indicated that the there was not enough time to practice cooperative learning. On the other hand, the calculated t-test value (t=-.424, p=.550, p>0.05) showed that there is no statistically significant difference between the teachers and students on the issue. It showed that there was no enough time to practice cooperative learning was low. Additionally, 19teachers (20.9%) and 1school leaders (25.0%) respondents were agreed on the idea. 34(37.4%) of teachers and 2(50%) of school leaders were not agreed on the item. 38(41.8%) of teachers and 1(25%) of school leaders respondents were not decided on this idea.

As indicated table 7, item 10, respondents were requested to rate teachers check active interaction in cooperative learning activities. In this regard, the calculated mean of teachers (M = 2.86, SD = 0.797) perceived low on the issue and school leader (M = 3.00, SD = 0.816) perceived that the lack of support from school to implement cooperative learning were moderate. On the other hand, the calculated t-test value (t=.174, p=.421 p>0.05) showed that there is no statistically significant difference between the teachers and school leader on the issue. It showed that lack of support from school to implement cooperative learning was low. In addition to this, 19(20.9%) of teachers and 1(25.0%) of school leaders respondents were agreed on the idea. 1(25%) of school leader and 32(35.2%) of teachers were not agreed on the item. 38(41.8%) of teachers and 1(25%) of school leaders respondents were not decided on this idea.

The interview conduct with the secondary school teachers, and school leader's shows to identify the challenges of implementing cooperative learning in the chemistry subject for grades 9 - 12 at Bensa woreda secondary. In this case the government secondary teachers said:-

When researcher was interviewed that three selected specially chemistry teachers, there was no clear guide lines, planned lesson plan, chemistry laboratory, and necessary materials to facilitate cooperative learning in your school? Amare Amelo (2024) said that, "yes, there is planned lesson plan on cooperative learning methods ,but in the case of lack of class size, in the case of

time limit, lack of training about cooperative learning we have not use cooperative learning methods in our schools."

"In our school, cooperative learning methods does not implemented because of there is no clear guidelines, lack of training and awareness about cooperative learning, there is no enough time, existences of a large number of students in one class, and lack of support from school for teachers in practicing cooperative learning."

Also chemistry teachers TamiruTaye said that, "We have also some problems a lack of time to cover the content, a lack of instructional materials and school facilities, a lack of a practical chemistry lab, a lack of clear guidelines, and teachers who engage in less practical work were some of these factors for the implementing cooperative learning methods in classroom, but in this case we have not implementing cooperative learning methods in the classroom." (SS1, 2024)

Likewise, secondary school leaders said that;

“In our school, there was lack of support from school to implement cooperative learning". In these cases, only a few teachers were gave supports for student-centered teaching learning method especially English teachers teach their students by arranging group occasionally. In addition, the system of monitoring and evaluating by teachers were too weak. Principals and vice principals are given more emphasis to managerial process and administrative activities rather giving more attention for instructional activities in classroom. Here we can understand that most of school leaders and teachers not gave attention for instructional activities (cooperative learning practice(SS2, 2024).

Furthermore, the researcher observed sense of secondary school students day-to-day activities were not implementing cooperative learning in the classroom because the lack of preparing and organizing cooperative learning plan, a lack of clear guide line students and teachers are not develop communication and collaboration skills, and gain a deeper understanding of the materials. Providing them with training on secondary school students, appropriate teaching and learning activities for secondary school students and good organized and preparing cooperative learning plan can help them understand the importance of implementing cooperative learning methods in any classroom activities and give them the supporting materials they need to do so effectively. (OB, 2024) the researchers have observed the school plan that was not included the cooperative learning practice. And also the students one to five grouping prepare individual learning plan that was not organized. The researcher had observed the lesson plan formats of

teachers in most of school that did not have the method that how they practice cooperative learning in their classroom. These all show that the participation of supervisors, principals, department heads and teachers is too weak.

Based on document analysis, secondary schools typical emphasize the importance of implementing cooperative learning methods in chemistry classroom. Cooperative learning is one of the important strategies used to maximize students' learning through working together in small groups. In the document analysis, the researchers observed that there were no clear guidelines but, the preparing process of the practice of cooperative learning was not effective in the three selected secondary schools. Because of school leaders and teachers were not given attention to prepared clear guidelines to implement cooperative practice. In document also the researcher observed that most of the school plan was not well organized. In most of schools, the students' achievement plan is prepared but it was not organized. The lesson plan format prepared by school did not have the method that use to teach student in the classroom cooperatively.

4.9 What strategies have been used to improve the implementation of cooperative learning in chemistry for grades 9-12 at Bensa woreda secondary schools?

