Assessing the Implementation of Group Interaction In Teaching and Learning of Mathematics in Cheha District Secondary Schools

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LIST OF ABRIVATIONS

MOE: Ministry of Education
TESO: Teacher Education System Overhaul
GCL: Group Based Cooperative Learning
CTE: Collage of Teacher Education
NCTM: National council of teachers of mathematics
TGE: Transitional Government of Ethiopia
ETP: Ethiopian Education and Training Policy

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ABSTRACT

The main purpose of this study was to assess the implementation of five in one, group work and pair work cooperative learning in Cheha District general secondary schools. To conduct the study, survey design was employed. And the sources of data are students, teachers and school principals. It was carried out in cheha District general and secondary schools. By using simple random sampling 168 students were selected and 12 teachers were used. The main instrument of data collection was questionnaire. It was also substantiated with interview and classroom observations. And to analyze the data's both quantitative & qualitative method were used. The result of the study showed that the extent of practicing five in one, group work and pair work in cheha District general and secondary schools was moderate. The preference of students from five in one, group work, pair work and individual learning is five in one whereas the preference of teachers is group work. But they did not prefer learning individually. The extent of the participation of students in five in one, group work and pair work is moderate. The attitude of students and teachers to word five in one group work and pair work learning is encouraging. Whereas the attitude of them toward individual learning is discourage. And the top five challenges were shared by both teachers and students, these are: large class size, commitment of teachers, interest of students, time shortage and interest of teachers.

CHAPTER ONE: INTODUCION

1.1 Background of the study

Education is often regarded as the most determinant factor for socio economic development of countries It is obvious that no country has achieved developmental goals without successful Education & training programs MOE (1994) cited in Dereje(2006).

Regarding the role of Education in the development of the individual & in wider sense of society, the Ethiopian Education & Training Policy (ETP) cited in Andulem (2006). For instance, has the following to stipulate. Education enables man to identify harmful traditions & replace them by useful ones. And it helps man to improve, change as well as develop & conserve his environment for the purpose of an all rounded development by diffusing science & technology in to the society TGE (1994) cited in Andulem (2006).

It is Indisputable that Education plays a decisive & vital role in the overall development of any society, For an educational system to be efficient, a clear direction, which is compatible with the objective socio economic realities of a given country need to be devised by the government and leading parties. In all countries, therefore, attempt to design relevant education polices & strategies side by side to other sectors of social development .such polices and their means of implementation would generally be based on the needs of the individual as well as the society at large Aschahan(1978:78)cited in Tirulem(2003).

Education is amens of development of desirable habits, skills & attitudes, which make an individual a good citizen. In the process of education .we try to shape the behavior of young children in accordance with the aims and goals of national life. Education undoubtedly plays a great role in developing Individuals capacity in problem solving & Environment adaptability knowledge ability, skill and attitude TGE (1994:2) cited in Andulem (2006).

Learning is a constructive process that occurs best when What is being learned is relevant & meaningfully to the learner & when the learner is actively engaged in creating his or her

knowledge & understanding by connecting what is being learned with prior knowledge & experience (Lambert & Mccombs, 1998 In Yalew,2004, p.19) cited in Melese (2011).

As Indicated in Ethiopian Education & Training policy document ,The previous curriculum design & Instructional process suffered from old & Traditional approach (TGE,1994).The curriculum organization emphasized academic knowledge &Instructional methods ,which Initiated memorization & simple recall of facts by learners that was provided through official curriculum & presented by Teachers explanation or chalk & talk lecture methods. This means teachers dominated the class room instruction, where students were passively Listening Melese (2011).

On the contrary, active learning approach emphasizes on active learning than active teaching; the learner is a focus than the teacher. The learner is actively constructing his or her own knowledge out of the materials that are around. Thus the teacher acts as a facilitator who provides an environment that is rich in materials for learning. To this end ,effective teaching & learning requires the use of different methodologies & pedagogies to meet the demands of the new generation ,new techniques & the ever changing educational environment .the evidence is also clear that the total benefit to the learning multiply when schools open their doors to active learning approach (Lue,2000) cited in Melese (2011).

As result, in schools throughout the world, there is movement away from the learning that is made up of memorizing; learning by rote &from teacher centered to a new modes student centered that emphasis for making connection in the world around us, connecting & using information in active manner.

In a formal schooling system , the teaching learning process does not operate in a vacuum rather in a school environment .& class rooms have the major role .most of teaching learning process take place in class room through Interaction Andualem (2006).

Several studies have stressed the importance of Students Active role in the learning process.(Brown & Campion ,1986;Fraser etal,1988) .in particular ,from constructivist

perspective ,students interaction with one another, with the learning material, or with the teacher are significant activities for effective learning. We can see that most of the literature on teaching & methodologies now a day's stress the over whelming advantage of student centered or indirect Instruction over the traditional (teacher center one). Such assertions are also supported by several research finding. Anderson & Burns (1989;347) cited in Tirualem (2003).Noted that research conducted In class rooms In which teachers have Assumed non- traditional roles has produced quite Impressive results". As distinct to the traditional & passive classroom, in the student centered class room students are Actively Involving process. (plass, 1989:310) cited in Tirulem (2003) .

Teaching & Learning are complementary acts that involve a number of interpersonal processes. These processes are affected by the relationship among students, & between students and the teacher. This Idea supported by Schmuck & Schmuck (1971:3) cited in melka (2006), which state that the teaching learning process highly requires the interaction of students with each other through group work.

The development of basic skills through Interpersonal relationship necessities group work In the Teaching learning process as recommended by many scholars of the past & present ages .successful academic achievements can be attend through various learning strategies .one of these strategies mainly focuses on the Importance of Learning to work effectively in the groups in class rooms.

Furthermore, group work enables the students to get Independence from the teacher domination. Long (1977:292) cited in melka (2006).state that using group work strategy is an important step toward creating in the students a highly Independence from the teacher a step toward their learning how to learn.

So group work is significant in all academic subjects & also in all fields of life .In formal schooling systems ,the teaching learning process does not operate In vacuum rather in school environment. And class rooms have the major role. Most of teaching &learning process takes place in the class room through interaction Andulem (2006).

Interaction is often demand the most important component of meaning full learning experience (Dewy1938,vyggotesky,1978)cited in Yinebeb (2006) andulem (2006) and one of the major component of education (moore,1989,Wanger,1994) cited in yinebeb (2006).Dewy(1938)cited in yinebeb Argued that Education is based on the Interaction of an Individual with external &Internal condition . The Interaction which take place in the class room, has a great role in the overall teaching & learning process Andulem (2006).

In spite of limited' mathematics 'talk we found evidence of mathematical learning during the task these finding support .a number of conjectures about the learners 'vision of their roles as their peers teacher or students & the way this vision Impacts learning Interaction & Learning out comes It also leads to several suggestions about how to enhance learning in small groups as well as about areas for future research Into students Interaction(International journal of Educational research v51-52,plog-127,2012).

There are reform recommendations In mathematics education that assign a significant role to peer interaction In the teaching &learning mathematics the national council for teacher of mathematics (NCTM).

More over student's involvement in class room discussion was deemed the major components of effective instructions. Hence, learning with others has multi dimensional benefits for students .likewise ,if students are engaged In class room discussion it has a major impact on the overall teaching & learning process. In this study, the focus of Interaction is on assorting of interaction taking place between and among students, Teachers & peers.

1.2. Statement of the problem

Cooperative learning: a successful Teaching strategy in which small teams, each with students of different levels of ability use a Varity of learning activities to improve their understanding of subjects. The use of cooperative learning in the class room, as an instructional strategy had been a topic of study for many years. Cooperative learning

involves groups of students working to complete a common task (siegel,2005) cited In synder (2006).

This typically done with groups of 2-4 students; the smaller the group, the better the students result. The students working in a groups are higher performance out comes than students working alone, but this efficient was not due to the cooperation, but the cooperation Increased the likely hood of engagement in the types of the talk that support learning. When working with a partner, forms of elaborated talk are more relevant than when working alone (Krol, Janssen, Veenman, & vander linden, 2004) cited in synder (2006).

The National council of Teachers of mathematics (NCTM) expressed that learning with understanding is essential to enable students to solve the new kinds of problems they will inevitably face in the future, because not all students regularly participate in the whole class discussions, Teachers need to monitor their participation to ensure that some are not left entirely out of the discussion for long periods NCTM (2000). The use of small groups will allow the students an opportunity to share important thoughts ideas to a small group of peers, thus improving confidence in sharing of ideas & communicating about mathematical ideas.

Cooperative learning also gives students the chance to analyze & evaluate the mathematical thinking &strategies, another key concept NCTM promotes this can be done in a non threatening environment; the interaction with other students can help deepen the level of understanding of all students. The communication of mathematical idea helps to develop reasoning skills & better understanding of arithmetic procedures. The Nebraska state math standard 8, 4, 6 state that by the end of eight grade, students will use geometric terms &representations to describe the physical world, the communication of mathematics is a must. Research has shown that cooperative learning has a positive influence on students' involvement in math related material (Ferreira, 2001).students appear to enjoy working cooperatively &are willing to cooperate with others in the group (Krol,Janssen, veenman, & vander linden, 2004) cited in synder (2006).

The improve in students understanding level and a better score grades due to five in one cooperative learning was reported and low achieving students can share more from high achieving students by discussing in group after the teacher has done his best in the class (Adamma science Technology University, 2004).

As critically indicated in Ethiopian education and training policy document, the previous curriculum design and instructional process suffered from old and traditional approach. The curriculum organization emphasized academic knowledge and instructional methods, which initiated memorization and simple recall of facts by the learners that was provided through official curriculum and presented by teachers explanation or chalk and talk lecture method. Teachers dominated the class room instruction, where students are passively listening. This increases the concept of banking information in to the brain of the learner (TGE, 1994).

According to the views of Leu (2000), to make the new Ethiopian training policy document practical, extensive changes have been made to reform the curriculum in different ladders of education. The shift in the new education curriculum emphasizes a change from a rote, passive learning to a more active, learner focused education and the development of a higher order thinking skill as the basis of the teaching process MOE (2003).

One way to promote active learning approach is practicing different types of cooperative learning method. Some of which are five in one cooperative learning, group work and pair work learning methods.

The researcher has observed that many teachers are not implementing meaning fully & many students in Emdeber general secondary schools are not comfortably performing pair, group work & five in one cooperative tasks.

All the above reviews and discussions clearly showed that the advantages of cooperative learning strategies and a problem of implementing participatory learning approach.

In addition, no studies have been conducted so far to assess the implementation of five in one, group work and pair work learning strategies in Cheha district.

Therefore this study was initiated to assess the implementation of group interaction (five in one, pair work and group work) teaching & learning of mathematics with particular to Cheha District grade 9^{th} &10^{th} general secondary schools.

1.3 Objectives of the study

1.3.1. General objectives

The general objective of this study is to investigate students & Teachers challenges, practices & attitudes in five in one cooperative learning, pair work & group work teaching & learning of mathematics in Cheha District secondary schools.

1.3.2 Specific objectives

1. To examine the extent of student's participation in five in one, pair work & group work learning strategies in their class room.

2. To assess Teachers & Students attitudes towards five in one, pair work & group work teaching & learning strategies.

3. To examine teachers and students preference from pair work, group work, five in one cooperative learning & individual work.

4. To assess the challenges of students & teachers in implementing pair work, group work & five in one cooperative learning.

5. To examine the extent of implementation of five in one, pair work & group work teaching & learning strategies.

1.4. Research Questions

1. To what extent do teachers practice five in one cooperative learning, pair work, and group work teaching in the class room?

2. What are students' & teachers' preference from one in five, pair work, group work & individual work?

3. To what extent students participate in five in one, pair work & group work teaching & learning strategies in their class room?

4. What are the teachers & students attitudes towards five in one cooperative learning, pair work, group work& individual work in math class?

5. What are Teachers' & Students' challenges during implementation of five in one cooperative learning, pair work & group work teaching & learning?

1.5. Significance of study

It is expected that the results of this study would provide the following a significance.

1. It helps to reduce the most critical problems that inhibit the implementation of five in one, pair work& group work cooperative learning method in the schools.
2. It may provide significant Information about the current practice of five in one, pair work & group work teaching & learning strategies for Cheha District grade 9^{th} &10^{th} secondary schools.
3. It will also serve as reference to those who conduct a research on the topic.

1.6 Delimitation of the study

There are three general secondary schools in Cheha District. Because of the limited number of schools, this study was delimited to all three of general secondary schools. Furthermore the study delimited the practice, preference, participation of students, challenges and Attitudes of students & teachers on five in one, pair work& group work teaching & learning of mathematics.

1.7 Limitation

In studying the implementation of five in one cooperative learning, group work and pair work, the researcher faced the shortage of relevant literature with respect to the topic under study. In addition lack of the responsibility of some respondents in filling the questionnaire. In spite of these, the researcher has attempted to make the study as complete as possible.

1.8. Operational definition of terms

Attitude: refers to a tendency to respond positively: that is favorably or negatively: that is unfavorably.

Class room interaction: refers to purposeful chain of events or patterns which occur one after the other, each occupying only a segment of time.

Cooperative learning: a successful Teaching strategy in which small teams ,each with students of different levels of ability use a Varity of learning activities to improve their understanding of subjects.

General secondary schools: Schools consisting of grade 9^{th} and grade 10^{th} students

Group interaction: refers to the dynamics of the team and the way individuals In the group Interact with one another.

Group work: Learning of two or more students together

Five in one cooperative learning: Learning a group of five students

Pair works: Learning of two students

CHAPTER TWO: REVIEW OF RELATED LITERATURE

In this part a brief review of the related literature to the major topic of the study was made. Concept and definition of cooperative learning, Group-Based Cooperative Learning in the Ethiopian Context, Benefits of Cooperative Learning, Drawbacks of Group-Based Cooperative Learning, Cooperative Learning and Gender, The Effects of Cooperative Learning on the Classroom Participation of Students, The implementation of group- based cooperative learning, Phases/Stages of the Implementation of Group-Based Cooperative Learning, Types of Group Interaction, Five in one cooperative learning, Group work, Pair works, Student Configurations and Classroom Participation, Facilitating Student interaction in the math class room; stealing ideas or building Understanding, Class room interaction analysis system, The value of students Interaction, Challenges during the implementation of cooperative learning, From teachers' side, From Students' Side, Altitudes of Teachers and Students toward Group-Based cooperative Learning, Attitudes of Teachers toward Group-Based Cooperative Learning, Attitudes of Students toward Group-Based Cooperative Learning.

2.1. Concept and definition of cooperative learning

Cooperative learning can be defined as principles & strategies for enhancing the value of student- student interactions. Cooperative learning does not mean that students must do everything In groups. While group activities play a significant role in learning, whole class Instruction & Individual work continues to have an important place in education. A key point is that cooperative learning represents much more than just asking students to share their desks together & work as a group .as Nicholls& well note above. Collaboration is not easy, guidance of one form or another will often be useful, George (2000).

More over Cooperative learning: a successful Teaching strategy in which small teams, each with students of different levels of ability use a Varity of learning activities to improve their understanding of subjects. The use of cooperative learning in the class room, as an instructional strategy had been a topic of study for many years. Cooperative learning involves groups of students working to complete a common task (siegel,2005) cited In synder (2006).

This typically done with groups of 2-4 students; the smaller the group, the better the students result. The students working in a groups are higher performance out comes than students working alone, but this efficient was not due to the cooperation, but the cooperation Increased the likely hood of engagement in the types of the talk that support learning. When working with a partner, forms of elaborated talk are more relevant than when working alone (Krol, Janssen, Veenman, & vander linden, 2004) cited in synder (2006).

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Teachers also find satisfaction with the incorporation of cooperative learning groups. (Linclevski & kutseler, 1998) the use of small groups requires fundamental changes not only in the organization of the class room but also in ways of learning (Kramarski&mevarech,2003).there are many different research –based models of

cooperative learning. One popular model is the Johnson &Johnson model. this model defines five essential elements.(a)face to face to interaction (b)individual accountability,(c) positive group interdependence(d) social skills instruction & debriefing(Janssen,veenman,Vander,2004).what is nice is that no one model must be followed precisely to have a positive influence in the class room .in fact ,teachers will adapt research based models for use in their classroom .through the mechanism of assimilation, teachers should recognize the information that they receive about cooperative learning to fit their existing schema of teaching. The Inclusion of cooperative learning need not be viewed as an added burden, as welcomed change of instruction in the class room. (Siegel, 2005) cited in synger (2006).

