FACTORS INFLUENCING THE IMPLEMENTATION OF MATHEMATICS CURRICULUM IN GENERAL SECONDARY SCHOOLS IN EAST SHOWA ZONE OF OROMIA REGION

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A THESIS SUBMITTED TO THE DEPARTNMENT OF SCIENCE AND MATHEMATICS EDUCATION, COLLEGE OF EDUCATION AND BEHAVIOURAL STUDIES,
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DEPARTMENT OF SCIENCE AND MATHEMATICS EDUCATION

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ACRONYMS

AAU: Addis Ababa University.

EMPDA: Educational Materials Production and Distribution Agency.

ESDP: Education Sector Development Program.

GSS: General Secondary School.

ICT: Information and Communication Technology.

IER: Institute of Educational Research.

MOE: Ministry of Education.

NEA: National Education of Agencies

NCTM: National Council of Teachers of Mathematics.

TGE: Transitional Government of Education

UNESCO: United Nations Education, Science and Cultural Organization.

ABSTRACT

The purpose of this study was to investigate the major factors that influence the implementation of mathematics curriculum in general secondary schools. Attempts have been made to examine: - the attitude of mathematics teachers and students' perceptions towards the current mathematics curriculum, the achievement of objectives for grade 9 and 10 mathematics syllabi and their successful implementation, and factors influencing the implementation of grade 9 and 10 mathematics curriculum. To this end, a descriptive survey approach was used as a method of this study. The data was collected from 450 sample students, 30 mathematics teachers, 5 principals' schools, and 5 mathematics department heads selected through simple random sampling techniques. In-depth interview with principals, observation, questionnaires, and documentaries were employed to collect data for this study. The data obtained were analyzed using both quantitative and qualitative analysis methods. Accordingly, the result of the study indicated that the majority of mathematics teachers did use continuous assessment techniques to evaluate their students' performance. Significant proportion of mathematics teachers (16.7) had negative attitudes towards the implementation of the syllabus. Furthermore, the majority of the students' perceptions towards the implementation of the syllabus were found to be very low. There was scarcity of curricula and instructional materials and shortage of time to implement the mathematics syllabus. Lack of technical and materials supports, lack of communication and low attention on the part of principals, mathematics department heads and administration were observed to be the major factors influencing the implementation of mathematics curriculum. Consequently, there is a significance difference in mathematics achievement between five government GSS students in favor of Mojo and Wonji schools students. Hence, to alleviate the problems encountered in the implementation of the syllabus, continuous teacher professional development, adequate provision of curricula and instructional materials for mathematics teachers, department heads and principals and modifying or revising or changing the mathematics syllabus according to the needs of the students and the objectives of the GSS programs after conducting on extensive national study are suggested.

DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university.

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attitude on the part of those involved in the process of implementation, they will not be enthusiastic for its successful implementation.

Teachers were considering having a critical role for the actualization of the ideas in the implemented in the new curriculum. Hence, no matter what the curriculum suggests, it is the teacher who makes the ultimate decisions about what is going on in the classroom implemented. In that sense, teachers is seen as both the means and ends of curriculum reform movements (Cohen & Hill, 2001).Therefore, any curriculum change should pay attention to what teachers to implement know and believe. The purpose of this study was investigated the major factor that influencing the implementation of mathematics curriculum in Ethiopia.

The development of any nation can be viewed in economic, social and political terms. All of these are interrelated and are very important for national development of all rounded. As Hopper (1990: 343-347) described, education is a part of social-economic development, which is a powerful instrument to national development since it has significant role in generating and translating knowledge, values and attitudes. In particular, education is important for improving science and technology, promoting labor productivity and human resource, enhancing cultural etc. Emphasizing this Krulteskii (1976) as cited in Benbow & Arjmand (1990) said the development of sciences has been recently characterized by a tendency for them to become more mathematical. Mathematical methods and mathematical styles are penetrating everywhere.

This entails that, in order to advance national development, countries should give attention for expansion and improvement of their education system as one means in terms of access, quality, relevance and equity for all their citizens. It is well realized that such goals of education cannot be achieved through the limited resource of the government alone, particularly for developing countries. But, different stakeholders such as: non government organizations, communities, religions institution, private agencies, international agencies development partners etc should actively participate in the sector to bring the intended goals of development through education.

Moreover, the Education Sector Development Program (ESDP) I (1997: 46) and II (2002: 67) of MOE stated that the government promotes the education sectors through appropriate polices on investment at all level by private sectors, non government organizations, religions

organization and the communities institutions. Thus, government plays crucial role in policy development and standard setting. It develops curriculum and its implementation strategies, provide supervision, set standard for facilities and issues licenses for the institutions.

Currently, they are twelve (12) set of curriculum materials that implemented in general secondary schools (grade 9 and 10) of Ethiopia. According to the documents, in order to achieve the state the general objectives mathematics curricula are designed to help students acquiring: - a thorough foundation of knowledge, practical skills in application of knowledge and conviction of the value. More specific objectives are given in the respective syllabus: Thus, due to such significance of mathematics curriculum for national development and students' academic life, it is necessary to give due attention for development of the curriculum in general and for its implementation process in particular.

Education systems throughout the world place high importance on the teaching and learning of implementation of mathematics curriculum, and a lot of resource is put to maintaining and improving efficiency and effectiveness in these activities (Garden, 1987). There are two major reasons that add to the importance of mathematics. One is the relationship between mathematics performance and academic or career opportunities and performance (Mills, Ablard & Stump, 1993). The second is the importance of the study to implement of mathematics to the scientific, industrial, technological, and social progress of a society (Burton, 1979).