Table 15 find out strategies improved to implement cooperative learning approaches effectively in chemistry subject for grade 9-12 at Bensa Woreda secondary school.

SN	items	Group Statistics							
		GOR	SD F (%)	DA F (%)	U F (%)	A F (%)	SAF (%)	Mean	SD
1	Preparing an organized and participatory plan for cooperative learning is one of the solution to improving the implementation of Cooperative Learning	teachers	-	30(33.0%)	38(41.8%)	21(23.2%)	2(2.2%)	3.35	1.149
		school leaders	-	1(25.0%)	2(50.0%)	1(25.0%)	-	3.25	.957
2	Developing the positive attitude of	teachers	6(6.6%)	31(34.1%)	33(36.3%)	21(23.1%)	-	3.82	1.018

	leaders, teachers and students through different training is one of the solution to improve implementation of Cooperative Learning	school leaders	-		1(25.0%)	3(75.05	-	2.75	.500
3	Continuous monitoring, evaluation and giving feedback by leaders for teachers is one of the solution to improve implementation of Cooperative Learning	teachers	1(1.1%)	34(37.4%)	31(34.1%)	25(27.5%)	-	3.93	.929
		school leaders	-	1(25.0%)	1(25.0%)	2(50.0%)		3.00	.816
4	Allocate additional budget for facility fulfillment is one of the solutions to improving implementation of Cooperative Learning.	teachers	-	38(41.8%)	34(37.4%)	19(20.9%)	-	3.88	1.031
		school leaders	1(25.0%)	2(50.0%)	1(25.0%)	-	-	3.25	.957
5	Conducting action research is one of the solutions to improve implementation of Cooperative Learning	teachers	2(2.2%) 27(29.7%)	37(40.7%)	24(26.4%)	1(1.1%)	-	3.97	1.027
		school leaders	1(25.0%)	1(25.0%)	2(50.0%)	-	-	3.25	.957
6	Effective implementation of continuous professional development(CPD) is one of the solutions to improve implementation of Cooperative Learning	teachers	3(3.3%) 30(33.0%)	38(41.8%)	20(22.0%)	-	-	4.14	.864
		school leader	1(25.0%)	2(50.0%)	1(25.0%)	-	-	3.50	.577

Table 16 p-value and t-test values for challenges of cooperative learning

SN	**p-value and t-test values**		
	items	P-value	t-test value
1	Preparing an organized and participatory plan for cooperative learning is one of the solution to improving the implementation of Cooperative Learning	.423	.174 .
2	Developing the positive attitude of leaders, teachers and students through different training is one of the solution to improve implementation of Cooperative Learning	.126	2.092
3	Continuous monitoring, evaluation and giving feedback by leaders for teachers is one of the solution to improve implementation of Cooperative Learning	.317	1.976
4	Allocate additional budget for facility fulfillment is one of the solutions to improving implementation of Cooperative Learning.	.804	1.197
5	Conducting action research is one of the solutions to improve implementation of Cooperative Learning	.834	1.370
6	Effective implementation of continuous professional development(CPD) is one of the solutions to improve implementation of Cooperative Learning	.505	1.470

One way to improve the implementation of cooperative learning is by having well-organized and participatory plans for cooperative learning, as indicated in Item 1 of Table 7 by the respondents. In this regard, the calculated score results for the school leader (M =3.25, SD =0.957) and instructors (M =3.35, SD =1.149) indicated that there is a week-long cooperative learning practice in the secondary schools in BensaWoreda that I observed in the chemistry classes. However, two school leaders (50%) and twenty-six teachers (28.6%) felt that creating a well-organized, participative cooperative learning plan was a good way to improve the way cooperative learning was implemented. One school leader (25%) and twenty teachers (22.0%) had different opinions regarding how cooperative learning is implemented in the classroom. One responder who was a school leader (25%) and twenty-four teachers (26.4%) were unsure about this proposal. On this point, 4 (4.4%) of the teachers who responded strongly disagree. As a result, the computed t-test value (t=-.092, p=.126, p>0.05) indicates that the two respondents' opinions on the matter do not differ statistically significantly.

With regard to item 2 of table 7, the computed mean of school leader (M = 2.75, SD = .500) and teachers (M = 3.82, SD = 1.018). The study found that developing positive attitudes among

school leaders, teachers, and students through various training is a solution to improved cooperative learning implementation. 37.4% of teachers agreed, while 25% of school leaders and 14.3% of teachers disagreed. However, 75% of school leaders and 18.7% of teachers were undecided on the issue. 27(29.7%) of teachers respondents stronger disagree on the item twelve. This is confirmed by t-test value ($t = 1.976$, $p = .317$, $p>0.05$).