2.2 Group-Based Cooperative Learning in the Ethiopian Context

The New Education and Training Policy of Ethiopia and the curriculum reform initiated in 1994 imply a shift in education paradigm that emphasizes a shift from rote, passive learning to a more active, learner centered education, the encouragement of higher-order thinking skills and the use of content more relevant to the learner's environment. This shows that there is a shift from positivist epistemology to constructivist epistemology i.e. a shift from learning through memorization or repeating of information to learning through discovery, analysis, evaluation, problem-solving etc. to create new knowledge and understanding (Leu, 2000).

One of the objectives of teacher education in Ethiopia is to prepare teachers who can confidently promote various active learning strategies like cooperative group work, project work, problem solving method etc. (MOE, 2003). Therefore, teachers who are qualified to implement these strategies are being prepared by Teacher Education Institutes so as to effectively implement different active learning strategies like group based learning methods and others in different levels of schools, in relation to this ides Teacher Education System Overhaul (TESO) document, among major programs one emphasizes on the implementation of participatory, cooperative and active learning approach in the pre-service and in-service programs of Teacher Education (MOE, 2003).

Moreover, Leu, Livingston and Woods (2002) reported that though substantial changes and improvements have already been made, the Ethiopian curricula have not moved the teaching and learning process sufficiently away from rote learning of highly academic content. Based on their findings they recommend that the curriculum and the teaching-learning process must emphasize the use of higher -order thinking skills through the use of active and cooperative learning methods.

Hence, despite the Ethiopian New Education and training policy strongly criticizes the conventional teacher based approach in education; the teaching-leaning process in most teacher education colleges in Ethiopia has persisted to be teacher dominated. Most classes are characterized by a situation where students are made to listen to their teacher and copy notes from the blackboard. Learning by doing, problem solving, cooperative learning and group approaches are limited (Leu, 2000).

2.3. Benefits of Cooperative Learning

Panitz (1996) cited in Hilary (2006) lists over 50 benefits provided by cooperative learning. These benefits can be summarized into four major categories: social, psychological, academic and assessment.

Cooperative learning promotes social interactions; thus students benefit in a number of ways from the social perspective. By having the students explain their reasoning and conclusions; cooperative learning helps develop oral communication skills. Because of the social interaction among students, cooperative learning can be used to model the appropriate social behaviors necessary for employment situations. By following the appropriate structuring for cooperative learning, students are able to develop and practice skills that will be needed to function in society and the workplace. These skills include: leadership, decision-making, trust building, communication and conflict-management.

The cooperative environment also develops a social support system for students. Other students, the instructor, administrators, other school staff, and potentially parents become integral parts of the learning process, thus supplying multiple opportunities for support to the students (Kessler and McCleod, 1985).

Students also benefit psychologically from cooperative learning. Johnson and Johnson (1989) claim, "cooperative learning experiences promote more positive attitudes" toward learning and instruction than other teaching methodologies. Because students play an active role in the learning process in cooperative learning, student satisfaction with the learning experience is enhanced. Cooperative learning also helps to develop interpersonal relationships among students. The opportunity to discuss their ideas in smaller groups and receive constructive feedback on those ideas helps to build student self-esteem. In a lecture format, individual students are called upon to respond to a question in front of the entire class without having much time to think about his/her answer. Cooperative learning creates a safe, nurturing environment because solutions come from the group rather than from the individual. Errors in conclusions and thought processes are corrected within the group before they are presented to the class.

Students also tend to be inspired by instructors who take the time to plan activities which promote an encouraging environment (Janke, 1980). Receiving encouragement in a cooperative setting from both the instructor and peers helps to develop higher self-efficacy (see the Motivation chapter). As a result of higher self-efficacy, student grades tend to increase; thus, cooperative learning methods provide several academic benefits for students. Research indicates that students who were taught by cooperative methods learned and retained significantly more information than students being taught by other methods. Requiring students to verbalize their ideas to the group helps them to develop more clear concepts; thus, the thought process becomes fully embedded in the students' memory.

Vygotsky supports this concept in his research on egocentric speech by claiming that verbalization plays a significant role in task solution (Bershon, 1992). Discussions within the groups lead to more frequent summarization because the students are constantly explaining and elaborating, which in turn validates and strengthens thoughts. Students also benefit from cooperative learning academically in the sense that there is more of a potential for success when students work in groups. Individuals tend to give up when they get stuck, whereas a group of students is more likely to find a way to keep going (Johnson & Johnson, 1990). Cooperative learning calls for self-management from

students because they must come prepared with completed assignments and they must understand the material which they have compiled. As a result, a more complete understanding of the material is developed.

There are also many benefits of cooperative learning from the aspect of assessment. It provides instant feedback to the students and instructor because the effectiveness of each class can be observed. As instructors move around the room and observe each group of students interacting and explaining their theories, they are able to detect misconceptions early enough to correct them. Only a few minutes of observation during each class session can provide helpful insight into students' abilities and growth.

Cooperative teaching methods also utilize a variety of assessments. Grades are not dependent solely on tests and individual assignments which only allow for right or wrong responses, leaving little or no room for reflection and discussion of error or misconceptions. With cooperative learning, instructors can use more authentic assessments such as observation, peer assessment and writing reflections.

You will observe students working together in a group to construct a circuit board in physics class. The first benefit outlined is the social benefits of students working together cooperatively. Students benefit from social interaction with peers, and this is demonstrated in the clip showing positive student interaction. The second benefit shown in the video is the psychological benefit. As seen in the video students can gain a sense of self confidence and accomplishment through cooperative learning activities. In the video students demonstrate how they have solved a problem or conquered a challenge posed by their teacher. You can hear one student say "Look we did it!". The third mentioned benefit is academic. This type of learning helps students to interact with one another and become facilitators of information, instead of just listeners. This is demonstrated in the video when one student explains a concept to another in her group. The fourth and final benefit mentioned this video is assessment. Here you will see students working together for a group portion of the project as well as individually on computers to produce dual assessment portions. Not only do students here have opportunities to be evaluated as a part of a group as well as an individual’s but this type of cooperative learning allows for

instant feedback for students involved. In conclusion, this video points out drawbacks of cooperative learning and ways to be proactive to prevent those events. A single student doing most or all of the work seems to be the most common drawback, and you can observe that in the video as well. Preventative measures include predetermined groups, and even predetermined jobs for each student involved, to ensure that the work load is more equally divided. By Amber Perry and Ethan Greenberg (2006)cited in Hilary.R(2006)

2.4 Drawbacks of Group-Based Cooperative Learning

Even though various scholars and research findings conducted so far suggested that group-based cooperative learning could enhance learning of different subjects, there are some factors that inhibit its success and even create negative effects. For example, Randall (1999:58) reported that, the many benefits of cooperative group learning sometimes blind us to its drawbacks. She identifies the following practices as common weaknesses:

- Making members of the group responsible for each other's learning. This can place too great burden on some students. In mixed-ability groups, the result is often that stronger students are left to teach weaker students and do most of the work.
- Encouraging only lower-level thinking and ignoring the strategies necessary for the inclusion of critical or higher-level thought. In small groups, there is sometimes only enough time to focus the task at its most basic level.

On the other hand, Palmer, Peter and Streetman (2003) show that instructors who are unfamiliar with group-based cooperative learning may not initially accept this style of learning because they may feel they will lose control of their classroom!, or they may be unsure of the techniques used or possibly even think that it is too time consuming. They added that since group-based cooperative learning is centered on group work, students might be concerned that other members &\ their group are going to bring their grades down. This is essentially true if students are grouped by mixed ability, requiring higher ability students to guide lower ability students.

2.5. Cooperative Learning and Gender

According to Jordan, Walker, and Hartling (2004) although men's self-concepts are based more on separation and autonomy, women are more rooted in connections and relatedness. Men like being in competitive environments more as they perform better and tend to focus on achievement. On the other hand, women avoid being in such environments because they cannot achieve better results. This is probably because they tended to focus more on interpersonal aspects of competition (Inglehart, Brown and Vida, 1994).

Rodger, Murray and Cummings (2007) asserted that 'If women have more positive attitudes than men toward cooperation and social interdependence, then it follows that learning methods that allow for the development of trusting and interdependent relationships among students and between students and teachers should be more effective for women than for men. Thus where interdependence, cooperative attitudes, and desire for affiliation exist, competitive teaching methods may not create the most effective learning environments for women'. Research done in supporting this view has shown that women are superior in affiliation, cooperative attitude, and interdependence (Fultz and Herzog, 1991; Markus and Kitayama, 1991).

In their research Ellison and Boykin (1994) found that university women gained more success when cooperative learning was followed more than individualistic learning. They also asserted that cooperative learning created more positive attitudes toward the learning experience and more perceived ability.

Fultz and Herzog (1991) reported that women were more oriented to connection with others and nurturance which was closely related to gender difference in cooperative learning. In other words, women were higher than men in affiliation, whereas men were higher than women in working independently and focused to goal achievement.

Springer, Stanne, Donovan (1999), found no significant difference in cooperative and collaborative forms of small-group learning on student achievement between predominantly female groups and heterogeneous or mixed-gender groups.

Klein and Pridemore (1993) investigated affiliation in cooperative versus competitive teaching effects on academic achievement, time on task, and satisfaction in a university whose 85% of the students were women. It was found out that participants who worked cooperatively spent more time on the practice exercises than people who worked individually, whereas the high-affiliation group who worked cooperatively gained high success in the application section of the test. Students worked alone were not as successful as the ones who worked cooperatively. The mean of affiliation score for the mainly female students was higher than the norm.

2.6 The Effects of Cooperative Learning on the Classroom Participation of Students

A multiple baseline design across two subjects was used to determine the effectiveness of cooperative learning techniques on increasing student participation. The study was conducted on two male secondary students attending the upward bound pre-college program. Each student worked in small groups with specific roles, and two observers documented the amount of time each student participated during the cooperative learning activities. The results showed that cooperative learning techniques increased student's participation William (2012).

2.7 The implementation of group- based cooperative learning

In order to effectively apply any instructional method in the institution, one needs to critically understand the basic ideas and strategies of that method which is being employed. Example, the university of south wales/UNSW/(2006:online)list the following ideas for introducing and implementing group-based cooperative learning methods in the institution. These include:

Teachers have to explain to students why it might be important for them to gain experience of working cooperatively with others. Emphasizing how group work will help them achieve the course learning out comes. More over before introducing a group based cooperative learning activity find out whether students have any prior experience of working in group's .this can help you to design group work activities that are appropriate for all students in your course or class. Exploring student's prior experience of working in groups this can help you to design group work activities that are appropriate for all students in your course or class .exploring student's prior

experience of group work might also help you to overcome any resistance associated with negative experiences Gebeyaw teshager (2007)

After deciding the optimum size of the groups, teachers should choose a method of group formation that is appropriate to the project or task that the group will be undertaking. Again before students begin their group projects, give them time in class to get to know the members of their group and clarify expectations about the project with you .also better to give them some guide lines or training on how to work in groups. Teachers are also expected to monitor and support group based learning activities. For ex, ask students to provide regular updates or reports or meet with groups to check their progress and team process. When conflict arises within the group, encourage the group members to negotiate a resolution themselves step in only as a last resort.

Prior to the utilization of different evaluation methods, give careful consideration to how you structure the marking scheme, weighting ,and allocation of marks for cooperative group work, make sure that you develop and communicate clear assessment criteria. Gebeyaw teshager(2007).

Teachers should also give students an opportunity to reflect on their experience of group work for example, through discussion, journal, or check list. Sharing the final products of group work is also a good way to encourage reflection and critique .similarly; you can use a group work evaluation from to encourage students to identify the strengths and weakness of their group experiences.

2.8. Types of Group Interaction

2.8.1 Five in one cooperative learning

One of the mechanisms Implemented in school is organizing students in a group of five. This organization is believed to help students improve their understanding level & score better grades. Low achieving students can learn more from high achieving students by discussing in group after the teacher has done his best in class.

According to the teacher assigned to facilitate the organization of cooperative learning groups in the School, the grouping of students is done by dividing students in the three categories: high achievers, medium achievers, & low achievers, these students will be distributed in to different groups in a proportion of 1:2:2. This means one high achievers,

two medium achievers & two low achievers will form one group, & the team is led by high achieving students (Adamma science Technology University, 2004).

Research has shown much success when cooperative learning is implemented with heterogeneous groups of students. One study (Krol, Jansen, veen man, &Vander linden, 2004) cited in synder (2006), Paired a low –ability students with medium ability students & medium ability students with high ability students. This pairing was based on the assumption that the ability levels of the student should be different. In order to generate help seeking & helping behaviors, but not too different.

In order to still make it possible for the students to work in their zone of proximal development. Analysis of the data revealed that approximately 75%of the dialogue that occurred within the dyads was cognitive in nature there was more high –level interaction between the dyads consisting of a medium ability learner & a low ability learner. But, overall, the level of discussion was of a higher level for both groups.

Another study (Leikin&Zaslasky,1997) had arrangements of small study groups that made it possible for low-achievers to work in pairs with middle level students to ensure that every student got the opportunity both to study & to teach each type of learning materials. More research shows that when working with mixed abilities, the average & weaker students' achievements should significant gains, where as the loss in achievements of the stronger students was negligible,(Linchevski &kutcher,1998)cited in Synder (2006).

2.8.2. Group work

Group work is a type of group interaction strategies of teaching & learning .it is one of the best ways of encouraging active learning by arranging learners work together in group . It can take many forms involving pairs of students working together .up to ten learners together or if can involve students who work individually &come together in groups to compare & discuss the result of their group (curia cou,1998:39)cited in taye alemayehu (2013:38).

In addition, Group work is one pedagogical strategy that promotes participation and interaction. It fosters a deeper and more active learning process, and it also provides

instructors with valuable demonstrations of the degree to which students understand particular topics or concepts. In addition to exposing students to different approaches and ways of thinking, working with other students in groups can promote a sense of belonging that combats the anonymity and isolation that many students experience at a large campus. Some students may initially be reluctant to participate in group work, so sharing the reasons for group work with your students can help to convince the reluctant ones. It might help them to know that research has shown that groups frequently devise more and better solutions than the most advanced individual (Barkley et al., 2004; Cooper et al., 2003). Working together in groups also gives students the opportunity to learn from and teach each other. Classroom research has shown that students often learn better from each other than they do from a teacher (Barkley et al. 2005, 16–20).

Guide lines for doing Group work

Making the ground rule explicit helps to the stage for effective interaction, the guide lines describe generally the kind of behavior considered appropriate In group work In mathematics, they alert group to some specific problems that can limit their effectiveness, they provide a few basic strategies for copying with problems that do a raise, As concreter experience show students the value of the guide lines , the social frame work suggested gradually becomes part of the class room culture Anne.e (2014).

Group projects in mathematics

Traditional mathematics teaching is strong for the attainment of knowledge but makes more limited contributions to other elements. Project –based work can bring together techniques& Ideas which leads students in to a more active learning of mathematics Active learning can help develop deep learning(Hibberd,2002,p.59. Hibberd 2005;p6, &Kahn,2002 ;pp99-101) cited in Peter Rowlett(2006).

2.8.3. Pair works

Working collaboratively allows students to tackle more complicated and more conceptually difficult problems .carefully managed, collaborative learning can be a

powerful tool for teachers to use during class room instruction .connected mathematics suggests two types of collaborative learning groupings: partner work and small group work. Roberta Hunter (2006).

Many of the problems in connected mathematics are mathematically demanding, requiring students to gather data, consider ideas, look for patterns, and make conjectures and use problem solving strategies to reach solution. For this reason, the teachers guide often suggests that students work on the exploration of a problem collaboratively. Group work supports the generation of a Varity of ideas and strategies to be discussed and considered, and it enhances the preservance of students in tackling more complicated multi step and multy part problems.