Teachers and the concerned bodies must have a clear picture have to implement the newly planned or revised curriculum. Frequently a discussion about the new program among teachers, principals and curriculum workers is a key for successful implementation (Crandall et al cited in Ornstein and Hunkins, 2004: 302). Moreover, people usually support the curriculum if they understand its need and rational. As the result, curriculum implementation is the action and interaction of practitioners with the program's activities under a certain institutional settings (Sowell, 1996).

They are various factors which contribute to and influence curriculum implementation. Among the factors contributing to implementation are presences of human resources and their awareness of the curriculum and its implementation, availability of resource, and guidance and

support systems. On the other hand, factors such as absence of finance, insufficient supply of materials and equipments, lack of cooperative work relationships and insufficient time seriously influencing the implementation (Pratt, 1980, Ornstein and Hunkins, 2004).

The Ethiopia Education and Training Policy have given attention to mathematics instruction at all level of primary, secondary and TVET Educations (TGE, 1994). Hence, in our education system the place of mathematics as a subject has been very important. Mathematics is one of the oldest and most fundamental sciences. It uses mathematical theory, computational, techniques, algorisms, and the latest computer technology to solve economics, scientific, engineering, physics and business problem. In addition, it has many different applications. In supporting this idea, Price (1971: 86) stated that the subject has a wide range of application in various field of science like business, technology, physical science, medical science and industries. It is also application in art, social science and humanities. In addition, it acts a catalyst in stimulating the development of others.

There should be evaluation of the curriculum implementation activities at school level. To strength these idea Marew (2000: 68), McCormick and James (1983: 301) and Fullan (2001: 151) stated that curriculum implementation evaluation enables to identify or predict in process defects, in procedural design or its implementation, help decision makers identify how far for the idea program deviates, and support an organization in achieving its goals. In general, evaluation of curriculum implementation deals with the question of whether what is planned in the curriculum document is put in to action and to what exert the intended plan is translated in to practice.

1.2 Statement of the problem

In Ethiopia, Educational researches made in governmental schools by graduate student-researchers of AAU: Kinfu (2008) in the study of evaluation of the implementation of preparatory mathematics syllabus in Assela TVET Institution; Girma (2007) in the study of the implementation science curriculum in Missionary Owned Secondary Schools; Alemayehu (2005) in the study of evaluation of teachers' performance in implementing in geography curriculum in Gore General Secondary School; Akaleweld (2001) in the study of the nature and purpose of practical one in the science curriculum materials in AA, and Solomon (2000) in

the study of an evaluation of implementation of grade 8 mathematics syllabus in Sidoma Zone, have all reported in their finding, the existence of prevalent gap between design 'intents' (the program) and what is actually in practice at the classroom level.

In most of the above studies teachers' classroom performance were found inefficient. Many teachers were using the tradition methods of teaching-talk, chalk and rote memorization of facts, ideas, and principles instead of using techniques and strategies suggest in the syllabus. The reasons identified in most of these studies were high student- teacher ratio, teachers' lack of pedagogical capability towards educational innovation, insufficient central support for teachers, lack of awareness by the schools communities about the new approach of the education system, poor school management system, over load of school time table, schools financial problem and many others.

Moreover, as far as my knowledge is concerned there is no research done before this study in relation to influence the implementation of mathematics curriculum in GSS, particular in East Showa Zone. So, there is no research evidence that indicate the existence or non existence of the above problems in these types of schools. Research that investigated how government schools implement the GSS mathematics syllabus is not available. Thus, it is of paramount importance to factor influencing the implementation of mathematics curriculum in general secondary schools.

In this study, the major concern is to identify factors influencing the implementation of mathematics curriculum in general secondary schools in East Showa Zone of Oromia Region with emphasis on impediments during implementation process. Thus, the aim of this study is to identify factors influencing the implementation of grade 9 and 10 mathematics curriculum in the schools.

1.3 Objectives of the study

The general objectives of the study are to assess the factors influencing the implementation of mathematics curriculum in general secondary schools in East Showa Zone of Oromia Region.

The specific objectives of the study aimed to: -

1. Identify the perception of mathematics teachers and students towards the implementation of mathematics curriculum?
2. Assess the achievement of objectives for grade 9 and 10 mathematics syllabi and their successful implementations?
3. Identify the major factors influencing the implementation of grade 9 and 10 mathematics curriculum?

1.4 Research questions

With the above objectives, then, the study attempts to answer the following basic research questions: -

1. What are the perceptions of mathematics teachers and students' perception towards the implementation of mathematics curriculum?
2. Are the objectives of grade 9 and 10 mathematics syllabi achieved? Is the implementation successful?
3. What factors are influencing the implementation of grade 9 and 10 mathematics curriculum?

1.5 Significance of the study

This study has at least the following significance: -

1. It will initiate the GSS curriculum experts to develop mathematics syllabus appropriate and applicable for the GSS program.
2. It will increase the interest and curiosity of the student to learn mathematics by way of providing the most appropriate curriculum to them.
3. It helps governmental bodies (MOE, Regional and Zone Education Bureaus) to give due to attention for the prevailing conditions of government secondary schools in the Region, but in particular for surveyed school.
4. It provides information for teachers, principals, students and school administration to improve the actual teaching-learning experience of mathematics subjects.

5. It can serve as feedback for the respective school about the implementation process of the mathematics curriculum by identifying their successes as well as challenges.
6. Furthermore, this study can serve as a base line work for the future in-depth investigation at national levels.