Table 7, item 3, shows that one way to improve the implementation of cooperative learning was for leaders to provide continuous monitoring, assessment, and feedback to teachers. The computed mean results for teachers were $M = 3.93$, $SD = 0.929$, and for school leaders were $M = 3.00$, $SD = .816$). This demonstrates that one way to improve the implementation of cooperative learning was for leaders to continuously monitor, evaluate, and provide feedback to teachers. The t-test result ($t=1.197$, $p=.804$, $p>0.05$) supports this. Two (50%) of the school leaders and 27 (29.7%) of the teachers who responded agreed that one way to improve the implementation of cooperative learning was for leaders to provide teachers with ongoing monitoring, evaluation, and feedback. Of the instructor responders, 31 (34%) strongly agreed with the item.

One school leader (25%) and five teachers (5.5%) who responded disagreed with this statement. One school leader (25%) and twenty-seven (29.5%) of the teachers who responded were undecided about the item.

One way to improve the implementation of cooperative learning is to allocate additional budget for facility fulfillment (item 4 of table 7). The teachers' and school leader's computed mean scores ($M = 3.88$, $SD = 1.031$) and $M = 3.25$, $SD = 0.957$) respectively showed low scores on this item. One way to improve the implementation of cooperative learning is to allocate additional budget for facility fulfillment, according to 2 (50%) of school administrators and 33 (36.3%) of teacher respondents. Thirteen (14.3%) teachers and one school leader disagreed with this statement. Of the responses, 1 (25%) of school leaders and 15 (16.5%) of instructors were unsure about the item. Thirty (33.3%) of the teachers who responded strongly agreed with the item. The t-test results ($t=1.370$, $p=.834$, $p>0.05$) support this.

One way to improve the implementation of cooperative learning was to ask respondents to perform action research, as indicated in Table 7, Item 5. The computed means for teachers and school leaders ($M = 3.97$, $SD = 1.027$) and ($M = 3.50$, $SD = 0.577$) are deemed low for this issue. The t-test result ($t =1.197$, $p =.804$, $p>0.05$) supports this. As a result, there isn't much of a difference in opinion between school administrators and teachers. Furthermore, two school leaders (50%) and 29 teachers (31.9%) concurred that carrying out action research was one way

to enhance the cooperative learning program's implementation. On the notion, 11(12.1%) of the teachers who responded objected. Of the responses, 2 (50%) of school leaders and 16 (17.6%) of instructors were unsure about the idea. 35 (or 38.5%) of teachers respondents stronger agreed on the idea.

One way to enhance the application of cooperative learning is through the effective use of continuous professional development (CPD), as mentioned in Table 6. Consequently, the school leader (M =3.50, SD = 0.577) and instructors (M =4.14, SD = 0.864) had average scores that were thus low. The computed t-test value of t = 1.370, p =.834, and the p>0.05) all support this. This demonstrates that there were never any statistically significant differences between instructors and school administrators in terms of how teachers and students share ideas. As a result, on item 16, 5 (5.5%) of the teachers who responded disagreed. Of the responders, 2 (50%) school leaders and 37 (40.7%) teachers agreed with this approach. 36 teachers (or 39.6%) who responded were more assertive agreed with this notion; two school leaders (50%) and thirteen teachers (14.3%) stated that they were unable to decide on this matter (i.e., they were undecided).

The secondary school instructors and school administrators were i**nterviewed** to learn more about enhanced ways for implementing cooperative learning practices in the chemistry classroom at BensaWoreda Secondary School, which serves grades 9 through 12. In this instance, the government secondary teachers stated: "In our school, there is no preparing, organized and participatory plan as solution to improve the implementation of cooperative learning because of lack of information, there is no evidence to support the claim that there is a difference in attitudes between school leaders and teachers in practicing cooperative learning, teachers and students no through different training as solution to improve the implementation of cooperative learning about in our school leaders on implementing cooperative learning."

Additionally, Beyene Alamo, a chemistry instructor, stated, "In this case, we have not implemented cooperative learning methods in the classroom; instead, we have only used teacher-centered that, for the students." As a result, we are unable to employ cooperative learning techniques because the current student-centered approach was inadequate. (SS1, 2024)

Similarly, secondary school administrators stated that; "In the case of lack of enough time, lack of class size, allocated additional budget we have did not planed effective implementation of continuous professional development (CPD) as to improve implementation of cooperative

learning." One way to enhance the application of cooperative learning is to create an efficient framework for continuous professional development, or CPD. When cooperative learning is given enough time in the classroom, students can benefit from one another's knowledge, improve their ability to collaborate and communicate, and comprehend the subject matter more deeply. Additionally, better classroom management and increased teacher satisfaction are benefits for educators. All students can benefit from more inclusive and productive learning environments created by principals, but primarily in our secondary school that cooperative learning techniques were not being fully used.(SS2, 2024)