It is appropriate to ask students to think about a problem individually before moving in to groups, allowing them to formulate their own ideas and questions to bring to the group. These multiple perspectives often lead to increasing and diverse strategies for solving a problem.

2.9 Student Configurations and Classroom Participation

Connected Mathematics provides opportunities for students to tackle mathematical problems individually, in pairs, in small groups, and as a whole class. Each of these arrangements of students enhances learning. The way you group your students will depend on the size, nature, and difficulty of the task. For a particular Problem, students might do individual work as part of the Launch phase or the launch may be a whole-class discussion. In the Explore phase, students may work individually, in pairs, or in small groups. They may take part in a whole-class discussion of a problem during the Summarize phase. The rationale for each of these grouping decisions is the nature of the problem and the goals of the lesson. The Teacher's Guide for each unit offers specific suggestions for grouping. (http:creativecommons.0rg/license/by-nc-nd/2.5/)

Whole-Class Work

The Launch of a CMP lesson is typically done as a whole class, yet during this launch phase of instruction, students are sometimes asked to think about a question individually before discussing their ideas as a whole class. However, it is during the Summarize phase, when individuals and groups share their results that substantive whole-class discussion most often occurs. Led by the teacher's questions, the students investigate ideas and strategies and discuss their thoughts. Whole-class discussion allows a variety of ideas to be presented and the mathematical validity of solutions to be tested. Questioning by other students and the teacher challenges students' ideas, allowing important concepts to be developed more fully. Working together, the students synthesize information, look for generalities, and extract the strategies and skills involved in solving the Problem. Since the goal of the summarize phase is to make the mathematics in the problem more explicit, teachers often pose, toward the end of the summary, a quick problem or two to be done individually as a check on how the students are progressing. Moving flexibly between whole-class and individual work keeps the whole class focused, but allows each student to test his or her understanding of the ideas being discussed. (http:creativecommons.0rg/license/by-nc-nd/2.5/)

Individual Work

The teacher's notes often suggest that students spend some time working on a question individually before working with their partner or group. Asking students to first think about and try a question on their own gives them time to sort out their own ideas and assess what make essence to them and what causes them difficulty.

For an occasional question it is suggested that students work entirely on their own. Such questions may be less demanding than questions for which group work is suggested, or they may provide an opportunity for teachers to assess each student's understanding or skill at an important stage in the development of key mathematical ideas in the unit.

The ACE exercises at the end of an Investigation are intended to be solved individually,

outside of class. These exercises give students a chance to practice and make sense of ideas developed in class. These exercises are narrower in scope and demand than are the Problems in the Investigations.(http:creativecommons.0rg/license/by-nc-nd/2.5/)

Pairs and Small-Group Work

Working collaboratively allows students to tackle more complicated and more conceptually difficult problems. Carefully managed, collaborative learning can be a powerful tool for teachers to use during classroom instruction. Connected Mathematics suggests two types of collaborative-learninggroupings:partnerworkandsmall-groupwork.

Many of the problems in Connected Mathematics are mathematically demanding, requiring students to gather data, consider ideas, look for patterns, make conjectures, and use problem-solving strategies to reach a solution. For this reason, the Teacher's Guide often suggests that students work on the exploration of a problem collaboratively. Group work supports the generation of a variety of ideas and strategies to be discussed and considered, and it enhances the perseverance of students in tackling more complicated multi-stepandmultipartproblems.

It is appropriate to ask students to think about a problem individually before moving into groups, allowing them to formulate their own ideas and questions to bring to the group. These multiple perspectives often lead to interesting and diverse strategies for solving a problem.

Group work is also suggested for some of the Unit Projects. These projects tend to be large, complicated tasks. Working in a group allows students to consider a variety of ideas and helps them complete the task in a reasonable amount of time. You will want to determine group configurations in an efficient manner so class time is not wasted. You may find it easiest to decide before class how students will be grouped. There are various methods you can use to establish groups, such as assigning students to a group for a whole unit of study or randomly drawing for group assignments on a more frequent basis. You might also want to arrange the seating in the room to minimize

movement during the transition from individual to group to whole-class settings. (http:creativecommons.0rg/license/by-nc-nd/2.5/)

2.10. Student interaction in the math class room; stealing ideas or building understanding

Research tell as that student interaction through class room discussion and other forms of interactive participation is foundational to deep understanding & related students achievement .but implementing discussion in the mathematics class room has been found to be challenging .Doctor chatrine(2007).

Research tells us, teaching practice that emphasis student's interaction improves both problem solving & conceptual understanding without loss of computational mastery. benefits increase further when students share reasoning with one another, higher order questions are correlated with increased students achievement , particularly conceptual understanding ,left to their own devices ,students will not necessarily engage in high quality math talk the teacher plays an important role Doctor chatrine(2007).

2.11. Challenges during the implementation of cooperative learning

2.11.1. From teachers' side

Lack of training

Currently most teachers are not trained during their certification processes in cooperative methods and those that are often receive incomplete training. If teachers are taught by the lecture method while at teachers' college, then it is hardly surprising that this will be the method of choice when their turn arrives to take over the classroom (Panitz, 1996). This shows that in order to effectively any instructional methods in the relevant and adequate training is very crucial. In relation to this view Copley (1992) said that:

> *There is no task that can be done without knowledge; the knowledge or skill could be gained from formal training or experience sharing. To implement, lack of clarity about the task leads to poor quality. or no implementation. Lack of knowledge could be one of the factors not to implement teaching methods.*

Loss of control in the classroom

Gregory and Thorley, (1994) argue that the biggest inhibiting factor to implement cooperative group work lies in the fact that many teachers feel they give up control of the class if they give more responsibility to the students for their learning. When a teacher lectures she/he gets the feeling that the content is being covered, because it has been presented to the students in an orderly fashion.

Fear of the loss of content coverage

Teachers fear a loss in content when they use cooperative group work methods because group interactions often take longer than simple lectures. Students need time to accumulate enough information in order to be able to use it within their groups. They need time to work together to reach a consensus (Gregory and Thorley, 1994). Since the major function of cooperative learning involves teaching students how to work together effectively, teachers need not focus on how much they teach rather how much students are actively involved in the material.

Lack of prepared materials for use in class

The use of group-based cooperative learning techniques requires teachers to build a set of teaching 'materials, which create interdependence among students, and provides a basis and reason for their working together. Current textbooks generally offer a set of questions at the end of each chapter, which are usually answered by students individually (Irwin et al, 1985). Therefore, in order to appropriately utilize GCL, the curriculum materials should be developed in such a way that students are actively involved in the material and develop the necessary knowledge, skill and attitude.

Lack of familiarity with alternate assessment techniques

Panitz (1996) pointed out that assessment is a major concern frequently expressed by teachers who are unfamiliar with group-based cooperative learning methods. They presume that individual accountability will be lost or that one student will dominate the group or do all the work for the group.

They are unfamiliar with how to assess group efforts and assign grades to groups. Often /they assume that only one process is appropriate for assessing student performance.

He further suggests techniques available for assessing groups. These include teacher observations during group work; group grading for projects; students grading each other or evaluating the level of contribution made by each member to a team project; extra /credit given when groups exceed their previous average or when individuals within a group exceed their previous performance by a specified amount; use of a mastery approach whereby students may retake tests after receiving extra help from their groups or the teacher; and the use of individual quizzes, exams or assignments .

2.11.2 from Students' Side

Students' views on Group-based Cooperative Learning

Students feel that the lecture method is "easier" because they are passive during the class while apparently receiving the necessary information. In contrast, interactive classes are very intense. The responsibility for learning is shifted to the student, thus raising the level of critical thinking by each student. This situation is both mentally and physically challenging. The students initially respond by complaining and desiring for a return to the good old lecture days (Gregory and Thorley, 1994).

Also, students may perceive the teacher as not. doing his/her job. However, collaborative classrooms are student centered whereas in typical classes' teacher performance is seen as central to the class (Irwin et al 1985). In order to address this concern, teachers n*eed* to make clear to the students why they use a particular technique and what the outcomes will be from the activity. Another way for teachers to overcome this perception is to spend time with the groups or with individuals during the class.

Lack of knowledge

A major problem in implementing cooperative group work arises because students lack an understanding of the underlying philosophies of cooperative group-based learning. In relation to this idea, Panitz, (1996) says that our current system encourages competition and individual responsibility and discourages student interaction.

The process of student centered discovery and construction of their own knowledge base is new to most students (Cohen, 1994). They feel much more comfortable hearing *J the teacher presents the important facts instead of having to sort out what is important. A common fear among students is that all the group members will be wrong, leading to failure (Gregory and Thorley, 1994).

More over Teachers who are unfamiliar with cooperative learning may not initially accept this style of learning because they may feel they will lose control of their classroom, or they may be unsure of the techniques used or possibly even think that it is too time consuming. As Panitz stated (Panitz, 1996) In this next section, we will discuss some of the possible drawbacks to cooperative learning.

Loss of Control - Cooperative learning is a structured approach that requires instructor support and guidance. In order for cooperative learning to be utilized in the classroom, instructors must receive training to be proficient in implementing the techniques. Maximum learning will only emerge if proper training is received by the instructor and then transferred to the student.

Instructors may resist using cooperative learning techniques in their classroom because they are afraid they may lose control of their teaching routine. Cooperative learning takes time to implement; therefore, initial lessons may take longer. Once students and the instructor are comfortable with the process, then the amount of time for each lesson decreases.

Instructors may have a difficult time giving up their control of the content that is being covered (Panitz, 1996). They are accustomed to presenting the curriculum to the students

and are unable to give students the freedom to learn on their own. Students learning only one part of the curriculum in their group may make an instructor anxious about what their students know.

Showing their expertise in a subject area is important for some instructors. Giving up the opportunity to show off this expertise may deter instructors from using cooperative learning in their classrooms. Also, if students are expected to explore on their own, then they may have questions that the instructor cannot answer. Both of these possibilities may cause an instructor to lose confidence in her teaching abilities. Instructors can still be experts, but they will be using their knowledge as a facilitator rather than a giver of information.

Group Work - Depending on the age level, students may resist using cooperative learning in their classrooms. Lecture does not require much interaction and participation from the students; therefore, they can get as much or as little from the class as they like. Being required to work in a group may ruffle a few feathers with the students because now they are being asked to participate and contribute to their learning. In addition, they are also asked to learn new concepts and taught how to work in a group. They may not be accustomed to working in a group, and therefore, may be unsure of the dynamics involved in group work.

Since cooperative learning is centered on group work, students may be concerned that other members of their group are going to bring their grades down. This is especially true if students are grouped by mixed ability, requiring higher ability students to guide lower ability students.

Deciding how groups should be formed is an important part of the cooperative learning planning process. There has been some debate as to how groups should be formed in order for students to effectively work together and reach their maximum potential.

Mixed ability grouping allows for all group members to be involved, though the type of involvement differs. Advanced students can teach struggling students, but concerns arise about advanced students doing all the work and struggling students not being motivated

to be involved at all. There are also concerns that gifted students are held back by the lower ability students in their group. If students are grouped with others of the same ability level, then the lower ability group may feel frustrated and unmotivated to try. This is also true of those who are grouped by gender or race because it may support stereotypes that certain subject areas are dominated by certain groups.

There are also varying opinions about the optimal number of people for small group formation. The consensus seems to agree that no more than 4 people in a group produces higher achievement (Slavin, 1987). Fixed seating and large class sizes may make group arrangement difficult though. Still, even if the room is easily arranged into small groups, instructors may have a difficult time accessing all of the numerous small groups.

Most students are not accustomed to group work, especially in high school classrooms. Students will have to be taught to work effectively in a group setting. Resolving group conflict can be a major challenge for instructors. Groups will need to make sure that every member listens to and appreciates each group member's contribution. Identifying responsibilities within the group and encouraging each to do their best work needs to be addressed before group work begins. Also, students that work better alone may struggle to succeed in a group atmosphere.

Since the classroom will be made up of several small groups, the noise level will escalate. This can be very uncomfortable for some instructors, especially if they are accustomed to a lecture and seatwork classroom. This can also cause problems for those students who have attention difficulties.

Cooperative learning is based on social interaction; thus, grouping students together to work independently even for a short period of time may encourage behavior that is off task. While the instructor is circling the room to observe and interact with the groups, it is difficult to make sure every group is productively working on their assignment. Self-management skills will have to be introduced before students break out into groups and be reinforced as they progress through their work.

Time Requirements - With cooperative learning, the textbook is used only as an instructional supplement, so it is necessary for instructors to create additional materials for the students. Usually these materials are made from scratch because many instructors' manuals offer limited suggestions for group activities. Creating these new materials can be very time consuming. So, not only are instructors spending a large amount of time implementing this new way of learning, but they also have to create the materials to go along with it.

Since students have to generate an answer or information within their group, work time may take longer than the traditional lecture. Because of this additional time, instructors may be unable to cover the same amount of curriculum as before when they used teacher directed class discussions. Many times, in a traditional classroom, the quality of the work is compromised in order to teach the entire curriculum.

Other Drawbacks - Since students are working together on a group assignment, it is difficult to assess students with a paper and pencil test. Instructors will have to find another way to assess student work and progress. Since students are used to concrete assessments, it may be difficult for students to adjust to authentic assessments.

Vague objectives, avoidance of teaching, and lack of critical thinking activities are other problems associated with cooperative learning. With the focus on managing groups, it is possible for instructors to overlook the students' objectives and tasks. Therefore, students are not receiving the needed guidance to effectively learn the task at hand. Some critics say that instructors who rely on small group work are avoiding their teaching responsibilities. Students are left on their own to teach themselves the curriculum. In addition, since students are working in small groups that require additional time, instructors may be more apt to assign tasks that do not demand higher level thinking skills. The quality is overlooked in order to increase the quantity of assignments.

complexities of teaching mathematics In ways they did not- experience as students, dies comfort with their own mathematics knowledge , Lack of sustained professional development opportunities, greater requirement for facilitation skills & attention to class

room dynamics , Lack of time especially In face of curricular demands. math teachers face a number of challenges In facilitating high quality students Interaction ,o r' math task' the biggest is the complexity of trying to teach mathematics In ways they did not experience as students. Discomfort for some with their own level of math content knowledge & lack of us tamed professional development opportunities also make teachers reluctant to adopt math-talk strategies further the complex negotiation of math-talk .In the class room requires facilitation skills & heightened attention to class room dynamics D.rchatrine (2007).

The teacher must model math-talk so that students understand the norms of Interaction In the math class room of course students to Justify their solutions &build on one an other's Idea & finally step aside as students take Interaction Responsibility for sustaining & enriching demands Increasing .Time is another challenge .In the face of cubicula demands the time required facilitated Interaction has been Identified by teachers as an Inhibitor to Implementing math-take however the research also sells as that despite these challenges teachers haves facilitating math talk .

2.12 Altitudes of Teachers and Students toward Group-Based cooperative Learning

2.12.1 Attitudes of Teachers toward Group-Based Cooperative Learning

Johnson and Johnson (1989) reported that group based cooperative learning develops positive teachers and students attitudes .they argue that teachers learn about students behaviors. Since students have many opportunities to explain their actions and thoughts to the teacher. Accordingly, the lines of communication are opened and encouraged. they concluded that the empowerment created by the many interpersonal interaction leads a very positive attitude by all participants involved.

However, many educators believe that teachers say they are using cooperative learning where they are missing its essence. For instance Johnson, Johnson and Smith, 1991 reported that many teachers perceive cooperative group work as having students sit side by side at the same table to talk with each other as they .do their individual assignments. Thus: cooperation is not assigning a report to a group of students where one student does all the work and the others put their names on the product.

As indicated by Palmers, Peters and Streetman (2003), instructors may resist using group-based cooperative learning techniques in their classroom because they are afraid they may lose control of teaching routine. They also stated that, for some instructors showing their expertise in a subject area is important. Hence, giving up the opportunity to show off this expertise may deter instructors from using cooperative group work in their classroom. On the other hand, instructors have frequently perceived some common problems that greatly reduce the effectiveness of small group based learning activities. For example, according to Michaelsen, Fink and Knight (1997), probably the most common problem is that one or two vocal individuals often dominate the discussions to the point that quieter members' ideas are either unexpressed or largely ignored.