1.6 Delimitation of the study

This study is delimited with the performance of the GSS in implementing mathematics curriculum in East Showa Zone of Oromia Region. Thus, the findings of this study reflected only the activities of these schools in the 2006 E.C since all information (data) are collected in this academic year. The scope of the study is limited to perception of mathematics teachers' and students' perception towards the implementation of the syllabus, the achievement of the students and factors influencing the implementation of grade and 10 mathematics curriculums. The delimitation has been made for the following main reasons: -

- Easy access of information from the area by the student – researcher.
- General secondary schools of the government in this zone are experienced in implementing curriculum materials since most of them have more than six years experience.

1.7 Limitation of the study

In ordered to evaluate the desired classroom instruction in depth, continuous classroom observations are vital tools. In this study, however, each sample teachers were observed only two times in his classrooms. Due to time factor, it was not possible for the researcher to have some more observation sessions. The refusal of interviewees to be recorded during interviews sessions with also another problem faced in the data collection. Though these limitations exited in the study, I attempted to make it as complete as possible by using field notes and another data collection instruments such as questionnaires and observation.

1.8 Operational definition of terms

According to their usage in this study the following terms are defined in the manner stated below:

Successful implementation of curriculum: - it is the actual use of the requirement of the curriculum by the implementers so that it is congruent to the intended or planned use.

Factors: - refers to a course determinant that underlies and influence in the implementation of mathematics syllabus.

Qualified mathematics teacher: - refers to who have at least BED or BSc degree.

Curriculum materials: - it includes policy guidelines, strategic plans, syllabi, teachers' guides and students' textbooks that are prepared by MOE.

Organizational performance: - it is appropriateness of the organization to hold activities as the requirements of its duties and responsibilities.

Achievement tests: - mathematics tests prepared for this study based on the syllabuses and textbooks of the mathematics of grade 9 and 10.

1.9 Organization of the study

The study has five chapters. The first chapter focuses on the background of the study, statement of the problem, objectives of the study, research questions, and significance of the study, limitations and delimitations of the study. The second chapter comprises review of theoretical aspects and related literatures. The methodology of the study is given in chapter three. The results/findings of the study are dealt with in chapter four. Finally, chapter five deals with the discussion, conclusion and recommendation.

CHAPTER TWO
REVIEWS OF RELATED LITERATURE

2.1 The Concept of Curriculum Implementation

Shiundu and Omulando (1992: 30) asserted that curriculum is the way content is designed and delivered. It includes the structure, organization, balance and presentation of the content and learning experience of a program in the classroom. As defined here, curriculum is a set of materials that included both contents and instructional guidelines. The set of materials may be from developer or may have been selected from a variety of materials organized by the school.

If a curriculum is a plan for an education program, it is prepared for some intended purpose. In this connection, McNeil (1990: 124) also stated that the primary purpose of a curriculum is it's being used by formal school with the view bring about the behavioral change in the learners so that the objectives of education is general and the aims of schooling particular could be met. To this, curriculum must be implemented.

The concept of curriculum and its implementation are highly interrelated. Derebsa (2004: 57) demonstrated that without curriculum there is no implementation and with the implementation of the curriculum materials has little meaning. To this end, Pratt (1980: 426) asserts: -

> "*Curriculum change is a political process, question of who gets what, when and how perhaps because of its political nature, the question of implementation has often being ignored by curriculum writers and left to administration managements specialists, who have studied change and innovation extensively*."

Thus, implementation is important part of the curriculum development process which may lead us to the essence of curriculum implementation. They are two points of views in defining the process of curriculum implementation. The first group of educators' access curriculum implementation simply as a process of translating the curriculum implementation to the actual teaching learning environment regardless of other factor which could influence the plan directly or indirectly, for instance, Shiundu and Omulando (1992: 224) define curriculum implementation as the stage where the curriculum plan is translated in to reality through classroom activities. Pratt (1980: 306) expressed that the decision of curriculum developers to introduce the developed curriculum in the school on a large scale marks the beginning of actual

curriculum implementation. Similarly, Marsh and Wills (1995: 209) and Beauchamp (1968: 163) defined curriculum implementation as simply putting of the planned and developed curriculum in to practice.

The second group of educators' sees curriculum implementation as a separate component in curriculum activities which involves extensive action by many parties requiring changing the individual's knowledge, action and attitudes. For instance, Ornstein and Hunkins (1998: 292) view curriculum implementation as an interaction process between those who developed the program and these who are changed to deliver it. Fullan and Promfret (1977: 336) on their part define curriculum implementation as the actual use of an innovation or what an innovation consists of practice. These authors further elaborate that the process of implementation a new curriculum is highly complex task and therefore requires extremely skillful assortment of participants and relevant content for effective results and the task of curriculum implementation can be said to involves two main processes: - a) changing the attitude of a people, policy makers, administrators, teachers, school supervisors, parents, the key public and ultimately the learners themselves and b) providing the necessary professional, technical and materials supports for implementers to make the process more effective. Thus, according to them the people concerned must be persuaded about the worthwhile of innovation and facilities (materials and time) and personal supports have to be delivers if the implementation is to be effectively realized.

Ornstein and Hunkins (1998: 299-316) expressed that successful implementation of curriculum results from carefully planning, which interns focuses on three parameters: - the people, program, and organization. If an innovation or reform in to be fully implemented, at least the conditions of these three factors should be changed. Thus, effective implementation is possible if and only if there is change in curriculum materials, teaching practices, organization structure and belief or understanding about the curricula and learning practice. In supporting these ideas Fullan and Promfret (1977: 361-365), in their review of educational researches, conceptualize that a curriculum change consists of primary of five dimensions: - a) all subjects matter/materials b) organization structure c) role or behavior d) knowledge and e) value internalization all of these vis-à-vis a particular innovation idea or development.