Furthermore, the researcher observed that secondary school students' daily activities did not incorporate cooperative learning in the classroom due to a lack of planning and organization for the cooperative learning program, a lack of clear guidelines that prevent students and teachers from developing their teamwork and communication skills, and a lack of comprehension of the subject matter. They can better understand the value of incorporating cooperative learning methods into all classroom activities and receive the necessary resources if they receive training on secondary school students, suitable teaching and learning activities for secondary school students, and a well-organized and prepared cooperative learning plan. The cooperative learning activity was not included in the school plan that the researchers saw (OB, 2024). Researchers have seen that cooperative learning was not incorporated into the school plan. Students create unstructured learning plans in schools without a cooperative learning framework, highlighting low supervisory, and administrative, departmental, and teaching participation.

Document analysis indicates that secondary schools generally stress the value of using cooperative learning strategies in the chemistry classroom. One key tactic for maximizing students learning while collaborating in small groups is cooperative learning. However, the document analysis revealed to the researchers that while plans for implementation and follow-up had been developed, the evaluation process, which involved training teachers, administrators, and students to adopt a positive attitude, was ineffective in improving the implementation of cooperative learning in the three secondary schools that were chosen. The researcher noted that the majority of the school plan was disorganized in this document as well. The majority of schools construct students' success plans, but they are disorganized. The prepared lesson plan format and the cooperative learning approach used in the classroom by the school were not available.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATION

This chapter presents the summary, conclusions, and recommendation of the study.

Firstly, a summary of the study and major findings are made. Secondly, conclusions of the fundamental findings are drawn. Thirdly, some possible recommendations are forwarded on the bases of the study.

5.1. Summary of major findings

This study's primary goals are to evaluate the cooperative learning practices used by students, instructors, principals, and supervisors in BensaWoreda secondary schools. To achieve these goals, a number of specific questions were posed regarding the use of cooperative learning in chemistry classes, the frequency with which teachers employ these methods, the difficulties in implementing cooperative learning in chemistry classes at Bensa woreda secondary school, and possible solutions to these problems. Following that, tools for gathering data were created and used, including surveys, interviews, observations, and documents. Three randomly chosen secondary schools were the sites of a descriptive survey study conducted by the researcher 43 students from these schools were chosen through stratified sample techniques. 91 teachers were chosen using basic random sampling methods, whereas 3 principals and 1 supervisor were chosen by deliberate selection methods. Chemistry instructors and department directors received both closed-ended and open-ended questionnaires that were tailored to address the study topic in order to gather pertinent data from the sampled population. Three secondary school teachers, a supervisor, and a principal conducted the interviews. Document analyses of lesson plans, strategic plans, and cooperative learning plans were looked at in addition to the questionnaire and interview. Lastly, version 26 of the statistical program for the social sciences (SPSS) was used to evaluate all of the quantitative data that had been collected. Descriptive statistics, such as frequency distribution, mean, and standard deviation, were used to do this.

To achieve the purposes of the study, the researcher was guided by the following research questions:

1. How does the school plan to implement cooperative learning methods in the chemistry subject for grades 9 - 12 at Bensa Woreda Secondary School? Do you have a plan?
2. To what extent is being implemented cooperative learning methods in chemistry subject for grades 9 - 12 at Bensa Woreda Secondary Schools?
3. What were the challenges to implementing cooperative learning methods of their chemistry classes at Bensa woreda secondary school and how can they be addressed?
4. What strategies have been used to improve the implementation of cooperative learning in chemistry for grades 9-12 at Bensa woreda secondary schools?

The aim of this study was to assessing the practices and challenges of implementing cooperative learning methods in the chemistry classroom for grades 9 through 12 at BensaWoreda Secondary School. The study's demographic characteristics revealed that the majority of participants were adults, with the majority of teachers, principals, and supervisors having five to ten years of experience. This suggests that the study has a high potential for effectiveness with the right technical support and on-the-job training. The study's demographic and professional characteristics can be used to better understand the makeup of the sample and make well-informed decisions based on the findings.

The majority of secondary schools, the researchers found, lacked sufficient daily cooperative-related activities. These deficiencies were caused by a number of factors, including a lack of clear policies, a shortage of resources, and a lack of training for secondary school teachers regarding the application of cooperative learning techniques in the classroom.