Therefore, in order to minimize and if possible avoid group-based cooperative learning problems, the best advice is to explain the rationale, design well-structured meaningful task, give students clear directions, set expectations for how group members are to contribute and interact, and invite students to try it (Cooper and Associates, 1990).

On the other hand, the teachers have frequently perceived some common problems that greatly reduce the effectiveness of small group-based learning activities .for ex, according to michaelsen, fink and knight (1997), probably the most common problem is that one or two vocal individuals often dominate the discussion to the point that quieter members ‘ideas are either un expressed or largely ignored.

Therefore, in order to minimize and if possible avoid group based cooperative learning problems ,the best advice is to explain the rational, design well-structured meaning full task ,give students clear directions, set expectations for how group members are to contribute and interact ,and invite students to try it (cooper and associates,1990)cited in Gebeyaw teshager(2007)

Whereas another study shows that the factor related to teachers may include in adequate professional & lack of interest in their profession, punctuality, & respect for student’s .these may result in developing negative attitude, & it becomes difficult to make student centered practical. Positive Teachers attitude exists when teachers have confidence in their ability to teach, committed to teaching & cooperate with each other .Teacher are

committed to Teaching learning & care about their students, when they set high standard of work and behavior & model themselves .

Teachers are co-operative when they plan school activities & teachers collaboratively & when they share ideas with each other & when Teachers & administrators work together on whole school Issue (Henveld & Coraig, 1996) cited in Derje (2010).

2.12.2 Attitudes of Students toward Group-Based Cooperative Learning

Davis (1993) states that some students like instructors initially express skepticism about the value of cooperative group work, or feel that class time is best spent hearing from the instructor (who's the authority) rather than working with students who, they believe, know as little as themselves. Similarly, Christon (1990) explains that most students who come to college classes expecting the conventional classroom arrangement, with the instructor in front of the class and students in straight rows listening and watching the teacher, they will be confused and hesitated when these expectations are not met.

On the other hand, based on their past experience with school, many students perceive that they are in competition with the classmates and students may also object, in part because their education has been based on individual effort, and they may feel uncomfortable helping others or seeking help (Cooper and Associates, 1990). This shows that many students enter higher education having developed independent study habits and are strongly oriented towards) their own personal achievement. Thus, these students may perceive little value for their own learning in group activities, or may be frustrated by the need to negotiate.

Student may simply not engage in group based cooperative learning secession because they feel that it will be a waste of time or are afraid of taking part. In other cases they may be reluctant to make the very real personal commitment that many group –based cooperative learning exercises require , because they do not fell that they have the necessary skills and do not want to show themselves up' in front of their peers (cohen,1994) cited in Gebeyaw Teshager (2007)

Student can also perceive cooperative group work as a management tool used by instructors primarily to reduce their assessment load and of little or no benefits to students.(christen,1990)cited in Gebeyaw Teshager (2007). To this end, one of the strongest concerns that the students have about grouped based cooperative learning is the possibility that group assessment practices may not fairly assess individual contributions.

For learning to take place effectively & for students to become successful, they should be ready & motivated to learn materials offered by their teachers .students readiness & motivation refers to the extent to which they are willing to do assignment, & participate in practical project & other tasks (Ayalew etal,2009).

No learning will take place unless the students is willing & committed, no potential will be realized unless the student responds to a challenge, no matter how good the curriculum, how cognitively correct the teaching methods, unless the teacher is able to motivate his/her students to enhance about their science & make commitment In it, he/she will have given them little of lasting Importance.(Woolnough,1994) cited in Dereje (2010).

As the findings of different studies indicated that, Suhendan.ER(2012), 92,2 % of the students said that cooperative learning environments develop positive relationship among friends in class. While working in groups the students meet each other and rely on each other. They improve their communication skills. They are aware of individual differences so they accept this and they support each other. They find constructive solutions to problems. Through developing good relationships and supporting each other, cooperative learning also leads to increase school success, improve higher order thinking skills, develop self-esteem, grow a positive attitude towards school and courses and gain social skills (cohen, 1994; felder and Brent, 2012; slavin, 1996; wang, 2012).

88,6 % of the students reported that while studying in cooperation students guide each other. In cooperative learning classes students can construct their own multiple learning environments. They realize that there are individual differences. They have the chance of completing their lack, revising what they know, and learning while teaching to others. By discussing with group members, solving problems, suggesting possible solutions, and

finding wrongs they can develop their higher order thinking skills (borich, 2007; gillies, 2007; havard, du and xu, 2008; riley and anderson, 2006). Piaget (1970) claimed that the most effective interactions are between peers as they are on equal basis and challenge each other's thinking skills.

83,1 % of the students stated that cooperation improves trust on each other. This is an indication of harmony in a class as the students rely on each other and realize that moving together in the right path brings success to all of them. When the group members perceive this, a positive interdependence will occur (Johnson and Johnson, 2012). In order to complete a task the student should realize that he has to combine his work with the group mates'. The student will make use of his mates' studies and vice versa. They will work in small groups to maximize the learning by sharing their resources to provide mutual support and encouragement and to celebrate their joint success (felder and brent; 2012; gunter, estes, schwab, 1995). Once positive interdependence is understood by the students, it establishes that each group member's efforts are required and indispensable for group success and each member has a unique contribution to make to the joint effort as he has his own resources, role and task responsibilities. Positive interdependence results in face to face promoting interaction. Promoting interaction leads to positive inter relationships, psychological adjustment and social competence (felder and brent, 2012).

79,5 % of the students indicated that they respect to each other's thoughts while studying in cooperation. In cooperative learning classes, during the process of learning, forming groups, participation in the group, putting forward the point of view, having different roles, doing discussions, sharing the reward make the learners gain social skills. They make use of the diversions in heterogeneous classes and learn to be tolerant. As a result, they multiply their feeling of respect towards themselves and the others (slavin, 1996). Students learn how to cooperate (bliss and lawrence, 2009; wichadee and orawiwatnakul, 2012).

84,9 % of the students put forward the motivation of cooperative work and 75,3 % of students reported that while studying in cooperation friends help each other. According to

sharan and sharan (1990) cooperative learning encourages students to work in the soul of a team. The team members help each other, accelerate motivation and trust each other's success (hornby, 2009). They are responsible for each other and they have to know what each member of the group is doing (gillies, 2007; wang, 2012). The group is united around a common goal. They realize that they will win or lose together. Whenever they achieve they know that all group members receive the same reward. Each group member has a portion of resources, information or materials which have to be combined for the group to reach its goals. Having and sharing the feeling of achievement, the encouraging class atmosphere accelerates the motivation of the students and makes them have positive attitude towards school, learning and the class (borich, 2007; Felder and brent; 2012).

61,4% of the students said that cooperative learning environments develops individual responsibility. Although the students work as a group, the student has his own responsibility when his individual success is assessed. The result not only affects the student but the group also. The student should know that without doing anything individually, he and the group cannot achieve any goal. The group's one of the main aims is to strengthen each member (gillies, 2007). Cooperative learning empowers individual responsibility (cruickshank, bainer and metcalf, 1999; felder and brent, 2012; gillies, 2007; Yi and luXi, 2012). In an effectively organized cooperative learning class, students need to learn the assigned material and ensure that all members of the group learn the assigned material. These two are the students' main responsibilities. The students know that they won't be successful unless the members of the group are successful (slavin, 1996).

34,9% of the students identified that studying on their own is more enjoyable than working in groups. A research which was conducted by somapee (2002) indicated students' positive opinions towards cooperative learning. An idea which is supported by experts is that students working in small cooperative teams can understand the presented material by the teacher better than students working on their own. Cooperative learning has crucial social outcomes such as positive inter group relations, ability of working in collaboration and self- esteem development (cohen, 1994; slavin, 1996).

31,3% of them stated that they get better results when they study on their own. According to dunn, beaudry and klavas (1989), students learn more when they study in their preferred setting and manner. A preferred particular style may not always guarantee that it is the most effective. Sometimes students prefer the easy or the comfortable way. Some may choose a way because he has no other alternatives. They may benefit from developing new and more effective ways to learn (weinstein and mcCombs cited in woolfolk, winne and perry, 2011). On the contrary, numerous research studies advocate that cooperative learning leads to higher academic success than individual or competitive approaches (hornby, 2009; johnson, johnson and stanne, 2012).

Results showed that 66,9% of the students are at the side of cooperative learning , whereas 33,1% of them believed that if they work alone they would have better results and they thought working alone was more enjoyable.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 The Research Design

The main purpose of this study was to assess the implementation of five in one corporative learning, group work and pair work learning in Cheha District general and secondary schools. Thus descriptive survey design was employed on the ground that it would help to show the general picture of the implementation of five in one, group work and pair work cooperative learning method in Cheha District general secondary schools. Moreover, the qualitative approach was used to supplement the quantitative data and to get in depth understanding about the implementation of five in one, group work and pair work cooperative learning.

3.2 **Description of the study area**

Cheha District is found in Debub regional state in Gurage zone located in south western part of Ethiopia at about 180 km from Addis Ababa .Cheha District is bordered by Gumer District to the north, Enemore District to the south, Eesha District to the east and Gurage zone to the south.

3.3 **The Source of Data**

The sources of data for this study were students and teachers and school principals of Cheha District general secondary schools.

3.4 Population and Sampling

3.4.1 Population

According to the Information obtained from school principals there were a total of 1580 students (853 Grade 9^{th} & 727 Grade 10^{th} students). In 2006 academic year, out of this 611 of the students were females & the remaining 969 students were males besides there were 12 mathematics teachers (2 females& 10 males) and 3 principals.

3.4.2 Sampling

In the process of selecting participants for study simple random sampling technique was employed. In the three general and secondary schools there was 14 and 12 section of grade 9^{th} and 10^{th} respectively. Hence the researcher randomly selected 6 section from each grade level, 2 sections from two of the schools and 4 sections from the remaining schools in each grade level.

Thereafter, he randomly selected 14 students from each selected section of two grade levels. That means, among 1580 students in Cheha District general and secondary schools, 168 (10.6%) respondents were selected using simple random sampling to avoid subjectivity and bias for this study similarly, the total numbers of mathematics teachers who teaching 9^{th} and 10^{th} mathematics were 12. Since this number is manageable 12(100%) were taken.

3.5 Data Collection Instruments

3.5.1 Questionnaire

In order to get appropriate information about the implementation of five in one, group work and pair work cooperative learning method in Cheha District general and secondary schools two sets questionnaires were prepared for students and teachers. Student's questionnaire was prepared in Amharic so as to avoid problems emanated from inability to understand English language. Each questionnaire contain four parts which were intended to measure the practice, the participation, the preference, the challenges and the attitudes of students and teachers towards five in one cooperative learning, group work and pair work learning. The questionnaires contain both closed and open ended types of question. For closed ended type, the natures of the response were both choice and scale type. To see the extent to which teacher practice in five in one cooperative learning, group work and pair work learning, the scales ranging from very effective (5) to not very effective(1) were used. To see the participation of students in group interaction, three closed ended items were prepared. Four closed ended items were prepared to see the preference of teachers and students to five in one cooperative learning, group work, pair work and individual learning and in order to see the attitudes of teachers and students

towards five in one cooperative learning, group work, pair work and individual learning a questionnaire consisting of 20 items having a 5 point likert scale ranging from strongly agree (5) to not strongly agree (1) were prepared. Furthermore to investigate the challenges during the implementation of five in one cooperative learning, group work and pair work learning, 10 items with 4 point likert- scale and 10 items (rating from highest to lowest) were prepared. Before the actual data collection, the instruments were given to the thesis advisor for further comments, criticisms and evaluations. Eventually the instruments were tried out in small scale study in antonyos general secondary school. For the pilot study 40(20) students from each grade level were selected. Thus the reliability of the instrument was tested by cronbach's alpha method. The reliability of the instruments was 0.752 and the normality was between -1 and 1 (appendix-A and B).

3.5.2 Interview

The researcher made the interviewees with 9 and 10 open – ended interview items for students and Teachers respectively; which are related to the implementation of five in one, group work and pair work cooperative learning method (see appendix-D). Hence, individual interview was conducted with 4 and 6 voluntary teachers and students respectively and the principals of the schools were interviewed, Using semi-structured interview questions. For all interview the researcher used hand writing to collect data.

Semi-structured interview questions are used because they are flexible, new questions can be brought up during the interview as the result of what the interviewee says, so the interview flows more like a conversations. In this study, interview was conducted to collect supplementary information about the implementation of five in one, group work and pair work cooperative learning method in Cheha District general and secondary schools.

3.5.3 Observation

The real classroom instructional processes are manifested while teachers teach and students learn. Therefore, classroom observation was one of the supplementary data connecting instruments. In this study to see the implementation of five in one, group work and pair work cooperative learning method. Hence, the researcher made structured

observations while student were attending in the class room. The observation were mainly focused on the practical application of five in one, group work and pair work cooperative learning method of suitability of the class rooms for applying these method (see appendix-C). The class room observation was made according to the checklist. Finally, the results of the classroom observations were analyzed to strengthen the data obtained through questionnaire and interview.

3.6. Validity & Reliability of the Instruments

Before the Actual data collection, the Instruments were given to colleagues so as to set valuable .comments & criticisms on the strengths & weakness of the Items .based on the comment, the researcher made necessary modification & it was given to the thesis advisor for further comments, criticisms & evaluation.

Eventually the Instruments were try out in small scale study in antonyos secondary school. For the pilot study 40(20) students from each grade level were selected. Thus the reliability of the Instruments was tested by cr0mbach alpha method. The reliability of the instrument was.752 and the normality was between -1 and 1.

Likewise to validate the items of the observation check list, diverse means was employed; first the observation check lists were given to professionals in the area such as educational researchers & pedagogist for comments. This was to increase the validity of instruments.

3.7. Techniques of data analysis

For this study both quantitative and qualitative data analysis technique were used to answer the basic research questions of the study, appropriate data analysis procedure was employed based on the essence of data. The data that were collected through Interview, observation check list were analyzed qualitatively. However the data that collect from questioners were analyzed using descriptive analysis, Independent t- test and one way ANOVA.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter deals with presentation and analysis of data. The first part presents the characteristics and back ground of the sample populations involved in study. The second part deals with the analysis and interpretation of data obtained from the respondents on the implementation of five in one, pair work and group work activity.

4.1 Characteristics and Background of Respondents

The major categories of respondents in the study were teachers and students in SNNP Region, Guragué zone, Cheha District general and secondary schools. In the questionnaire, the two groups of respondents, who were considered to be relevant as main Source of information, were requested to provide information on their personal profiles. The profiles are given in the following two tables.

Table 1: Profiles of students

NO	Items	No	%
1. Sex	A. males	103	61.3%
	B. females	65	38.7%
2. Grade	A. 9^{th}	84	50%
	B. 10^{th}	84	50%
3. Schools	A. Emdiber	112	66.7%
	B. Gubre	28	16.7%
	C. Yejoka	28	16.7%

According to table 1, among the total respondents, 103 (61.3%) were males, while the remaining 65 (38.7%) were females. This shows that the participation of males is exceeding females. In the case of grade level, 84 (50%) and 84 (50%) of the respondents were grade 9^{th} and grade 10^{th}. As to the number of respondents from each school, 112 (66.7%), 28(16.7%) and 28(16.7%) were from Emdiber, Gubere and Yejoka general and secondary schools respectively. This shows the majority of the respondents were from Emdiber general and secondary schools, this is because of high student population in that school.

4.2 The Extent of Teacher's Practice of Five in One Cooperative Learning, Pair Work and Group Work Teaching and Learning in The Class Room

Organizing students in a group help students to improve their understanding level & to score a better result. Low achieving students can share more knowledge and skill from high achieving students during group discussion after the teacher has done his best in the class. To assess the extent of teacher's practice of five in one cooperative learning, pair work and group work in the teaching learning of mathematics, the following research question is developed.

To what extent do teachers practice five in one cooperative learning, pair work and group work teaching and learning in the class room?