Organization structures involve changes informal arrangements and physical conditions: different ways of grouping students, the presence of personal to perform new role, and adequate supply of new materials. Thus, structural alternations may be necessary to supports user in their attempts to implements other aspects or an innovation they value, and the lack of certain structure changes may inhabit or incompatible with implementation. The behavioral manifestation or role relationships change concerns new teaching styles, new role relationship between mathematics teachers and students, mathematics teachers and mathematics department heads, mathematics teachers and supervisors, and so on.

The other dimension of the implementation concerns the knowledge and understanding that users have about the innovation various components such as its philosophy, values, assumptions, strategies and other organizational components.

The last, but not last dimension concerns users' valuing of and commitment to implementing innovation various components, such as the acceptance of and agreement of stakeholders with the philosophy, aims and objectives of the new curriculum. Neither of these reveals what exactly it is that people are valuing or even whether they all have the same perceptions concerning what the innovation is.

Therefore, for effective implementation of innovation, making aware of clear intention of the change among stakeholders', and in serving training for implementation, and the previsions of materials, appropriate time and facilities during the implementation are pre-requisites.

Another important factor that determines the effectiveness' of curriculum implementation at school level is related to its approach. Accordingly, Synyder et al (1996: 402) suggest, there are three perspectives with regards to implementation approaches of a program: such as fidelity perspectives, mutual adaptation, and curriculum enactment. These approaches are categorized and summarized based on their assumption, knowledge, and role of teachers and concepts of evaluation in curriculum implementation as follows:

Aspect	Fidelity	mutual adaptation	curriculum enactment
Assumption	The intended curriculum must be implemented as the implementers plan it	Since ideality and reality do not match, some modification or adaptation may require by the user of the planned curriculum	Teachers and students in the classroom jointly develop learning experience
Knowledge	Curriculum experts are the sources of knowledge for their students	Local context guide by experts are source of knowledge for students and teachers	Students and teachers with in the classroom construct it
role of teachers	Only transmitter of the planned curriculum in the class	Actively participate the adapt the planned curriculum to local context	Developer and implementer of the curriculum with his students
Evaluation techniques	By comparing and contrasting the stated objectives with observed achievements	By considering the planned and unplanned objectives or knowledge experiences during implementation for the achievements of students	By describing and understanding the meaning given to the prepared curriculum by students and teachers

Source: Adapted from Snyder et al (1996: 414-428)

The above table show that the existence of different approaches to the development as well as implementation of curriculum materials. Their differences start from their assumption and foundation of knowledge about what a school curriculum is.

Therefore, study of curriculum implementation at school level is important for reasons of identifying whether the planned curriculum is materialized as it is intended or not. In this regard Fullan and Pronfret (1977: 335-339) after reviewing the works of researchers on curriculum implementation have identified the following four main reasons for the need to study curriculum implementation. Such as: - To understanding why so many proposed

educational changes fail, and identify the most problematic aspects of to bring about changes; to know what has changes it must be conceptualized and measured directly; to assert what determines the implementation of a curriculum, or in short, to interpret learning outcomes relate them to possible determinants; and to be aware of activities of the implementers with they are in line with the requirements of the programs

2.2 The Status of Mathematics Curriculum Implementation of Ethiopia

In1990 Ethiopia has undergone political system change and consequently educational reform including curriculum issues. The new educational and training policy of Ethiopia TGE (1994) state innovation in different aspects of education sectors such as change in: objectives, contents, evaluation techniques, roles of students and mathematics teachers, structural changes, medium of instruction the use of new technology in the schools, participation of stakeholders and many more.

However, emphasizing the nature of curriculum implementation in developing countries Dereje cited in IER (2002: 9) noted that curriculum implementation is a formidable and complex task in most countries where planning and leadership capabilities are at lowest stage. As parts of developing countries, Africans countries in general and Ethiopia in particular share similar educational challenges.

Therefore, to have more effective implementation of the curriculum in the country for better success and for altering of such desperate situation of teaching-learning requires the commitment of all bodies accountable of success of educational and hence for the development of this nation. The time is still not late for making of necessary adjustments in line with country's politics, economic, schools and others situation required for effective implementation of the curriculum documents.

The facilities of school need to be adequately available and utilized to support the demands of school curriculum in general, but as with the practical teaching of mathematics curriculum. In this regards, Jenkins (2003: 121) describe, there is no doubt about the need of materials and facilitates libraries, ICT, equipments, tools etc for the implementation of mathematics curriculum. This is because the practical works of mathematics subjects has been expected to

use facilities and materials to effects such a broad range of different learning outcomes, including cognitive, affective and manipulative.

According to Jenkins (2003: 130), Bekalo and Welford (2000: 102) and Richardson et al (1987: 130) propose solving problems of mathematics curriculum typically are: -

- Helping students in understanding more theoretical aspects of mathematics curriculum
- Arousing and maintaining interest in mathematics subjects
- Developing competence at carrying out mathematical investigations

In addition to these facilities and materials for effective mathematics curriculum implementation, there seem little reasons to doubt that contemporary information and communication technology can make significance difference to the quality of teaching mathematics curriculum. In this regarding again Jenkins (2003: 164) Richardson et al (1987: 263) noted that making effective use of ICT in teaching mathematics curriculum require the way teachers are use it as a resource to achieve a learning out comes.

These authors also put their conceptions about the use of ICT facilities and materials in school systems as: -

- Having global or national access of mathematics curriculum information, teaching materials and resources.
- Communicate rapidly with teachers or and students in other parts of the worlds and engages in conservation about difficult in implementation of mathematics curriculum.
- Access the catalogues of major factors that influencing libraries in during the implement of mathematics curriculum in different areas.
- Under take professional development during the implementation of mathematics curriculum.