It was discovered that most teachers had a statistically significant positive opinion on the employment of cooperative learning techniques in the secondary school curriculum. The curriculum's ability to successfully assist students' development through cooperative learning was also affirmed by the teachers. It was noted that different secondary schools employed different curricula for teaching and learning. Private secondary schools employed a cooperative learning approach that was pre-planned. It was deduced that instructors' sense of ownership contributed to their favorable sentiments about the cooperative learning approach.

Teachers in this study prepared daily, weekly, and monthly lesson plans by closely adhering to the curriculum. Nevertheless, there were no students available to use cooperative learning techniques, and there was no space set aside in the classroom for group discussions, in-person interactions, cooperative learning, or other activities. That was because it was challenging to provide such spaces because of the small class sizes. In terms of curriculum content, research indicates that secondary school curricula impart knowledge through regular activities that support students' social, cognitive, and physical growth (UNESCO, 2010). Furthermore, all teachers should have easy access to a government-approved teacher guidebook, according to Ethiopia's 2010 national policy guideline for ECCE. But none of the investigated guidebooks had a student-centered approach that was clearly stated, and as a result, practices varied from school to school. As a result, the secondary school under study had subpar curriculum materials, with content that had no bearing on the learning environment.

According to the survey, most secondary schools have a negative perception of the practice of implementing cooperative learning. Teachers at secondary schools in BensaWoreda are not successfully applying cooperative learning methods in the chemistry classroom. A number of factors, including a lack of resources, teachers' attitudes toward cooperative learning, and inadequate training, contributed to the lack of cooperative learning implementation. Leaders in secondary schools and the WEO agree that introducing cooperative learning has a good effect on students' growth and academic results. Nevertheless, the majority of secondary schools still employ traditional teaching strategies that do not promote creativity or increase learning.

Additionally, the researcher saw that certain secondary school teachers used a variety of techniques to apply cooperative learning methodological practices, such as individual accountability, positive interdependence, face-to-face engagement, and social interaction. Inadequate implementation of cooperative learning methodological practice was evident in the lack of materials such as chemicals, experiments, laboratory equipment, practical labs, and stores in the classroom. Public secondary schools were more important ones to implement cooperative learning in the classroom. Certain secondary schools did not provide a face-to-face learning environment where students may freely choose how to learn or engage in cooperative learning. Teachers controlled the majority of the teaching process, and cooperative learning was discouraged. The lesson plan was created with an emphasis on academic abilities such as problem-solving, innovation, fostering communication between educators and students, gaining

quality knowledge, and fostering good citizenship in Ethiopia. The study's findings demonstrated that secondary school instructors require more training and assistance in order to successfully adopt cooperative learning methodological practice in the classroom.

Furthermore, students' cognitive, social, and emotional development may suffer from a lack of cooperative learning methodology. For instance, students' ability to solve problems, communicate, and exercise self-control is negatively impacted if they are not given the chance to participate in cooperative learning activities that enhance certain subject areas (Bodrova& Leong; Whitebread, 2012).The statistics and observation suggest that BensaWoreda secondary schools were having a great deal of difficulty giving younger children with appropriate indoor and outdoor learning environments. Lack of developmentally appropriate and varied resources, short learning sessions, and a larger student-to-teacher ratio may all be detrimental to kids' learning and growth. The quality of secondary school education could be raised by addressing these problems and implementing strategies including hiring more personnel, educating them, and stressing a well-rounded education.

One of the main obstacles to cooperative learning practices is the lack of proper planning and curriculum design for implementing it. Other obstacles include the lack of necessary equipment, motivation, awareness, and instructional materials, as well as a lack of a related plan and clear guidelines. The teacher stated that because the classes are repetitious and lack interactive tools, pupils rapidly lose interest in them or learn cooperatively. Additionally, the small classroom size means that there are no teaching aids available to improve the learning experience for the students. As to the findings of Beyene et al.'s research study from 2022, most of the secondary schools under investigation lacked sufficient prepared lesson plans and equipment to enable the use of cooperative learning approaches in the classroom. The absence of the prepared lesson plan and accompanying materials in the classroom made it difficult for students to practice face-to-face interaction techniques with one another. The researchers also observed that classroom size lacked instructional aides that improve students' learning experiences and that the layout of the lesson plan and equipment did not support individual or cooperative learning.

On the other side, the high teacher-to-student ratios, the absence of a broad curriculum, the teaching and learning process, and specified learning areas all had a detrimental effect on the learning and development of secondary school pupils. It was crucial that secondary schools in Ethiopia solve these problems and give their students sufficient and efficient indoor and outdoor learning opportunities.