To analyze the extent to which five in one, pair work and group work cooperative learning methods have been practiced in Cheha District general and secondary schools, both percentage and an independent t-test were used.

Table2: An independent t-test result on practice of five in one cooperative learning, pair work And group work teaching and learning in the classroom (teachers & students response).

Variable		N	Very high No %	High No %	Moderate No %	Low No %	df	t	P
The practice of five in one	Students	168	11 (6.5%)	36 (21.4%)	98 (58.3%)	23 (13.7%)	178	-2.719	0.07
	Teachers	12	2 (16%)	4 (33.3%)	5 (41.7%)	1 (8.3%)			
The practice of group work	Students	168	13 (7.7%)	49(29.2%)	82 (48.8%)	24 (14.3%)	178	-1467	.144
	Teachers	12	2 (16.7%)	3 (25%)	5 (41.7%)	2 (16.7%)			
The practice of pair work	Students	168	17 (10.1%)	51(30.4%)	78 (46.4%)	22 (13.1%)	178	-1.471	.143
	Teachers	12	3 (25%)	2 (16.7%)	6 (50%)	1 (8.3%)			

The majority of students 98 (58%) responded that five in one cooperative learning is practiced moderately, whereas only few students 11 (6.5%) responded as five in one cooperative learning is practiced in a very high level, similarly the majority of the teachers 5 (41.7%) responded that five in one cooperative is practiced moderately, whereas only few teachers 1 (8.3%) responded as it is practiced in low level.

The majority of students 82 (48.8%) responded that group work is practiced moderately, similarly the majority of the teachers 5 (41.7%) responded that group work is practiced moderately.

Majority of students78 (46.4%) and teachers 6 (50%) responded that pair work is practiced moderately. There for the findings revealed that the majorities of teachers responded that the extent of the practice of five in one, group work and pair work are moderate. Similarly the majority of the students responded that the extent of the practice of five in one, group work and pair work are moderate.

An independent t-test, did not show any statistical significance difference between the response of teachers and students on the practice of five in one cooperative learning, ($p=0.07>0.05$), the practice of group work ($P=.144>0.05$) and the practice of pair work ($P=.143>0.05$). This means the response of teachers and students in the practice of five in one, group work and pair work are the same.

According to (Leu, 2000) despite the Ethiopian New Education and training policy strongly criticizes the conventional teacher based approach in education; the teaching-leaning process in most teacher education colleges in Ethiopia has persisted to be teacher dominated. Most classes are characterized by a situation where students are made to listen to their teacher and copy notes from the blackboard. Learning by doing, problem solving, cooperative learning and group approaches are limited.

In the observed classes in the schools, the teachers were asked oral questions related to the lesson, occasionally the teachers ordered to the student to do in group, but the students were not doing meaningfully. In the interview, one of the teachers said that:

Theoretically, I know various cooperative learning methods; but because of large class size and shortage of time to cover student's text book, I have some times employed five in one cooperative learning, group work and pair work learning strategy.

Since the above research not recent, it never tells the current practice of five in one, group work and pair work learning and teaching. But now a days since both the government and any stack holders focuses on five in one, group work and pair work cooperative learning that is why they are practiced moderately.

In sum from the result of the tables, the information's from observation and interview, we can conclude that the practice of five in one, group work and pair work is moderate.

4.3 The extent of utilization of different instructional activities

The following are some of the activities in teaching and learning process which are used to practice five in one, group work and pair work cooperative learning. These are grouping students in class–room to exit cooperative learning climate, arranging classroom seats to smart participatory learning, Arranging materials & resources for task base learning. Designing tasks that actively engage students in valid learning activities and assigning high achievers to be a group leader in five in one cooperative learning

To what extent the teachers utilized the following instructional activities?

To analyze this research questions the researcher used both descriptive and an independent t-test.

Table3: descriptive and an independent t-test result on teachers utilization of different activities

variables	N	Very effective No (%)	Effective No (%)	Not sure No (%)	Not effective No (%)	Not very effective No (%)	Mean	df	t	P
Item1									.171	.864
Students	168	3 (5.7%)	69 (41.1%)	17 (10.1%)	18 (10.7%)	4 (2.4%)	3.97	178		
Teachers	12	4 (33.3%)	4 (33.3%)	3 (25%)	1 (8.3%)	0 (0%)	3.92			
Item2									.382	.703
Students	168	44 (26.2%)	50 (29.8%)	23 (13.7%)	32 (19%)	19 (11.3%)	3.40	178		
Teachers	12	2 (16.7%)	5 (41.7%)	0 (0%)	4 (33.3%)	1 (8.3%)	3.25			
Item3									-.915	.362
Students	168	24 (14.3%)	57 (33.9%	20 (11.9%)	37 (22%)	30(1 8.3%)	3.05	178		
Teachers	12	2 (16.7%)	4 (33.3%)	4 (33.3%)	1 (8.3%)	1 (8.3%)	3.42			
Item4									-.262	.794
Students	168	52 (31%)	48(28.6%)	23(13.7%)	33 (19.6%)	12 (7.1%)	3.57	178		
Teachers	12	3 (25%)	5 (41.7%)	1 (8.3%)	3 (25%)	0 (0%)	3.67			
Item5									-.258	.797
Students	168	116 (69%)	33 (19.6%)	11(6.5%)	6 (3.6%)	2 (1.2%)	4.52	178		
Teachers	12	8 (66.7%)	3 (25%)	1 (8.3%)	0 (0%)	0 (0%)	4.58			

Item1: Grouping students in class –room to exit cooperative learning climate

Item2: Arranging class –room seats to smart participatory learning

Item3: Arranging materials & resources for task base learning.

Item4: Designing tasks that actively engage students in valid learning activities

Item5: Assigning high achievers to be a group leader in five in one cooperative learning

As shown in table 4, from the instructional strategies utilized by the teachers, majority of students 116(69%) and majority of teachers 8 (66.7%) responded that selecting high achievers to be the leader of the group is very effective and 52 (31%), 44 (26.2%) and 24 (14.3%) students responded as designing tasks that actively engage students in valid learning activities, arranging class room seats to smart participatory learning and Arranging materials & resources for task base learning are utilized very effective whereas 69 (41.7%) students responded as grouping students in class –room to exit cooperative learning climate is utilized effectively. And 5 (41.7%) teachers responded as arranging class –room seats to smart participatory learning and designing tasks that actively engage students in valid learning activities are utilized effectively, then 4(33.3%) teachers responded as grouping students in class –room to exit cooperative learning climate and arranging materials & resources for task base learning are utilized effectively. This shows that relative to other activities, assigning high achievers to be the leader in five in one cooperative learning is utilized effectively.

The t-test showed that there is no significant difference in the response of teachers and students for grouping students in class –room to exit cooperative learning climate, arranging classroom seats to smart participatory learning, arranging materials & resources for task base learning, designing tasks that actively engage students in valid learning activities and high achievers will be the group leader in five in one cooperative learning.

This means the response of teachers and students in grouping students in class –room to exit cooperative learning climate, arranging class –room seats to smart participatory learning, arranging materials & resources for task base learning, designing tasks that

actively engage students in valid learning activities and high achievers will be the group leader in five in one cooperative learning are the same.

According to (Adamma science technology University, 2004) one of the mechanisms implemented to promote cooperative learning in school is organizing students in a group of five. This organization is believed to help students improve their understanding level & score better grades .Low achieving students can learn more from high achieving students by discussing in group after the teacher has done his best in class.

According to the teacher assigned to facilitate the organization of cooperative learning groups in the School, the grouping of students is done by dividing students in the three categories, high achievers, medium achievers, &low achievers, these students will be distributed in to different groups in a proportion of 1:2:2.this means one high achievers, two medium achievers & two low achievers will form one group, & team is led by high achieving students.

And also both the majorities of teachers and students responded that the most effectively utilized were selecting high achievers to be the leader of the group and grouping the students in the class room to excite cooperative learning climate. Again the researcher observed that the teachers has made high achievers would be the group leader in five in one cooperative learning. One of the interviewed teachers said that:

> *Assigning of high achievers to be the leader of the group is practiced by most teachers, the teachers organized students in a group of five, which was done at the beginning of the year but after all, the teachers not practiced effectively.*

In conclusion, from the result of the tables, the information's from observation and interview, we can conclude that assigning high achievers to be the leader in five in one cooperative learning and grouping students in the classroom to excite cooperative learning were utilized effectively relative to other activities.

Table 4: Class room observation results

No	Items	Alternative and responded			
		Yes		No	
		No	%	No	%
1.	Does the teachers:				
	a. Arrange the class in five in one groups?	8	66.66%	4	33.33%
	b. Arrange the class in groups?	4	33.33%	8	66%
	c. Arrange the class in pairs?	3	25%	9	75%
	d. practiced five in one cooperative learning?	6	50%	6	50%
	e. Encourage all students in the group to contribute, to talk to each other?	5	41.66%	7	33%
	f. Grouping students in the class room to excite cooperative learning climate?	8	66.66%	4	33.33%
	g. Arranging class room seats to smart participatory learning?	4	33.33%	8	66.66%
	h. Arranging materials & resources for task base learning?	3	25%	9	75%
	i. Designing tasks that actively engage students in valid learning activities?	5	41.66%	7	59.33%
	j. High achievers will be the group leader in five in one cooperative learning?	12	100%	0	0%
2.	Does the student actively participate in five in one cooperative learning task?				
3.	Is there any challenge during the implementation of five in one, pair work & Group work learning in the actual class?				

Class room observation was conducted with the help of check lists. As shown in table 13 it was understood that the majorities of the teachers were arranged the class in five in one groups 8 (66.66%), and in all observed classes teachers were assigned High achievers would be the group leader in five in one cooperative learning 12(100%). And the researcher observed the challenges of implementing cooperative learning, some which are student teachers ratio, and motivation to learning and motivation to teaching. Again the participation of

students is not that much. The table shows the practicability of five in one cooperative learning is moderate, which are 6 (50%).

4.4 Student and Teacher Preference of Five in One, Pair Work, Group Work and Individual Work

Five in one, group work and pair work learning strategies are types of cooperative learning whereas individual learning is not types of cooperative learning. The students and teachers may prefer five in one or group work or pair work learning or individual learning.

What is student and teacher preference of five in one, pair work, group work and individual work?

To analyze the extent to which five in one, pair work, group work and individual learning preferred by students and teachers in Cheha District general and secondary schools, both percentage and an independent t-test was used.

Table5: An independent t-test result on Students and teachers preference of five in one, group work and individual work

Variables		N	Very high No (%)	high No (%)	low No (%)	df	t	P
The preference of five in one	Students	168	117(69.6%)	43(25.6%)	8(4.8%)	178	1.867	.649
	Teachers	12	4 (33%)	8 (66.7%)	0 (0%)			
The preference of group work	Students	168	98 (58.3%)	64 (38.1%)	6 (3.6%)	178	1.689	.093
	Teachers	12	6 (50%)	3 (25%)	3 (25%)			
The preference of pair work	Students	168	84 (50%)	74 (44%)	10 (6%)	178	1.493	.137
	Teachers	12	4 (33.3%)	6 (50%)	2 (16.7%)			
The preference of individual work	Students	168	23(13.7%)	37 (22%)	108(64.5%)	178	.358	.720
	Teachers	12	1 (8.3%)	3 (25%)	8 (66.7%)	178		

As shown in Table 5, the highest number of teachers 6 (50%) preferred group work to a great extent as compared to other methods of teaching learning and similar number of teachers 6 (50%) preferred to pair work to a moderate extent. The majority the teachers 8 (66.7%) preference to five in one cooperative learning is to a moderate extent. On other hand the extent of the majority of teachers 8 (66.7%) preference to learning individually is to less. As whole from the result we can conclude that the majority of the teachers prefer group work and next to that five in one and followed by pair work.

The majority of students responded as they prefer five in one 117 (69.6%), group work 98 (58.3%) and pair work 84 (50%) to a great extent and the majorities of students 108 (64.5%) preference to individual learning is to a less extent (table 5). Therefore majority of students prefer learning through five in one, and then group work and pair work respectively.

An independent t-test, there is a significance difference in the responses of teachers and students for five in one cooperative learning ($p=0.02<0.05$). But there is no significance difference in the responses of teachers and students for group work, pair work and individual learning.

The previous researches showed that there are as many disadvantages as advantages of cooperative learning and

In sum, the result showed that, the highest extent preference of teachers is group work whereas the student's preference is five in one. The difference in preference of teaching learning methods between the respondents is reported by the previous researchers. One cannot unanimously state which one is better, since each teacher has his/her own likes and dislikes. It is his/her individual choice which one should be used during the process of teaching. One should not induce anybody to use any of these managements, since all of them may occur to be very useful, depending on situation, moment or surroundings in which we

are going to teach. That is why it is very inconvenient to claim whether one of them is better or worse than the other (http://www.educutor.org.pl/index.php).

4.5 The Extent of Students Participation in Five in One, Pair Work and Group Work Teaching and Learning Strategy in Their Class Room

In active learning method, specifically learning in five in one, group work and pair work cooperative learning, participation of students is very necessary. Thus to have a fruitful learning there must be participation of students.

To what extent of students participate in five in one, pair work and group work teaching and learning strategy in their class room?

To analyze the participation of students in five in one, pair work and group work cooperative learning in Cheha District general and secondary schools both percentage and an independent t-test was used.

Table 6: An independent t-test result on participation of students in five in one, group work and pair work teaching and learning strategy in their class room.

Variable		N	Very high No %	High No %	low No %	df	t	P
Participation in five in one	Students	168	61 (36.3%)	90 (53.6%)	17 (10.1%)	178	-.384	.702
	Teachers	12	4 (33.3%)	8 (67.7%)	0 (0%)			
Participation in group work	Students	168	66 (39.3%)	91 (54.2%)	11 (6.5%)	178	-.475	.352
	Teachers	12	2 (16.7%)	10 (83.3%)	0 (0%)			
Participation in pair work	Students	168	58 (34.5%)	86 (51.2%)	24 (14.3%)	178	.921	.156
	Teachers	12	2 (16.7%)	7 (58.3%)	3 (25%)			

Table 6 shows the majority of the teachers responded that the participation of students in five in one, group work and pair work cooperative learning are moderate. Which are 8 (67.7%), 10 (83.3%) and 7 (58.3%) respectively. Therefore the participation of students in five in one, group work and pair work cooperative learning are moderate.

When we come to student's response, as shown from the table, the majority of the respondents responded that the participation of students in five in one, group work and pair work cooperative learning are moderate. Which are, 90 (53.6%), 91 (54.2%) and 86 (51.2%) respectively. Therefore from the table we can conclude that the extent of the participation of students in five in one, group work and pair work is moderate.

When we come to the result of an independent t-test, there is no significance difference in the responses of teachers and students for five in one, group work and pair work cooperative learning.

The result of another research show that, Drackford (2012) different types of cooperative learning techniques increased students participation.

Since five in one, group work and pair work are types of cooperative learning they increased student's participation. Therefore because of the practice of five in one group work and pair work cooperative learning are moderate, the participation of student is moderate.

Information's gathered from observation checklist and interviews about the participation of students in cooperative learning are as follows, from interviews, although five in one, group work and pair work cooperative learning is not practiced effectively, when they are practiced their participation is not bad. Meaning they participated moderately. Similar result was obtained from class room observation. In the interview:

> *The students reported that small group discussion was one of cooperative learning method frequently used by their teachers through one or two of group members completed the group task while the other member desired their names to be listed on the assignment paper as if they were actively participated on the discussion.*

In this regard, Johnson, Johnson and Smith (1991) noted that cooperation is not assigning a report to a group of students where one or two students do all the work and the others put their name on the product. Thus, cooperation is much more than being physically near students, discussing materials with them, helping them or sharing materials among students although each is important cooperative learning.

In general based on the result of the tables, interview and class room observation made by the researcher it is possible to conclude that the participation of students in five in one, group work and pair work is moderate.

4.6 Teachers and Students attitude Towards Five in One, Group Work, Pair Work and Individual Work in Math Class.

Both the teachers and students have their own attitude or attitude towards five in one, group work, pair work and individual work. Because of individual difference they may not have the same perceptions, any way we will see soon.