In conclusion, the implementation of mathematics curriculum for general secondary school are stated the objectives, strategies and assessments methods of students achievement. The success of mathematics curriculum implementation, as any other subjects are strongly influenced by what has to be taught, by the resource available, by teacher academic and professional

background, and by wider culture and social norms. It follows that any reform in mathematics curriculum must address these various elements in a coherent and integrated way.

2.3 Evaluation of Curriculum Implementation

Once curriculum is implemented at the school level, it's obvious that need arises to evaluate the successes and challenge of the planned curriculum for improvement or changes so that the strength and weakness, the consistency between actual practices and the intended purpose should be thoroughly studied. Indeed, there are many curriculum claims very time in human development that continuous evaluation and refinement of the curriculum and its implementation is demanding task.

Several scholars or evaluated like Patton (1997: 203), Madous et al (1983: 129) and others have fourth part their conceptions on the contribution of evaluation in the field of education as follows:

- Helping planning process what to do next, to provide and account of what is happening.
- Enable to control the quality of education in general and particularly the country identifying and detecting problems during implementation of mathematics syllabus.
- Enable to identify or predict in process, defected in procedural design or its implementation.
- Helping decision makers to identify how far the ideal the programs deviates, and supports and organization in achieving its goals.

Therefore, it was seen preferable to reserve the term educational evaluation for application of different techniques to look for effectiveness of programs, curriculum of organizational variables.

Several educators have put the definition and concepts of curriculum implementation evaluation forth. For instance, Scriven as cited in Ornsteins and Hunkins (1998: 320-322) stated that curriculum implementation evaluation deals with the question of whether what is planned in curriculum documents put into action or use, to what extent the intended plan is translated in to work.

Similarly, Sayler et al (1981: 327) indicated that the significant role of curriculum implementation evaluation is primary determining the value of curriculum. Curriculum implementation evaluation is concerned with investigating whether the planned curriculum is fulfilling its purpose and the appropriateness of the contents and instructional materials for the purposed aimed. Likewise, McCormick and James (1983: 190-01) consider curriculum implementation evaluation as a very important issue for educators or decision makers since the information gathered during evaluating enables the curriculum experts to check their programs and roles in line with the stated goals.

Therefore, curriculum implementation evaluation can be considered as evaluating of all the administrative arrangements, practical and the structures with in which educational institution it operates. The process of gathering data which is used in assigning valuates something and finally making a decision, to accept, improve or reject it. These enable evaluators to consider all data related to the program implementation, interested in gaining greater understanding of the relationship organization form and multiplicities of classroom transaction that they generate.

2.4 Attitude towards the Implementation of Mathematics Curriculum and its impact on Achievement

In almost all Ethiopian schools considering mathematics curriculum as a challenging subject which cannot be understood is a common phenomenon among students, teachers and parents. But, this is true in many countries too. Mathematics will be considered by many individuals as a difficult subject to learn (Fennema & Sherman, 1976). This kind of outlook has a direct relation with the achievement of students. Students with negative attitudes towards mathematics curriculum would performance problems because they develop anxiety (Hembree, 1990).

A number of factors do influence student's mathematics achievement positively or negatively. One among these factors that contribute to variations in mathematics achievement is attitude towards mathematics curriculum. The direct relationship between mathematics achievements and attitudes of the students, as well as their reciprocal influence will be well documented (Aiken 1970; Johnson 1984; Sherman, 1980; Tsai and Walberg 1983). If students have positive

attitude towards mathematics curriculum, it is likely that they will allot a considerable portion of their study time to the subject and strive to master the knowledge and skills necessary.

Many students develop fear towards the implementation of mathematics curriculum due to their misunderstanding, non understanding and failure during previous lessons; effort must be exerted to resolve this fear before proceeding to the next section as students learn new mathematical concepts and procedures by building on what they already know. Learning with understanding can be viewed as making connections or establishing relationships either within existing knowledge or between existing knowledge and new information (Hiebert & Carpenter, 1992).

Negative attitude towards the implementation of mathematics will be also common among most parents. Parents believe that mathematics is hard to understand and they try to avoid it for their students as far as possible. Simple example which shows us the negative attitude of Ethiopian parents is their reluctance to send their students to college or university faculties which offer mathematics as a course. They encourage their students to enroll the social science faculty where they think there are no mathematics courses.

Another factor which bears some influence on the relationship between success and motivation is the whole notion of worth. This will arguably the aspect most likely to change over time as motivation, social and emotional development will all influence the pupil's perception of what mathematics achievement is 'worth'. For some pupils at certain stages their notion of the worth of mathematics may simply reflect teacher implementation of the attitudes of the students. In the case of young slow learners the parental attitude towards education is very considerable significance in the pupil's view of worth (Larcombe, 1985).

2.5 Factors Influencing the Implementation of Mathematics Curriculum in General Secondary School

A number of factors can be mentioned as related to facilitator or influence the implementation of mathematics curriculum, methods of teaching or any other educational activities. Factors related to the teacher's attitude, students, experiences, and professional competence, organization of curriculum materials, school facilities and class size can be cited as the main

factors that can influence the implementation of mathematics curriculum. In the following an attempt would be made to mention ideas related to these factors as written by many scholars in the fields.