5.2 Conclusions

The purpose of the study was to investigate the practices and challenges of implementing cooperative learning methods in chemistry subject for grade 9 – 12 at BensaWoreda Secondary School. Cooperative learning is one of the important strategies used to maximize students' learning through working together in small groups. The study's primary findings led to the following conclusions being made. A questionnaire was used to gather information from students, teachers, principals, and supervisors. Interview data also showed that most of the chosen teachers, principals, and supervisors were unaware of the use of cooperative learning in classroom instruction. Consequently, the implementation of cooperative learning in BensaWoreda secondary schools was not as successful. Therefore, it appears that neither school administrators nor instructors in the sample secondary schools had a favorable opinion of the cooperative learning approach.

Researchers studying cooperative learning discovered that there is a dearth of knowledge regarding cooperative learning using a range of instructional strategies is an issue that educators who are new to cooperative learning frequently bring up (Law, 2011). In this sense, educators lack the necessary expertise to evaluate group projects and implement cooperative learning for teams. Instructors presume that students must relinquish individual accountability or that a single student can lead the group or complete the group's assignment in its entirety. Research suggests cooperative learning is a key strategy for maximizing student learning through small group collaboration. However, secondary schools in BensaWoreda have not successfully implemented this approach due to lack of necessary knowledge and skills, intimidation by students' ability, and implementation concerns.

Class size and school culture impact the implementation of cooperative learning in classrooms, particularly in large chemistry classrooms. Inconsistency in schools is attributed to the lack of appropriate classrooms and the time required for discussions. Teachers also argue that cooperative learning takes too long, affecting the teaching-learning process and students' academic performance. Regular assessment and checklist preparation are crucial for effective implementation.

In general, the implementation of a participatory plan, teacher motivation, training, action research on active learning, including cooperative learning practice, efficient implementation of CPD by educators and leaders with an emphasis on cooperative learning practice, and regular monitoring and evaluation are therefore concluded to be the key components. As a result, schools

must have a variety of amenities in their classrooms, including student-to-teacher ratios, tables, chairs, whiteboards, lesson plans for cooperative learning, etc. Principals must devote more time to teaching and learning than to extracurricular activities if they hope to improve student achievement.

5. 3 Recommendations

One of basis of findings and conclusions drawn, the following recommendations for further secondary school education about implementing of cooperative learning were forwarded for the concerned bodies.

5.3.1 for Woreda Educational Office

The researcher recommends that Woreda Educational Office.

- The development of government-approved cooperative learning method teacher guidebooks that are easily accessible to all government and private teachers is vital to ensuring uniformity in the curriculum and teaching practices.
- To effectively use cooperative learning approaches in the classroom, teachers, principals, and supervisors should receive training and support.
- Create outreach initiatives to raise students' and instructors' knowledge of the value of cooperative education.
- To organizes a practical training for teachers and school leaders to have a good understanding of cooperative learning and teaching methods.
- The Minister of Education should focus on the cooperative learning and teaching methods of school leaders and develop trainings with a positive attitude.

5.3.2 for school leaders (principals and supervisors)

- School management should plan a weekly to yearly plan for teachers based on cooperative learning and teaching method for the school.
- To develop training for teachers to know and teach cooperative learning and teaching methods
- School should fulfill different facilities in the school and class room (class student ratio, table, chair, blackboard&...etc.).
- In order to raise the standard of instruction for every student, encourage private secondary schools to share their best methods with government secondary schools.

- ❖ Continuous professional development (CPD) that focusing on improving teachers and school leaders' knowledge and skill of teaching methods must be provided.
- ❖ Action research also should be conducted by school leaders and teachers.
- ❖ A school leader must create an environment conducive to the needs of each student.
- ❖ Work together with community organizations and the local government to get more resources and money for secondary schools.
- ❖ To promote cooperation among students, teachers, and department head for secondary school employees in order to improve the standard of instruction and resources offered to teachers and students.
- ❖ The awareness of teachers and leaders should be improved through training and experience sharing.
- ❖ School principals need to spend more time on teaching and learning to improve students' academic achievement rather than emphasizing non-instructional activities.

5.3.3 for teachers or facilitators

- ❖ As a facilitator, the teacher helps students learn by guiding them through the process and offering resources and support when needed.
- ❖ To teach pupils in accordance with their standards, teachers should receive training in cooperative learning and instructional techniques.
- ❖ Instructors ought to incorporate cooperative learning strategies into their lessons by carefully crafting and arranging them.
- ❖ Teachers should facilitate cooperative learning in the classroom by primarily motivating students to participate
- ❖ They should be trained in why and how to implement cooperative learning methods.
- ❖ Participate in frequent training and professional growth programs to enhance your knowledge and abilities in cooperative learning techniques and other areas of educational tactics at any level.
- ❖ Using clear guidelines and practical or experimental resources for cooperative learning method.
- ❖ In order to implement cooperative learning teachers ought to be the role players by being committed and preparing teaching methodologies which initiates group based discussion.