What are the teachers and students attitude toward five in one, group work, pair work and individual work in math class?

Table 7 and 11 presents the mean (x) to assess the attitude of students and teachers .To this end, if the mean is above 3, it shows a tendency of positive attitude and if the mean score is below 3, it indicates the tendency negative attitude. Hence the ideal mean is 3.

4.6.1 Teachers attitudes toward five in one, group work, pair work and individual work in math class.

Teachers have their own perception or attitude towards five in one, group work, pair work and individual work.

What are the teacher's attitude toward five in one, group work, pair work and individual work in math class?

Table 7 presents the mean (x) to assess the attitude of teacher's .To this end, if the mean is above 3, it shows a tendency of positive attitude and if the mean score is below 3, it indicates the tendency negative attitude. Hence the ideal mean is 3.

Table 7: Attitudes of teachers towards the different teaching methods

No	Variables	N	M	SD
1.	I like to work one in five cooperative learning	12	4.5000	.67420
2.	I like to group work learning	12	4.4167	.90034
3.	I like to pair work learning	12	4.2500	.45227
4.	I like to Individual work learning	12	2.3333	1.23091
5.	It is wastage of time working in five in one learning	12	4.2500	.86603
6.	It is wastage of time in pair work learning	12	4.0833	1.08362
7	It is wastage of time in group work learning	12	3.7500	1.21543
8.	It is wastage of time in individual work learning	12	3.6667	1.07309
	Grand mean		3.9063	

As shown in table 7, the mean perception rate of teachers towards item number 1, 2, 3, 5, and 6 are 4.500, 4.4167, 4.2500, 4.2500 and 4.0833 respectively. Since the mean rates are greater than four, the teachers have a strong positive attitude towards the majority of items. Whereas, the mean perception rate of teachers towards item number 7 and 8 are 3.7500 and 3.6667 respectively. These shows the teachers have moderate positive attitude towards these two items. In addition to these, the mean perception rate of teachers towards the item number 4 is 2.3333. Since the mean is less than three, the teachers have a negative attitude to these three items.

Teachers` attitudes of cooperative learning by descriptive statistics the average means values (3.9063), suggested that the average values give positive attitude towards cooperative learning in mathematics class.

Therefore, we can conclude that the teachers have a positive attitude towards these cooperative learning whereas, they have a negative attitude towards to individual learning. This finding goes parallel with Johnson and Johnson (1989), who reported group based cooperative learning, develops positive teachers and student's attitudes. They argue that teachers learn about student's behaviors, since students have many opportunities to explain their actions and thoughts to the teacher. Accordingly, the lines of communication are opened and encouraged. They concluded that the empowerment created by the many interpersonal interaction leads a very positive attitude by all participants involved.

Table 8: descriptive statistics of teacher's attitude on five in one cooperative learning, group work, pair work and individual learning

Variables	N	M	SD
five in one cooperative learning (Item 1,5,9,13)	12	4.3542	.59790
group work Learning (Item 2,6,10,14)	12	4.2292	.63477
pair work Learning (Item 3,7,11,15)	12	4.1250	.56909
individual Learning (Item 4,8,12,16)	12	2.5833	. 92524

Since the means of five in one, group work, pair work and individual work are 4.3542, 4.2292, 4.1250 and 2.5833, the perception of teachers towards five in one is good, next to five in one group work then pair work whereas the teachers have not good perceptions towards to individual work.

According to the information gathered from interview, even though there are factors that affect the implementation of five in one, group work and pair work activity teachers still have a positive attitude towards five in one group work and pair work. But the attitude of teachers towards individual work is not positive.

In conclusion, based on the results of this study, the attitudes of teachers towards to five in one, group work and pair work is positive whereas the attitudes of teachers towards individual work is not positive.

4.6.2 Student attitude toward Five in One, Group Work, Pair Work and Individual Work in Math Class

Students have their own attitude towards five in one, group work, pair work and individual work.

What are the student's attitude toward five in one, group work, pair work and individual work in math class?

Table 9 presents the mean (x) to assess the attitude of student's .To this end, if the mean is above 3, it shows a tendency of positive attitude and if the mean score is below 3, it indicates the tendency negative attitude. Hence the ideal mean is 3.

Table 9: Attitudes of students

No	Variables	N	M	SD
1.	I like to work one in five cooperative learning	168	4.7262	.53279
2.	I like to group work learning	168	4.3571	.78371
3.	I like to pair work learning	168	4.1071	.97904
4.	I like to Individual work learning	168	2.3810	1.33945
5.	I understand the math concept when I work in one in five learning	168	4.1190	1.02548
6.	I understand the math concept when I work in group learning	168	4.1310	.89282
7.	I understand the math concept when I work in pair learning	168	3.7798	1.15518
8.	I understand the math concept when I work individually.	168	2.3631	1.26881
9.	I can get a good result when I work in five in one learning	168	4.5595	.63531
10	I can get a good result when I work in group learning	168	4.1845	.84513
11.	I can get a good result when I work in pair learning	168	3.8631	1.00255
12.	I can get a good result when I work in Individual learning	168	2.4881	1.34471
13.	It is wastage of time working in five in one learning	168	4.4643	1.04905
14.	It is wastage of time in pair work learning	168	4.5357	.89505
15.	It is wastage of time in group work learning	168	4.4048	1.09017
16.	It is wastage of time in individual work learning	168	3.6429	1.46122
17.	I am frustrated when I work in five in one learning	168	4.2976	1.13496
18.	I am frustrated when I work in group learning	168	4.2917	1.11255
19	I am frustrated when I work in pair learning	168	4.3869	1.03198
20.	I am frustrated when I work in individual learning	168	4.0417	1.31484
	Grand mean		3.9562	

As shown in table 9 the mean perception rate of students towards item number 1, 2, 3, 5, 6, 9, 10, 13, 14, 15, 17, 18, 19 and 20 are greater than four, the students have a strong positive attitude towards the majority of items. Since the mean rates whereas, the mean perception rate of students towards item number 7, 11 and 16 are 3.7798, 3.8631 and 3.6429 respectively. These shows the students have moderate positive attitude towards these two items. In addition to these, the mean perception rate of students towards the

item number 4, 8 and 12 are 2.3810, 2.3631 and 2.4881. Since the means are less than three, the students have a negative attitude towards these three items.

Teachers` attitudes cooperative learning by descriptive statistics the average means values (3.9562), suggested that the average values give positive attitude towards cooperative learning in mathematics class.

Therefore, we can conclude that the students have a positive attitude towards five in one, group work and pair work learning Whereas, they have a negative attitude towards to individual learning.

Suhendan.ER (2012) indicated that the majorities of the respondents, (66,9%) of the students are at the side of cooperative learning , whereas 33,1% of them believed that if they work alone they would have better results and they thought working alone was more enjoyable.

Table 10: Descriptive and F-test of students' attitude on five in one cooperative learning ,group work, pair work and individual learning

Variables	N	M	SD	F	P
five in one cooperative learning Item:1,5,9,13,17)	168	4.4333	.49702	.225	.878
group work learning (Item: 2,6,10,14,18)	168	4.3000	.49476		
pair work learning (Item: 3,7,11,15,19)	168	4.1083	.65947		
Individual work learning (Item: 4,8.12,16,20)	168	2.9833	.79412		
Grand mean		3.9562	0.61134		

Since the means of five in one, group work, pair work and individual work are 4.4333, 4.3000, 4.1083 and 2.9833 respectively, the perception of students towards five in one is good, next to five in one group work then pair work whereas the students have not good perceptions towards to individual work.

Again in same table 10, the attitude of students towards five in one, group work, pair work and individual work is not significantly different, since the p value is greater than 0.05.

In sum, the findings of the study are consistent with the result of studies indicated above and based on the result of the table; students have a positive attitude towards five in one group work and pair work. But the attitude of students towards individual work is not positive.

The Students 'attitude toward Five in One, Group Work, Pair Work and Individual Work in Math Class With respect to Grade

What is the students' perception toward five in one, group work, pair work and individual work in math class with respect to grade?

In order to assess the attitude of students' toward five in one, group work, pair work and individual work in math class with respect to age .the researcher used both descriptive and an independent t-test

Table11: descriptive and an independent t-test result on perceptions of students with respect to Grade

Variables	Grade	N	M	SD	SE	df	t	p
Attitudes toward Five in one cooperative learning						166	0.062	0.951
	9th	84	4.4357	0.55983	0.06108			
	10th	84	4.4310	0.42850	0.04675			
	Total	168	4.4333	0.49416	0.05391			
Attitudes toward group work learning						166	0.560	0.576
	9th	84	4.3214	0.48696	0.05313			
	10th	84	4.2786	0.50446	0.05504			
	Total	168	4.3000	0.49571	0.05408			
Attitudes toward Pair work learning						166	0.537	0.592
	9th	84	4.1357	0.60213	0.6570			
	10th	84	4.0810	0.71481	0.07799			
	Total	168	4.1083	0.65847	0.36749			
Attitudes toward Individual work learning						166	0.854	0.394
	9th	84	3.0357	0.87765	0.09576			
	10th	84	2.9310	0.70214	0.07661			
	Total	168	2.9833	0.78989	0.08618			

The means of five in one, group work, pair work and individual work are 4.4333, 4.3000, 4.1083 and 2.9833 respectively; the perception of students' towards five in one is good, next to five in one group work then pair work. Whereas the perceptions of students towards to individual work is almost neutral.

Again in same table 11, the mean of grade 9 (3.98) and grade 10 (3.93) are much closed. And the attitude of students towards five in one, group work, pair work and individual work is not significantly affected by grades of students, since the p value in all cases greater than 0.05.

The Students' attitudes toward Five in One, Group Work, Pair Work and Individual Work in Math Class with Respect to Sex

What is the students' attitude toward five in one, group work, pair work and individual work in math class with respect to sex?

In order to assess the attitudes of students' toward five in one, group work, pair work and individual work in math class with respect to sex .the researcher used both descriptive and an independent t-test were used.

Table12: descriptive and an independent t-test result on attitudes of students with respect to sex**.**

Variables	sex	N	M	SD	SE	df	t	p
Attitudes toward Five in one						166	-.519	.604
	male	103	4.4175	0.46282	0.04560			
	female	65	4.4585	0.54969	0.06818			
	Total	168	4.4333	0.49702	0.03835			
Attitudes toward Group work						166	.543	.588
	male	103	4.3165	0.46655	0.04597			
	Female	65	4.2738	0.53918	0.06688			
	Total	168	4.3000	0.49476	0.03817			
Attitudes toward Pair work						166	-.902	.368
	male	103	4.0718	0.59399	0.05853			
	female	65	4.1662	0.75297	0.09339			
	Total	168	4.1083	0 .65947	0 .05088			
Attitudes toward Individual work						166	.541	.589
	male	103	3.0097	0.77631	0.07649			
	female	65	2.9415	0.82593	0.10244			
	Total	168	2.9833	0.79412	0.06127			

The table shows the attitude of students towards five in one, group work, pair work and individual work with respect to sex, since the means of five in one, group work, pair work and individual work are 4.4333, 4.3000, 4.1083 and 2.9833 respectively, the perception of students' towards five in one is good, next to five in one group work then pair work. Whereas the students have not good perceptions towards to individual work.

Again in same table 12, the mean of male (3.9539) and female (3.9600) are much closed. And the attitude of students towards five in one, group work, pair work and individual work is not significantly affected by schools, since the p value in all cases greater than 0.05.

The Students' attitudes toward Five in One, Group Work, Pair Work and Individual Work in Math Class with Respect to School

What is the students' attitude toward five in one, group work, pair work and individual work in math class with respect to school?

In order to assess the attitudes of students' toward five in one, group work, pair work and individual work in math class with respect to school .the researcher used both descriptive and one-way-ANOVAs.

Table13: descriptive and one-way-ANOVAs result on attitudes of students with respect to school

Variables	Schools	N	M	SD	SE	F	P
Attitudes towards five in one						0.013	.987
	Emdiber	112	4.4375	.48882	.04619		
	Gubre	28	4.4214	.49692	.09391		
	Yejoka	28	4.4286	.54627	.10324		
	Total	168	4.4333	.49702	.03835		
Attitudes towards group work						0.549	.579
	Emdiber	112	4.3107	.48162	.04551		
	Gubre	28	4.3429	.50730	.09587		
	Yejoka	28	4.2143	.54141	.10232		
	Total	168	4.3000	.49476	.03817		
Attitudes towards pair work						0.208	.812
	Emdiber	112	4.1196	.66385	.06273		
	Gubre	28	4.1357	.64877	.12261		
	Yejoka	28	4.0357	.67121	.12685		
	Total	168	4.1083	.65947	.05088		
Attitudes towards individual work						9.014	.000
	Emdiber	112	3.1357	.78784	.07444		
	Gubre	28	2.4643	.77947	.14731		
	Yejoka	28	2.8929	.59748	.11291		
	Total	168	2.9833	.79412	.06127		

The means of five in one, group work, pair work and individual work are 4.4333, 4.3000, 4.1083 and 2.9833 respectively, the perception of students towards five in one is good, next to five in one group work then pair work whereas the students have not good perceptions towards to individual work.

Again in same table 13,even if the mean of Emdiber (4.008), the mean of Gubre (3.841) and the mean of Yejoka (3.893) are not the same the attitude of students towards five in one, group work and pair work and is not significantly affected by sexes of students, since the p value in all cases greater than 0.05. Whereas the attitude of students towards individual work is significantly affected by sexes of students, since the p value is less than 0.05.

Table14: Turkey post-hoc test result on attitudes of students towards individual learning with respect to School

I) name of school	(J) name of school	Mean Difference (I-J)	Std. Error	P
Emdiber	Gubre	.67143*	.16027	.000
	Yejoka	.24286	.16027	.286
Gubre	Emdiber	-.67143*	.16027	.000
	Yejoka	-.42857	.20273	.090
Yejoka	Emdiber	-.24286	.16027	.286
	Gubre	.42857	.20273	.090

There was a statistically significant difference between groups as determined by one way ANOVAs (p=0.00).Turkey post-hoc test revealed that the attitude of students towards individual work statically significant in Gubre and Emdiber ((p=0.00) whereas there were no statically significant difference between the Yejoka and Gubre (p=0.090).

4.7 Teachers and Students' Challenges during the Implementation of Five in One, Group Work and Pair Work Cooperative Learning

There are different challenges during the implementations of five in one, group work and pair work cooperative learning. Since the extents of the challenges are not the same, we will see the order of the challenges.

What are teachers and students challenge during the implementation of five in one, group work and pair work cooperative learning?

To analyze the extent of the challenges during the implementation of five in one, pair work and group work cooperative learning methods in Cheha District general and secondary schools, mean rank was used.

Tab1e 15: Challenges of teachers in implementing five in one, group work and pair work (teachers' response)

No	Variables	Rank 1	2	3	4	5	6	7	8	9	10	Total	Mean rank	
1	Interest of students	2	0	4	1	2	0	0	0	2	1	12	4.67	3
2	Interest of teachers	2	1	1	3	2	2	0	0	0	3	12	5.08	5
3	Time shortage	2	3	1	1	0	0	1	1	3	0	12	4.75	4
4	Shortage of Teaching Materials	0	1	1	1	0	5	1	0	3	0	12	6.08	8
5	Achievement of students	0	0	0	0	0	0	2	2	2	2	12	7.33	9
6	Large class size	5	2	0	0	4	1	2	0	0	1	12	3.67	1
7	Participation of students	0	0	3	1	1	1	2	3	0	0	12	5.58	6
8	Commitment of teachers	1	4	0	1	2	0	1	3	0	0	12	4.25	2
9	Arrangement of chairs	0	1	1	3	0	1	3	1	1	1	12	5.92	7
10	Preparation of text book	0	0	1	1	1	2	0	2	1	4	12	7.42	10

As shown from the table, the challenges from highest to lowest are listed below. Large class size (mean rank=3.67, rank =1), commitment of teachers (mean rank =4.25, rank =2) the interest of students (mean rank =4.67, rank = 3), time shortage (mean rank =4.75, rank =4) Interest of teachers (mean rank =5.08 , rank =5) , participation of student(mean rank =5.58, rank=6), , arrangement of chair (mean rank =5.92, rank =7), shortage of teaching materials (mean rank =6.08, rank = 8), achievement of student(mean rank =7.33, rank =9), and preparation of text book (mean rank =7.42, rank =10).This means the teacher responded that the order of challenges from the highest to the least during the implementation of five in one, group work and pair work are large class size,

commitment of teachers, interest of students, time shortage, interest of teachers, participation of student ,arrangement of chair, shortage of teaching materials, achievement of student and preparation of text book.