2.5.1 School Related Factors

2.5.1.1 Curriculum Related Factors

Preparation and development of curriculum should state and should be seen in light of what has been done to include needs, interest and the background of the students and their level of achievement. Any education systems is effective, if its curriculum is considerate the need and aspiration of students. Regarding this point, NEA(1963) suggested that, where curriculum is designed, high emphasis should be given to the nature of the subjects, the need of the students and society, teaching methods, instructional materials and evaluation mechanisms.

Since schools are the consumers and practitioners of the curriculum to the expert of the curriculum have be too sure that: the school related factors (curriculum, teachers, students and society) are reading and willing received the curriculum. For the curriculum to be accepted by the learners, mathematics teachers as well as society, it should be the relevant to the real life condition background knowledge of the students. Kalfki (1996) stated that, curriculum relevance in the modern context can be addressed through identified the key social problems, which would be considered as the core contents of today education systems. In other words, the curriculum to be selected a various level of the education systems have to be closer to the present real life problem, to give the learner, the opportunities and imitative to the solution of both the individual as well as community problems.

According to Collopy (2003) stated that, the quality of education as viewed there pertain to the relevance what thought and learned to how well it fits the present future learning needs of the particular learner in equation. He also further expressed that: the suggested learning methods, instructional materials and have stated that, the relevance and appropriates of curriculum has a great impact on the students' academic performance.

2.5.1.2 Teacher Related Factors

Among the various factors that contribute to successful curriculum implementation in any level of education in general and secondary education in particular, variable have been recognized as important. That is, to say along with other interacting variables, the quality of curriculum implementation is a function of teachers' variables i.e. their interest, experience and attitude.

Hence, competence in the above attributes of teachers' provides teachers with the tools necessary to implement professional judgment and decision (Copper, 1986: 6, Erkyehun, et at 1991: 6).

A. Teacher interest to the professional

Scholars agree that teacher's low interest or negative attitude toward the curriculum has been one of the variables that contribute to ineffective curriculum implementation.

Supporting the above concept Lewy (1977: 252) and Pratt (1980: 419) have stated that a new education program can succeed only if accept it. If teachers do not accept the basic philosophy of a program, one can hardly expect that it will be properly implemented. It seems obvious, here, that teachers are more likely to teach a program successfully if they themselves accept the basic inputs of the programs.

B. Teachers' Experience

Theoretically, it is assumed that a rich background of teaching experience increases teachers' ability to teach effectively. Results of intensive study in the area indicate the positive correspondence of teachers' teaching experience and their actual performance in the classroom (Eggen and Kauchack, 2006: 57). Regarding this, Husen, et at. (1984: 2627) has cited many studies, which show the positive influence of experience on classroom performance. They further noted that, all other things being equal, it is general agree that teacher gains skills through experience and that the more experienced teacher is the more effective teacher.

C. Mathematics Teachers attitude towards the profession

Education researches agree that the teachers' negative attitude toward teaching profession has been one of the variables that factor their effectiveness. In views of this for instance, Pratt (1980: 419) expressed that a new educational program can succeed only if teachers accept it. Other researchers like Anderson (995: 74), Darge (2000: 80-85) and MOE (2002: 11-12) also explained that teachers' attitude towards teaching profession greatly influence their effectiveness. As to them, effective teachers' have positive attitudes toward their profession and work with their colleagues in the schools and with parents of the students. Hence, having a negative attitude towards the profession has great impact on teachers' effectiveness.

Therefore, the Ethiopia General Secondary School standard allows 65 – 75 students in one class while in the Preparatory School allow 55-65 students. This would state in the Ministry of Education School Standard Documents as the maximum limits, with the understanding of that, class room to be conductive, manageable and create interactive situations for the process of teaching and learning (MOE, 1988:2).

2.5.1.3 Student Related Factors

Students related factors that influencing the implementation of effective learning process requires close examination of the learners. According to Anderson (2004: 45); one must request the following in the teaching learning process:

> … What are the students supposed to learn from his or her participation in this activity? What knowledge is to be acquired or constructed? What cognitive processes are to be employed? Continued focus on students makes it more likely that the learning until will be effective?

Students related variables that have influence the pedagogical teaching learning condition in mathematics curriculum in students' attitude and behavior in school.

A. The Student perceptions towards the implementation of mathematics curriculum

Over the decade, interest has become an important concept with in the field of education (Engstron, 1994). In the teaching learning process, basic motivation to learn mathematics

curriculum is pivotal. It is difficult to mathematics teacher to teach mathematics if the students have not interest for learning. Major factors that influence the students' interest for learning mathematics are socially background of child, instruction of mathematics teacher with students, mathematics teacher methodology of teaching, mathematics teacher characteristic (aggressiveness, pronunciation approach etc) and the individual characteristics of students (Gravel, 1980).

Furthermore, Aggrawal (1996) stated that student usually develop lack of interest in particular subject when mathematics teacher are not good enough in teaching those subject at their lower grade or when they are biased on the subject. He also stated that lack of planning and preparation by mathematics teacher, ineffectiveness style of presentation of the lesson, failure to use appropriate teaching aids and fail to involve student in the instructional activities are the cause for the student to dislike a particular the subject.

B. Student classroom behavior

There is an increasing in having measure of problem in student behavior (Pastlethwaite, 1994); such as absenteeism, disciplinary problems and vandalism. When student are absent from the school, they forgot their opportunities to learn. In the near time, they may interfere with other students' opportunity to learn through peer relation. Absenteeism is also harmful for student to establish the habit of consistent and on time attendance, such habit will serve young people well in their for the work lives (Smith et al, 1995).

Student disciplinary problem and vandalism influence mathematics teachers and students' by reducing school effectiveness in habiting student learning, and disrupting the school learning environment. The measurements of problem in student behavior help to provide a more comprehensive picture of student outcomes (Pastlethwait, 1994).