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Appendix-I

HAWASSA UNIVERSITY

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Appendix-A

Questionnaire to be completed by Secondary School students and teachers

Dear respondent,

The objective of this study is to investigate the practices and challenges of implementing Cooperative Learning in the chemistry subjects at BensaWoreda, Sidama Zone Public Secondary Schools. In line with these objectives, the purpose of this questionnaire is to collect information about the Practice of Cooperative Learning in your school. The information provided in the Questionnaire will be handled confidentially and used for academic purposes only. Hence, the advance of your genuine and professional contribution will enable the study to be a successful one. Please give your responses after reading the instructions carefully for each section and answer every question. Note that there is no need to write your name anywhere. Thank you in advance for your genuine opinion!

Please note the following points before you start filling out the questionnaire

1. Do not write your name on the questionnaire
2. Read all the questions before attempting to answer the questions
3. There is no need to ask others to fill out the questionnaire
4. Supply appropriate responses by using "√" mark to your appropriate answer

Thank you!

Part: 1 -General Information

- Instruction: Make a tick (√) for the following questions in the boxes indicated.
  - Name of school----------
  - Sex A. Male □ B. Female □
  - Age A. 20 and below □ B. 21-30 years □ C. 31-40 year's □ D. 41-50 years E. above50 years □
- Grade A. 9th□ B. 10th□ C. 11th□ D. 12th□
- Qualification: A. Diploma□ B. Degree (BA/BSC/Bed)□C. MSC/MA/Med □ D. others □
- Work Experience: A.5 years □ B. 5-10 years □C. 11-15 years □ D. 16-20 years □ E. above 20 years □
- Your current position: A. Principal □ B. Vice principle □ C. Teacher □

Part 2: Opinion of School teacher towards practice of Cooperative learning in chemistry classes.

The following are statements about the Practices of Cooperative Learning in your school. Please rate each statement from Strongly Agree to Strongly Disagree and tick the numbers which most closely represents your opinion using the following 5 points scale.

Response Scale: 5 = SA (strongly agree), 4 = A (Agree), 3 = U (Uncertain), 2 = D (Disagree) and1 = SD (Strongly Disagree).

Table 1: Implementation plan for implementing cooperative learning methods in chemistry for grades 9 - 12 at BensaWoreda Secondary School.

No	Items	SA	A	U	DA	SD
1	In our school, there is a planned cooperative learning					
2	The cooperative learning method actively works in the chemistry teachers practice during my class.					
	Positive interdependence					
3	Students in a group share materials / resources to accomplish task while working in a group for a common goal					
4	Students tutor each other until each group members understand the materials					
	Individual accountability					
5	Each group member takes responsibility for the success or failure of the group.					
6	The teacher informs students what the standards of success are for the whole group and individual members before starting the group work					
	Face-to-face interaction					
7	Students in a group freely share their views, ideas and feelings					
8	Teachers encourage students to actively engage in group discussion					
	Social interaction					
9	Students perform their group activities together and facilitate their social interaction.					
10	Teachers check active interaction in cooperative learning activities					

Table 2:Practice of cooperative learning being implemented in chemistry subject for grades 9-12 at BensaWoreda Secondary School.

Response Scale: 5 = SA (strongly agree), 4 = A (Agree), 3 = U (Uncertain), 2 = D (Disagree) and1 = SD (Strongly Disagree).

No	Items	SA	A	U	DA	SD
1	There are daily lesson plans on the cooperative learning method in grade 9-12 chemistry classes in my school.					
2	I am do cooperative learning in my class in the twice a week in chemistry subjects in my school					
3	Teachers frequently check the contribution of each group members					
4	Teachers give group work in every class in chemistry period					
5	Students work together in group work in your class in every week					
6	Students and teachers share ideas each other in any period.					

Table3: challenges of cooperative learning of their chemistry classes at Bensaworeda secondary school and how can they be addressed

Response Scale: 5 = SA (strongly agree), 4 = A (Agree), 3 = U (Uncertain), 2 = D (Disagree) and1 = SD (Strongly Disagree).