The next step is to see the teachers' and students' challenges during the implementation of five in one, group work and pair work from the students' response

Tab1e 16 : Challenges of students responses in implementing five in one, group work and pair work(Student response)

	Rank											
Variable	1	2	3	4	5	6	7	8	9	10	total	Mean rank	
1. Interest of students	45	35	35	13	12	3	12	1	2	10	168	3.3333	1
1. Interest of teachers	29	29	25	24	7	20	19	5	6	4	168	4.0476	2
2. Time shortage	26	21	16	16	14	21	12	17	14	11	168	4.9524	4
3. ShortageofTeaching Materials	10	11	16	9	23	32	16	22	16	13	168	5.8631	6
5.Achievement of students	5	14	8	14	14	18	28	19	16	32	168	6.5655	9
6. Large class size	12	21	27	23	20	17	17	13	13	5	168	4.8750	3
7.Participation of students	13	13	12	18	19	8	12	23	35	15	168	6.0893	7
8.Commitment of teachers	10	14	15	25	17	16	16	17	20	18	168	5.7857	5
9. Arrangement of chairs	7	9	9	16	21	27	13	26	20	20	168	6.3214	8
10.Preparationof text book	11	1	5	11	21	6	23	25	26	39	168	7.1310	10

As shown from the table, the challenges from highest to lowest are listed below. Interest of students (mean rank=3.67, rank =1), Interest of teachers (mean rank =4.0476 rank=2), Large class size (mean rank =4.8750, rank = 3), time shortage (mean rank =4.96, rank =4), Commitment of teachers (mean rank =5.7857, rank =5) , Shortage of Teaching Materials (mean rank =5.8631, rank=6), Participation of students (mean rank =6.0893, rank =7), Arrangement of chairs (mean rank =6.3214, rank = 8), achievement of student (mean rank =6.5655, rank =9), and preparation of text book (mean rank =7.1310, rank =10).This means the students responded that the order of challenges from the

highest to the least during the implementation of five in one, group work and pair work are Interest of students, Interest of teachers, Large class size, time shortage, Commitment of teachers, Shortage of Teaching Materials, Participation of students, Arrangement of chairs, achievement of student and preparation of text book.

As the findings of different studies Indicated that Teachers who are unfamiliar with cooperative learning may not initially accept this style of learning because they may feel they will lose control of their class room, or they may be unsure of the techniques used for possibly even think that it is too time consuming. Hilary.R (2006)

Teachers may have a difficult time giving up their control of the content that is being covered (Pantiz, 1996).they are accustomed to presenting the curriculum to the student and are unable to give students the freedom to learn on their own. Students learning only one part of the curriculum in their group may take the teacher anxious about what their students know.

There are also varying opinions about the optimal number of people for small group formation. The consensus seems to agree that no more than 4 people in a group produces higher achievement (Slavin, 1987).fixed seating and large class sizes may take group arrangement difficult though. Still, even if the room is easily arranged in to small groups, the teachers may have a difficult time accessing all of the numerous small groups.

Most students are not accustomed to group work, especially in high school class rooms. Students will have to be taught to work effectively in group setting .resolving group conflict can be a major challenge of the teacher. And again Hilary.R (2006) put that, preparation of text book is also another challenge during the implementation of cooperative learning strategies

Information is gathered on interviews and observation about the challenges during the implementation of five in one, group work and pair work from teachers, students and directors, the majorities of the respondents identified the following challenges,

which are large number of students, commitment of teachers, interest of students and teachers, shortage of time and preparation of text books. These above challenges are the highest challenges during implementation of the above cooperative learning, which are identified by all of the above stake holders.

In conclusion, the finding of the study is conformity with that of other studies mentioned under this issue. Even if teachers and students ordered differently, they put the same highest challenges. The teachers ordered as, large class size, commitment of teachers, interest of students, time shortage, interest of teachers, participation of student ,arrangement of chair, shortage of teaching materials, achievement of student and preparation of text book. Whereas the students ordered as, Interest of students, Interest of teachers, large class size, time shortage, Commitment of teachers, Shortage of Teaching Materials, Participation of students, arrangement of chairs, achievement of student and preparation of text book. And both teachers and students put the same highest challenges, these are large class size, commitment of teachers, interest of students, time shortage and Interest of teachers.

Chapter Five Summary, Conclusion and Recommendation

5.1 Summary

The main purpose of this study was to assess the implementation of five in one, group work and pair work in Cheha District general and secondary schools. In this study, quantitative method was applied to collect data from teachers and students through questionnaires. Also, to substantiate the data gathered through questionnaires, interview and observation were made. Hence, based on the review of literature and analysis of the data, the following findings were obtained.

- The practice of five in one, group work and pair work is moderate.
- Students' preference from five in one, group work, pair work and individual work is five in one whereas the preferences of teachers are group work.
- The participation of students in five in one, group work and pair work is moderate
- The Attitude of teachers and students towards five in one, group work and pair work is encouraging. Whereas towards individual learning is not encouraging.
- According to teachers response the order of challenges in the implementation of five in one, group work and pair work from highest to lowest was large class size, commitment of teachers, interest of students, time shortage, interest of teachers, participation of student, arrangement of chairs, shortage of teaching materials, achievement of student and preparation of text books
- Whereas, according to the students the order of challenges from highest to lowest was Interest of students, Interest of teachers, large class size, time shortage, Commitment of teachers, Shortage of teaching Materials, Participation of students, arrangement of chairs, achievement of student and preparation of text books.
- The top five challenges were shared by both teachers and students, these are: large class size, commitment of teachers, interest of students, time shortage and interest of teachers.

5.2. Conclusion

Based on the above major findings for the study, the following conclusions are made.

- five in one cooperative learning, group work, and pair work learning strategy in cheha district general secondary schools are implemented moderately.

- The study concluded that the student's grade and sex did not have significance effect on attitudes of five in one, group work, pair work and individual learning strategy. However student's schools significantly affected on attitudes of individual learning.

5.3. Recommendation

1. In order to apply five in one, group work and pair work cooperative learning methods properly and effectively, teachers need to get continuous intensive training on how to use these cooperative learning and their advantages in teaching and learning of math.

   Even if the teachers know the general principles cooperative learning, they may not have knowledge about a specific way of implementing five in one, group work and pair work cooperative learning. Thus based on need assessment, the schools need to arrange in service training program in the form of workshop, seminars, or experience sharing to refresh make teachers use five in one, group work of pair work cooperative learning methods in their respective departments.

2. In order to implement five in one, group work and pair work cooperative learning effectively, the willingness and positive feeling of teachers and students need to be increase.

   Though five in one, group work and pair work learning has not been implemented properly and effectively practiced in the schools, both teachers and students have a positive attitude towards five in one, group work and pair work cooperative learning. Therefore in order to cultivate this fertile ground to maximum level, the school administrators fulfilled all the conditions necessary for effective use of the cooperative learning activates.

3. In order to implement five in one, Group work and pair work cooperative learning meaningfully, in the schools the challenges /obstacles should be alleviated. The research findings shows there are challenges during the implementation of five in one, group work and pair work cooperative learning. Therefore, both the teachers and students to have positive attitude towards them and to practice these cooperative

learning, the concerned bodies, the school principals, the District Beauro & the government alleviate the problems during the implementation of them.

4. In order to increase the participation of students the schools should alleviate the challenges during the implementation of five in one, group work and pair work cooperative learning and the teachers utilized different activities in the class room to excite cooperative learning climate.

5. In order to go with interest of students, the teachers use the preference of students.

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Appendix-A

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF MATHEMATICS EDUCATION

Students' Questionnaire

The purpose of this questionnaire is to collect data on the level of practice, challenges & opportunities in the implementation of group Interaction (five in one cooperative learning , group work & pair work) teaching & learning strategy In Cheha wereda secondary schools. Thus your frank & genuine response to the items in the questionnaire helps to meet the objectives of the study. Be sure that the information you provide will be kept confidential & used only for the academic purpose.

Thank you very much In advance!

I/ **General instruction .Please take a few minutes to answer all question, please use pen to write (mark) your answer.**

II/ General Information /personal Information.

1. Sex---------- 2.Age----------5. Name of school----------
3. Grade---------- 4. Section----------6.Woreda----------

III/ Instructional Activities

Direction 1: Please select the appropriate answer based on your experience & encircle it for each of the following.

1. How do you evaluate the practice of five in one cooperative learning in mathematics instruction? A/ very high B/ high C/ moderate D/ low
2. If your answer to question number 1 is low, please list what the reason is?

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3. How do you evaluate the practice of group work learning in mathematics instruction? A/ very high B/ high C/ moderate D/ low
4. If your answer to question number 3 is low, please list what the reason is?

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5 How do you evaluate the practice of pair work learning in math instruction?
A/ very high B/ high C/ moderate D/ low

6. If your answer to question number 5 is Low, please list what the reason is?

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7. To what extent the student actively participate in five in one cooperative learning Activities?

A/ Great extent B/ Moderate C/ less extent

8. To what extent the student actively participate in group work Activity?

A/ Great extent B/ Moderate extent C/ less extent

9. To what extent the student actively participate in pair work learning?

A/ Great extent B/ Moderate extent C/ less extent

10. To what extent do you prefer five in one cooperative learning?

A/ Great extent B/ Moderate extent C/ less extent

11. To what extent do you prefer pair work learning?
A/ Great extent B/ Moderate extent C/ less extent
12. To what extent do you prefer group work learning?
A/ Great extent B/ Moderate extent C/ less extent
13. To what extent do you prefer individual learning?
A/ Great extent B/ Moderate extent C/ less extent
14. During Group work organization, which grouping techniques do the teacher mostly use? A/ Heterogeneous grouping B/ Achievement grouping C/ interest grouping D/ sex grouping

IV/ Instructional strategies

Direction2: For the following instructional strategy utilization in teaching learning process, please indicate the effectiveness of your teachers by marking " X ". Use the scales: 5=very effective, 4=effective, 3 = not sure, 2=not effective, 1=not very effective.

No	To what extent Teachers utilize the following?	5	4	3	2	1
1.	Grouping students in the class room to excite cooperative learning climate					
2.	Arranging class room seats to smart participatory learning.					
3.	Arranging materials & resources for task base learning.					
4..	Designing tasks that actively engage students in valid learning activities					
5..	High achievers will be the group leader in five in one cooperative learning					

V/ Challenges to Implement five in one, group work & pair work activity.

Direction 3. To what extent the following affects the implementation of five in one, group work & pair work activity.

No		Great extent	Moderate extent	Less extent	No impact
1.	Interest of students				
2.	Interest of teachers				
3.	Time shortage				
4.	Shortage of Teaching materials				
5.	Achievement of students				
6.	Participation of students				
7.	Large class size				
8.	Commitment of teachers				
9.	Arrangement of chairs				
10.	Preparation of exercise book				

Direction 3.2. Rate In order of challenges of implementing five in one, Group work & Pair work. (Rate from the highest challenge to the least challenge).

------1. Interest of students

------2. Interest of teachers

------3. Time shortage

------4. Shortage of teaching materials

------5. Achievement of students

------6. Large class size

-------7. Participation of students

-------8. Commitment of teachers

-------9. Arrangement of chairs

-------10. Preparation of text book

IIII / Students Attitude towards five in one cooperative learning, pair work, group work and individual learning Activity.

Direction4: For the following statement please indicate the extent to which you agree or disagree regarding five in one cooperative learning, group work& pair work learning by ticking "X" mark (use scales: 5=strongly agree ,4=agree, 3=undecided, 2=disagree , 1=strongly disagree.

No	To what extent do you agree	5	4	3	2	1
1.	I like to work one in five cooperative learning					
2.	I like to group work learning					
3.	I like to pair work learning					
4.	I like to Individual work learning					
5.	I understand the math concept when I work in one in five learning					
6.	I understand the math concept when I work in group learning					
7.	I understand the math concept when I work in pair learning					
8.	I understand the math concept when I work individually.					
9.	I can get a good result when I work in five in one learning					
10	I can get a good result when I work in group learning					
11.	I can get a good result when I work in pair learning					
12.	I can get a good result when I work in Individual learning					

13.	It is wastage of time working in five in one learning					
14.	It is wastage of time in pair work learning					
15.	It is wastage of time in group work learning					
16.	It is wastage of time in individual work learning					
17.	I am frustrated when I work in five in one learning					
18.	I am frustrated when I work in group learning					
19	I am frustrated when I work in pair learning					
20.	I am frustrated when I work in individual learning					

Appendix-A

አዲስአበባ ዩኒቨርሲቲ

በድህረ ምረቃ ትምህርት ፕሮግራም

የሂሳብ ዲፓርትመንት ትምህርት ክፍል

ክፍል አንድ፡በተማሪዎች የሚሞላ የጽሑፍ መጠይቅ

ይህ መጠይቅ በደቡብ ብሄር ብሄረሰቦችናህዝቦች ክልል በጉራጌ ዞን በቸሃ ወረዳ በሶስት ሁለተኛ ደረጃ ትምህረት ቤቶች በጋራ የመማርና የማስተማር ሂደት (በ አንድ ለአምስት አደረጃጀት፣ በገራ እና በጥንድ መማር) ምን እንደሚመስል ለማየት ስለተፈለገ እርሶ ውድ ጊዜዎን መስዋዓት በማድረግ መጠይቁን ሳይሰለቹ ስለሞሉሉኝ በቅድመያ አመሰግናለሁ፡፡

ሀ/ መግለጫ፡ 1. መልሶን ለማመልከት መልሱን ያለበት የምርጫ ፊደል ያክቡት፡፡

2. መልሶቻቸው በጽሁፍ እንዲሞሉ ለተጠየቁት ጥያቄዎች መልስዎን እንዲሞሉ በተሰጡት ክፍት ቦታዎች ላይ በአጭሩ ይጻፉ፡፡

ለ/ ጥቅል መጠይቅ

1. ጾታ-------- 3. የክፍል ደረጃ-------- 5. የትምህርት ቤቱ ስም----------
2. ዕድሜ----- 4. ሴክሽን---------- 6. ወረዳ----------
ሐ/ የመማር ማስተማር ሂደት በተመለከተ

ትዕዛዝ 1 ፡ መልስ ይሆናል የምትለውን/ የምትይውን አክብ/ቢ፡፡

1. በሂሳብ ክፍለ ትምህርት ጊዜ የአንድ ለአምስት አደረጃጀት የመማር ሁኔታ ትግበራ እንዴት ትገመግመዋለህ/ትገመግሚዋለሽ?
ሀ/ በጣም ከፍተኛ ነው ለ/ ከፍተኛ ነው ሐ/ መካከለኛ ነው መ/ ዝቅተኛ ነው
2. የመጀመርያው ጥያቄ መልስህ/ሽ ዝቅተኛ ከሆነ ምክንያቱን ዘርዝር/ሪ፡፡

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3. በሂሳብ ክፍለ ትምህርት ጊዜ በቡድን የመማር ሁኔታ ትግበራ እንዴት ትገመግመዋለህ/ትገመግሚዋለሽ?
ሀ/ በጣም ከፍተኛ ነው ለ/ ከፍተኛ ነው ሐ/ መካከለኛ ነው መ/ ዝቅተኛ ነው
4. የሶስተኛው ጥያቄ መልስህ/ሽ ዝቅተኛ ከሆነ ምክንያቱን ዘርዝር/ሪ፡፡

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5. በሂሳብ ክፍለ ትምህርት ጊዜ ጥንድ ሆኖ የመማር ሁኔታ ትግበራ እንዴት ትገመግመዋለህ/ ትገመግሚዋለሽ? ሀ/ በጣም ከፍተኛ ነው ለ/ ከፍተኛ ነው ሐ/ በመካከለኛ ነው መ/ ዝቅተኛ ነው
6. የአምስተኛው ጥያቄ መልስህ/ሽ ዝቅተኛ ከሆነ ምክንያቱን ዘርዝር/ሪ፡፡

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7. በአንድለአምስት አደረጃጀት የመማር ስልት ተሳትፎህ/ሽ እስከምን ደረጃ ነው?
   ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ
8. በቡድን የመማር ስልት ተሳትፎህ/ሽ እስከምን ደረጃ ነው ?
   ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ
9. ጥንድ ሆኖ በመማር ስልት ተሳትፎህ/ሽ እስከምን ደረጃ ነው ?
   ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ
10. ከሌሎች የመማር ስልቶች በ አንድ ለአምስት አደረጃጀት የመማር ስልት በምን ያህል ደረጃ ትመርጠዋለህ/ትመርጪዋለሽ? ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ
11. ከሌሎች የመማር ስልቶች በቡድን የመማር ስልት በምን ያህል ደረጃ ትመርጠዋለህ/ ትመርጪዋለሽ?

    ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ

12. ከሌሎች የመማር ስልቶች ጥንድ ሆኖ የመማር ስልት በምን ያህል ደረጃ ትመርጠዋለህ/ትመርጪዋለሽ?

    ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ

13. ከሌሎች የመማር ስልቶች ለብቻ የመማር ስልት በምን ያህል ደረጃ ትመርጠዋለህ/ትመርጪዋለሽ?

    ሀ/ በከፍተኛ ደረጃ ለ/ በመካከለኛ ደረጃ ሐ/ በአነስተኛ ደረጃ

14. መምህራን ተማሪዎችን በቡድን ሲያቀናጁ እንዴት ነው ሚያቀናጁት? ሀ/ ከተለያየ ቦታ የመጡና የተለያዩ ባህሪ ያላቸው በመቀላቀል ለ/ በውጤታቸው መሰረት ሐ/ በፍላጎታቸው መ/ በጾታቸው

መ/ የመማር ማስተማር ስነ ዘዴ በተመለከተ

ትዕዛዝ 2 ፡የሚከተሉትን የመማር ማስተማር ዘዴዎችአጠቃቀም በመማር ማስተማር ሂደቱ የመምህራን የመማር ማስተማር መሰካት በዚህ ምልክት X ግለጹ፡፡እነዚህን በመጠቀም፡5 = በጣም የተሳካ ፣ 4 = የተሳካ ፣ 3 = እርግጠኛ፣ አለመሆን 2 = ያልተሳካ ፣ 1 = በጣም ያልተሳካ

ተቁ	በምን ያህል ደረጃ መምህራን የሚከተሉትን ይተገብራሉ	5	4	3	2	1
1	በጋራ መማርን በሚያስችል መልኩ ተማሪዎችን ያቀናጃሉ					
2	ወንበሮችን ተማሪዎችን እንዲሳተፉ በሚያደርግ መልኩ ያስቀምጣሉ					
3	የትምህርት ቁሳቁሶች ለቡድን ስራ በሚመች መለኩ የስቀምጣሉ					
4	ተማሪዎች በተገቢው መማር ይችሉ ዘንድ እና በንቃት ይሳተፉ ዘንድ ጥያቄዎች ያዘጋጃሉ					
5	ቡድኑን የሚመሩ ልጆች ነበዝ የሚባሉ ተማሪዎች ናቸው					

ሰ/ በጋራ መማርን ተግዳሮት የሚሆኑትን በተመለከተ፡

ትዕዛዝ 3 ፡ የሚከተሉትን በ አንድ ለአምስት አደረጃጀት መማር ፣ በቡድን መማርና ጥንድ ሆኖ መማር በምን ያህል ደረጃ ተግዳሮትይሆናሉ?(እነዚህን በመጠቀም፡ 4=በከፍተኛ ደረጃ፣3 =በመካከለኛ ደረጃ፣2=በአነስተኛ ደረጃ፣1= ተጽኖ የለውም)

ተቁ		4	3	2	1
1	የተማሪዎች ፍላጎት				
2	የመምህራን ፍላጎት				
3	የጊዜ እጥረት				
4	የማስተማርያ ቁሳቁስ እጥረት				
5	የተማርያዎች የስራ ውጤት				
6	የተማሪዎች ተሳትፎ				
7	የተማሪ ብዛት				
8	የመምህራን ቁርጠኝነት				
9	የወንበር አቀማመጥ				
10	የመማርያ መጽሐፍ አዘገጃጀት				

ትዕዛዝ3.2፡ በአንድ ለአምስት መማር ፣በጋራ መማርና ጥንድ ሆኖ መማር ተግባራዊ ሲደረግ ተግዳሮት ከመሆን አካያ ከትልቅ ወደ ትንሽ አስቀምጥ/ ጪ፡፡

------1. የተማሪዎች ፍላጎት

------2. የመምህራን ፍላጎት

------3. የጊዜ እጥረት

-----4. የማስተማርያ ቁሳቁስ እጥረት

-----5. የተማርያዎች ውጤት መሳካት

-----6. የተማሪዎች ተሳትፎ

-----7. የተማሪ ብዛት

-----8. የመምህራን ቁርጠኝነት

------9. የወንበር አቀማመጥ

-----10. የመማርያ መጽሐፍ አዘገጃጀት

ረ/ በአንድ ለአምስት አደረጃጀት መማር ፣በቡድን መማር እና ጥንድ ሆኖ መማር ለይ የተማሪዎች አመለካከት በተመለከተ፡

ትዕዛዝ4፡ በአንድ ለአምስት አደረጃጀት መማር ፣በቡድን መማርና ጥንድ ሆኖ መማር የሚከተሉት አረፍተነገሮች ለይ ምን ያህል እንደሚስማሙና እንደማይስማሙ የ X ምልክት ያድርጉ፡፡(እነዚህ ተጠቀሙ፡5=በጣም አሰማማለሁ ፣4=እስማመለሁ፣ 3=መወሰን አይቻልም 2=አልስማም፣ 1=በጣም አልስማም

ተቁ	በምን ያህል ደረጃ ይስማማሉ	5	4	3	2	1
1	በአንድ ለአምስት አደረጃጀት መማር እወዳለሁ					
2	በቡድን መማር እወዳለሁ					
3	ጥንድ ሆኖ መማር እወዳለሁ					
4	ለብቻ መማር እወዳለሁ					
5	በአንድ ለአምስት አደረጃጀት ስማር የሒሳብ ትምህርት ይገባኛል					
6	በቡድን ስማር የ;ሒሳብ ትምህርት ይገባኛል					
7	ጥንድ ሆኜ ስማር የሒሳብ ትምህርት					

	ይገባኛል					
8	ለብቻ ሆኜ ስማር የሒሳብ ትምህርት ይገባኛል					
9	በአንድ ለአምስት አደረጃጀት ስማር ጥሩ ውጤት አመጣለሁ					
10	በቡድን ስማር ጥሩ ውጤት አመጣለሁ					
11	ጥንድ ሆኜ ስማር ጥሩ ውጤት አመጣለሁ					
12	ለብቻ ስማር ጥሩ ውጤት አመጣለሁ					
13	በአንድ ለአምስት አደረጃጀት መማር ጊዜን ማባከን ነው					
14	በቡድን መማር ጊዜን ማባከን ነው					
15	ጥንድ ሆኖ መማር ጊዜን ማባከን ነው					
16	ለብቻ መማር ጊዜን ማባከን ነው					
17	በአንድ ለአምስት አደረጃጀት ስማር እፈራለሁ					
18	በቡድን ስማር እፈራለሁ					
19	ጥንድ ሆኜ ስማር እፈራለሁ					
20	ለብቻዬ ስማር እፈራለሁ					

Appendix-:B

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF MATHEMATICS EDUCATION

Teachers Questionnaires'

The purpose of this questionnaire is to collect data on the level of practice, challenges & opportunities. In the implementation of group Interaction (five in one cooperative learning ,group work & pair work) teaching & learning strategy In cheha wereda secondary schools. Thus your frank & sincere response to the Items In the questionnaire helps to meet the objectives of the study . be sure that the information you provide will be kept confidential & used only for the academic purpose.

Thank you very much In advance!

I/ General instruction .Please take a few minutes to answer all question, please use pen to write (mark) your answer.

I I/ General information / personal information

1. Sex----------
2. Age----------
3. Grade level you Teach ----------
4. Teaching load per week----------
5. A maximum number of students----------
6. Qualification ----------
7. Years of experience in teaching----------

III/ Instructional Activities

Direction 1: Please select the appropriate answer based on your experience & encircle It for each of the following.

1. How do evaluate the practice of five in one cooperative learning in math Instruction?
   a/ very high B/ high C/ moderate D/ low
2. If your answer to question number1 is Low, will you list what the reason is?

---

3. How do evaluate the practice of group work learning in math Instruction?
   a/ very high B/ high C/ moderate D/ low

4. If your answer to question number 2 is Low, will you list what the reason is?
   ---

5 . How do evaluate the practice of pair work learning in math Instruction?
a/ very high B/ high C/ moderate D/ low

6 If your answer to the question number 3 is Low, will you list what the reason is?

---

7. To what extent actively participate in five in one cooperative learning Activities?
A/ Great extent B/ Moderate extent C/ less extent

8. To what extent actively participate in group work Activity?
A/ Great extent B/ Moderate extent C/ less extent

9. To what extent actively participate in pair work learning?
A/ Great extent B/ Moderate extent C/ less extent

10. To what extent do you prefer one in five learning?
A/ Great extent B/ Moderate extent C/ less extent

11. To what extent do you prefer pair work learning?
   A/ Great extent B/ Moderate extent C/ less extent
12. To what extent do you prefer group work Learning?
   A/ Great extent B/ Moderate extent C/ less extent
13. To what extent do you prefer Individual work Learning?
   A/ Great extent B/ Moderate extent C/ less extent
14. During Group work organization, which grouping techniques do the teacher mostly use? A/ Heterogeneous grouping B/ Achievement grouping
   C/ Interest grouping D/ sex grouping

Iv/ Instructional strategies

Direction2: For the following instructional strategy utilization in teaching learning process, please indicate the effectiveness of your teachers by marking " X ". Use the scales: 5=very effective, 4=effective, 3 = not sure, 2=not effective, 1=not very effective.

No	To what extent Teachers utilize the following?	5	4	3	2	1
1..	Grouping students in class –room to exit cooperative learning climate					
2.	Arranging class –room seats to smart participatory learning.					
3.	Arranging materials & resources for task base learning.					
4.	Designing tasks that actively engage students in valid learning activities					
5.	High achievers will be the group leader in five in one cooperative learning					

V/ Challenges to Implement five in one, group work & pair work activity.

Direction 3. To what extent the following affects the implementation of five in one ,group work & pair work activity.

No		Great extent	Moderate extent	Less extent	No impact
1.	Interest of students				
2.	Interest of teachers				
3.	Time shortage				
4.	Shortage of Teaching materials				
5.	Achievement of students				
6.	Participation of students				
7.	Large class size				
8.	Commitment of teachers				
9.	Arrangement of chairs				
10.	Preparation of exercise book				

Direction 3.2. Rate In order of challenges of implementing five in one, Group work & Pair work. (Rate from the highest challenge to the least challenge).

------1. Interest of students

------2. Interest of teachers

------3. Time shortage

------4. Shortage of Teaching materials

------5. Achievement of students

------6. Large class size

-------7. Participation of students

-------8. Commitment of teachers

-------9. Arrangement of chairs

-------10. Preparation of exercise book

IIII / Teachers Attitude towards five in one cooperative learning, pair work, group work & individual learning Activity.

Direction4: For the following statement please indicate the extent to which you agree or disagree regarding five in one cooperative learning, group work& pair work learning by ticking "X" mark (use scales: 5=strongly agree ,4=agree, 3=undecided, 2=disagree , 1=strongly disagree.

No	To what extent do you agree	5	4	3	2	1
1.	I like to work one in five cooperative learning					
2.	I like to group work learning					
3.	I like to pair work learning					
4.	I like to Individual work learning					
5.	The Students understand the math concept when they work in one in five learning					
6.	The students understand the math concept when they work in group learning					
7.	The students understand the math concept when they work in pair learning					
8.	The students understand the math concept when they work individually.					
9.	The students can get a good result when they work in five in one learning					
10	The students can get a good result when they work in group learning					
11.	The students can get a good result when they work in pair learning					
12.	The students can get a good result when they work in Individual learning					

13.	It is wastage of time working in five in one learning					
14.	It is wastage of time in pair work learning					
15.	It is wastage of time in group work learning					
16.	It is wastage of time in individual work learning					

Appendix- C

Class room observation checklist for five in one, group work and pair Work cooperative learning

I/ General information

1. Subject being observed----------
2. Number of students in the class-------male-----female-----
3. Sitting arrangement----------

II/ Details in class room instruction

Instruction: Tick y(yes),if the appropriate activity is observed or demonstrated or tick N(no)if it is not observed R for remark.

Is the class room: Suitable in terms of seating?

II. **The instructional process**:

1. Does the teachers:

a. Arrange the class in five in one groups?

b. Arrange the class in groups?

c. Arrange the class in pairs?

d. practiced five in one cooperative learning?

e. Encourage all students in the group to contribute, to talk to each other?

f. Grouping students in the class room to excite cooperative learning climate?

g. Arranging class room seats to smart participatory learning?

h. Arranging materials & resources for task base learning?

i. Designing tasks that actively engage students in valid learning activities?

j. High achievers will be the group leader in five in one cooperative learning?

2. Does the student actively participate in five in one cooperative learning task?

3. Is there any challenge during the implementation of five in one, pair work& Group work learning in the actual class?

Appendix-D

Teachers Interview for five in one, group work and pair

Work cooperative learning activity

I/ General information

Sex--------- Age-------Qualification----------Year of experience----------

II/ Main data information

1. How is your interaction & relationship with your students in teaching learning of math?
2. How is the activity and participation of the students in five in one cooperative learning?
3. How often five in one cooperative learning practiced?
4. Why do/ do not you like to practice cooperative learning?
5. What do you think are the advantage of five in one, group work and pair work cooperative learning?
6. How do you see your attitude on five in one, group work and pair work cooperative learning?
7. What are the major factors that inhibit the implementation of five in one, pair work& Group work cooperative learning?
8. What techniques of cooperative learning are widely employed in your teaching?
9. What do you recommend for future consideration?
10. What do you prefer from five in one ,group work, pair work and individual work?

Appendix-E

Students Interview about five in one, group work and pair

Work cooperative learning activity in the class

I/ General information

Sex--------- Age-------Grade----------

II/ Main data information

1. How are the activity and your participation in five in one pair cooperative learning?
2. How are the activity and your participation in group work cooperative learning?
3. How are the activity and your participation in pair cooperative learning?
4. How often five in one cooperative learning practiced?

5. What do you think are the advantage of cooperative learning (five in one, pair work& Group work)?

6. How do you see your attitude on five in one cooperative learning?

7. What are the major factors that inhibit the implementation of five in one, pair work& Group work cooperative learning?

8. What techniques of cooperative learning are widely employed in your teaching?

9. What do you prefer from five in one, group work, pair work and individual work?

10. What solutions do you suggest for the improvement of the implementation of five in one, group work and pair work cooperative learning?

Appendix-F

Directors Interview about five in one, group work and pair

Work cooperative learning activity in the class

I/ General information

Sex--------- Age------- Qualification----------Year of experience----------

II/ Main data information

1. How do you feel the practicability of cooperative learning in school (five in one, pair work& Group work)?
2. What do you think the advantage of cooperative learning (five in one, pair work& Group work) Activity?

3. Is there any challenge during the implementation of five in one cooperative learning, pair work & group work learning?

4. What solutions do you suggest for the improvement of the implementation of five in one, group work and pair work cooperative learning?

DECLARATION

I, under signed, hereby declare that this thesis is my original work done under the guidance Mulugeta. A (PhD)

Name----------Signature----------

Date----------

This thesis has been submitted for the examiners with my approval as a university advisor

Mulugeta. A (PhD) Signature----------

Date----------

September2014

Addis Ababa University