2.5.1.4 Classroom Conditions

Class size refers to the number of pupils regularly schedules to meet in the administrative and instructional units. Know as class or section, usually under the direct guidance of single teachers (Munre, 1956:212). Class size concerns educators for various reasons because

learning can only occur positively when lesson are under appropriate condition both for the students and teachers. The class room size would its own impact in facilitating or hindering actives of teaching and learning.

The ideas of class size were become concerns and essential points of discussion among scholars. Because it is assumed as the class size increasing, students face any or all of the following problems. As Gibbs cited in Barneit (1995:162) state are: - lack of clarity of purpose, lack of knowledge about the progress, lack of advice on improvement, inability to support wide reading and independent study, lack of opportunity to discussion, inability to cope with variety of students and to motivate students.

Most educators agreed about the population (Marry Print (91993:253), Andrew (1994:154)). Furthermore, studies made in various countries like Sweden the classroom population is 24, Japan 30, China 40-50, were mention in the works of Mobuk (1998:168).

2.5.1.5 Organization Related Factors

Organization related factors are also equally important as human and materials resources in determining the success of curriculum implementation in the school. Many investigations have showed the dimension of organization in determining the effective implementation of innovation. For instance, Scheerens and Bosker (1997: 116-134) after studying a wide variety of school reform in USA, came up with six essential characteristics of successful school: focus on students' achievements, parental involvement, favorable school environment, strong leader ship, cooperative working culture, and time on task. Similarly, Edmonds (1981: 69-142) created what he called "Effective School Model". That noted five characteristics of successful school: strong administration leadership, culture of cooperation, high commitment for students' success, frequently monitoring of students performance, and safe and orderly school environments.

On the other hand, the communication culture of school communities-parents, principals, students and so on influence curriculum implementation. In this regard Amare (1999: 56) stated that the greater quality and quantity of sustained communication channel through interaction among people involved in curricula activities, the greater the degree of implementation. Similarly, Fullan (1991: 67-73) indicated that to raise the quality of teaching

within the classroom, demand effective culture of communication. The culture leads teachers to work together, sharing what they learn in their classrooms, to help one another and even to learn more.

The other aspect of organization aspect influencing curriculum implementation is the trend of professional development for teaching staff. According to McNeil (1990: 223), now staff development through workshops, seminars or short-term training is the central focus in successful curriculum implementation. To him, if we want to effective school, we must make it possible for teaching staff (teachers and principals) to develop their capacity to do the job and it is more important in persuading them to the curriculum. Therefore, it is evident from the above discussions that the nature and type of school structure, participation of parents and communities, nature of communication channels and staff development programs of the school are organization factors that facilitate or influence curriculum implementation in school systems.

CHAPTER THREE

RESEARCH DESIGN AND METHODLOGY

This chapter deals with design of the study, source of the data, sampling techniques, data collection instruments, and methods of data analysis.

3.1 Design of the study

The major concern of this study as indicated in chapter one is factors influencing the implementation of mathematics curriculum in general secondary school in East Showa Zone of Oromia Region. To this end, a descriptive survey approach was employed as method of the study. This method is more appropriate to gather variety of data related to the study and to the data in mixed type of quantitative and qualitative approach (Creswell, 2003: 128).

3.2 Source of the data

Three groups of people are used as source of data for this study. The first group consists of teachers who teach mathematics subjects to grade 9 and 10 in 2014 academic year. The second group comprised of grade 9 and 10 students. The third group comprised of principals of selected schools.

In addition to these, official document of MOE such as policy guidelines, sectors strategies plans, syllabus, teachers' guides and student textbooks of the respective subjects were used as source of information in the study.

3.3 Sampling techniques

Multi-stage cluster sampling was used to reach at representative teachers, pupils and classroom in the Zone. The use of this kind of sampling technique in survey study is supported by Kerlinger (1986) so as to select representative samples from larger number of cases.

From 12 Woredas of the East Sowa Zone, five Woredas were selected by simple random sampling techniques. These Woredas were Denkoka, Mojo, Lume, Alem Tena and Adama Woreda. From these Woredas, five schools were selected on the basis of their accessibility and

proximity to the researches. These schools were Denkoka, Mojo, Koka Ejersa, Bora and Wonji general secondary schools. Accordingly, to ensure the representative 450 students out of 10,032 grade 9 and 10 students, and 30 mathematics teachers out of 38 mathematics teachers of the schools, the sample schools were selected by simple random sampling techniques. All the five principals were selected from the five sample schools due to their manageable size and importance for the study. In order to fill the questionnaires, above 4.5% of students and above 78.9% of mathematics teachers were selected from the schools as indicated in the table 1 and 2 below.

Table 1: Sample learners from the sample schools

No	Woreda	Sample School	Population in learners in the schools			Sample learners		
			F	M	Total	F	M	Total
1	Denkoka	Denkoka GSS	724	860	1584	37	38	75
2	Mojo	Mojo GSS	1497	1671	3168	55	50	105
3	Lume	Koka Ejersa GSS	219	309	528	46	44	90
4	Alem Tena	Bora GSS	459	597	1056	40	35	75
5	Adama	Wonji GSS	1719	1977	3696	55	50	105
Total			4618	5414	10032	233	217	450

As it can be seen in table 1 above, 4.5% of the students were selected from the sample schools in which 75 students were from Denkoka GSS, 105 students from Mojo GSS, 90 students from Koka Ejersa GSS, 75 students from Bora GSS and 105 students from Wonji GSS with a total of 450 students out of 10,032 grade 9 and 10 students of the schools.