No	Items	SA	A	U	DA	SD
I.	**Classroom related challenges affecting the implementation of cooperative learning**					
1	The existence of a large number of students in one class					
2	Lack of clear guidelines to practice cooperative learning					
3	Problem of group organization and suitable classroom					
II.	**Students related challenges affecting the implementation of cooperative learning**					
4	Lack of awareness about cooperative learning and lack of student's motivation to work in groups					
5	Unwillingness of students to take responsibilities as they are assigned to participate during cooperative learning their work / responsibility					
6	Unequal sharing of tasks among group members					
III.	**Teacher related challenges affecting the implementation of cooperative learning**					
7	Lack of training / awareness					
8	Lack of interest in implementing cooperative learning					
9	There is not enough time to practice cooperative learning.					
IV.	**School related challenges affecting the implementation of cooperative learning**					
10	Lack of support from school to implement cooperative learning					

Table 4: Strategies improved to implement cooperative learning approaches effectively in chemistry subject for grade 9-12 at BensaWoreda secondary school..

No	Items	SA	A	U	DA	SD
I.	**Solution to improve the implementation of cooperative learning**					
1	Preparing an organized and participatory plan for cooperative learning is one of the solution to improving the implementation of Cooperative Learning					
2	Developing the positive attitude of leaders, teachers and students through different training is one of the solution to improve implementation of Cooperative Learning					
3	Continuous monitoring, evaluation and giving feedback by leaders for teachers is one of the solution to improve implementation of Cooperative Learning					
4	Allocate additional budget for facility fulfillment is one of the solutions to improving implementation of Cooperative Learning.					
5	Conducting action research is one of the solutions to improve implementation of Cooperative Learning					
6	Effective implementation of continuous professional development(CPD) is one of the solutions to improve implementation of Cooperative Learning					

Appendix-II

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Appendix-B

I**nterview** guide for Secondary Schools teachers, principals and Supervisors

The main purpose of this interview is to gather relevant data to assess the implementation level of Cooperative Learning approaches in grade nine chemistry subjects in BensaWoreda Public Secondary Schools. The response you provide will have constructive and Paramount importance for the successful accomplishment of this study, so you are kindly request to give your genuine responses. Your responses will be used only for academic purposes and be confidential.

A/ Sex A. Male □ B. Female□

B/ Age A. 20 years□ B. 21-30 years □ C. 31-40 years □ D. 41-50 years□ E. above 50years □

C/ Qualification: A. Diploma □ B. Degree (BA/BSC/) □ C. MSC/MA/Med □ D. others□

D/ Work Experience: A. 5 years □ B. 5-10 years□ C. 11-15 years □ D. 16-20 years □ E. above 20 years □

E/ Your current position: A. Principal □ B. Vice principal □ C. Teacher □

D. Department Head □

1. Have you effectively planned practices in Cooperative learning approaches in your school in chemistry subjects?

A/ Yes □ B/ No □

If you say "yes", what mechanisms do you have to check if teachers are implementing Cooperative Learning or not in chemistry classes? _____

2. How often do teachers bring into action cooperative learning methods in grade 9-12 chemistry subjects? _____

3. What are the challenges to implementing cooperative learning methods in grade 9-12 of their chemistry classes at BensaWoreda secondary school?_____

How can they be addressed? _____

5. How do you implement cooperative learning in teaching the chemistry curriculum?

_____

_____

6. What kind of support do you provide to teachers to encourage Cooperative Learning practice in chemistry classes?

_____

_____

6. Do you believe that Cooperative Learning has positive effects on Students' results?
A/ Yes □ B/ No □

If "Yes", what are the effects?

_____

_____

7. Are there the guide lines, planned lesson plan, chemistry laboratory, and necessary materials to facilitate Cooperative Learning in your school?

_____

_____

What are they?

_____

_____

8. What do you recommend for successful practice of cooperative learning approaches and tosee its positive effects on students' academic results in chemistry subject?

_____

_____

Appendix -III

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Appendix-C

3. Classroom observation checklist

No of students in a class _____Grade_____ Section_____

No	**Classroom conditions**	Yes (%)	No (%)
1	Is there enough sitting space for all students?		
2	Are the seats movable?		
3	Is the chemistry classroom layout arranged to facilitate cooperative learning?		
4	Is there enough space for movement between desks?		
5	Is the class size appropriate?		
6	Are the desk arranged in a straight row?		
	Teachers activity		
1	Arranging students for different classroom activities		
2	Clarifying the learning objectivities		
3	Giving direction about procedure and activities		
4	Using different instructional methods to implement cooperative learning		
5	Cooperative learning encourage students to become cooperative participants		
6	The teacher is more cooperative than the students		
7	The is cooperative in explaining, monitoring, and describing		
8	Managing the class for cooperative learning implementation		

Document observation checklist

1. Do annual plans and weekly lesson plans support the implementation of cooperative learning methods? Compare what is prepared and what is actually implemented in the classroom.
2. Do students learning daily lesson plan format prepared by the school teachers contain cooperative learning strategies at an appropriate level? Please show them!
3. In your educational office do you have a cooperative related curriculum, a teacher guide and an annual lesson plan?