Table 2: Sample teachers from the sample schools

No	Woreda	Sample School	Department	Number in teachers in the school			Sample teachers taken		
				F	M	Total	F	M	Total
1	Denkoka	Denkoka GSS	Mathematics	-	6	6	-	6	6
2	Mojo	Mojo GSS	Mathematics	1	11	12	1	7	8
3	Lume	Koka Ejersa GSS	Mathematics	-	2	2	-	2	2
4	Alem Tena	Bora GSS	Mathematics	-	4	4	-	4	4
5	Adama	Wonji GSS	Mathematics	4	10	14	2	8	10
Total				5	33	38	3	27	30

As it can be seen in table 2 above, 78.9% of mathematics teachers were selected from the sample schools in which 6 mathematics teachers were from Denkoka GSS, 8 mathematics teachers from Mojo GSS, 2 mathematics teachers from Koka Ejersa GSS, 4 mathematics teachers from Bora GSS and 10 mathematics teachers from Wonji GSS with a total of 30 mathematics teachers out of 38 grade 9 and 10 mathematics teachers of the sample five schools.

3.4 Data collection instruments

Multiple instruments of data collection are used in this study. According to Creswell (2003: 220 – 225), using more than one data collection techniques has an advantage to combine the strength and the weaknesses of a one source of data. In the same view, Best et al. (1999: 39) state that single study can use both quantitative and qualitative data tools. Bearing these ideas, the present investigation is conducted by using four types of instruments: Questionnaires, observation, interviews, and documentaries.

3.4.1 Questionnaire

Two types of questionnaire were prepared for teachers and students in connection with the research question on mathematics curriculum.

a) Questionnaire for mathematics teachers

The questionnaire which was prepared for teachers contains three parts. The first part of the questionnaires was prepared to obtain background information about teachers, the communication existing among teachers, their activities, teachers and department head, availability and utility of curriculum, teachers and principals, and the major factors that have been influencing the implementation process. The second parts of the questionnaires incorporate questions in the form of attitude scale to get information about teachers' agreement or disagreement with the implementation of mathematics curriculum in general secondary school using five point Lkert scales. The third part of the questionnaires contains items that indicate the necessary input or requirement used for teaching mathematics. In this part, teachers were asked to rate the extent to which the schools provide the materials for them. /see Appendix A/

b) Questionnaire for students

The questionnaire was prepared to obtain information about students' perception toward mathematics learning, the use of assessment technique by teachers, teachers and students interaction during mathematics instruction in the classroom and the classroom climate during teaching mathematics. The copies of the questionnaire were distributed to 450 students in general secondary school in East Showa Zone Oromia Region for pilot study. Finally, copies of questionnaire were administrated for those selected students in the schools in general secondary school in East Showa Zone Oromia Region. The five directors, the principals in the genera secondary school and the department head of each occupation helped me in distributing the copies of the questionnaires to 450 students. /See Appendix B/

3.4.2 Observation

An observation checklist which has lesson presentation variables in the classroom and observation rating scale regarding some instructional considerations were developed and used during classroom observation. The observers were one of the mathematics teachers who have BSc or BED in mathematics in the general secondary schools and the researcher himself. The mathematics teacher was oriented how to conduct the classroom observation. The reliability of the observation rating scale ought to be measured in ordered to determine its consistency. To measure reliability two or more observers can do observation at the same time and calculate the inter-rater reliability (Ary, Jacobs and Razavien, 2002). For classroom observation, the 30

mathematics teachers in general secondary schools were randomly selected from East Showa Zone of Oromia Region. Each of these 30 teachers was observed twice in his classroom. /See Appendix D/

3.4.3 Interview

Three types of interview questions were prepared namely; interview questions for mathematics teachers, interview questions for mathematics department heads and all principals in the schools. Interviews were conducted with sample mathematics teachers (5 in number); five department heads and all principals (5 in number) in general secondary schools in East Showa Zone of Oromia Region. During interview sessions, the communication was held in Amharic language between the interview and the interviewees in ordered to reduce the communication factors. I was writing the necessary points on the field noted while I interviewing the respondents. However, since the interviewees were not willing to be recorded, I did not record the interview. After the data was collected through Amharic, the translation was done in to English language with the help of fourth year MED students in mathematics department in AAU. /See Appendix E/

3.4.4 Documentaries

Best and Khan (1993: 191: 193) discussed that documents are important sources of data in many areas of investigation. That means documentary sources could serve for a useful purposes in offering information that is helpful in explaining social or educational practices. Thus, the educational policy document, educational statistical documents, students' text book, the syllabus, the teachers' guide and the general secondary school system curriculum guide were used for the purpose of this study. These documents were used for drawing information about the number of the teachers and students, class size; time allotted for mathematics teaching for each year in the schools and the suggested instructional guidelines in the curriculum. Moreover, achievement tests results were also used for the purpose of assessing students' achievement level in mathematics subject (see appendix C).

3.5 Techniques of data analysis

Since the study employed multiple methods of data collection, the procedures followed for analyzing the data depend on the instruments employed. Thus, the present investigation employed both quantitative and qualitative methods of data analysis procedures, because, the study intended to evaluate the match and mismatch between the 'intent' and the prevailing 'observed' teaching-learning practices of mathematics subjects in general secondary school.

A quantitative technique of data analysis is used for analysis of those data obtained through the questionnaires and observation notes that readily lead themselves numerical presentation. That is, such data tallied and changed to scores tables so that they can be described by statements. In parallel with quantitative techniques of data analysis, qualitative data analysis also employed for analysis of those data gathered from interview, which are less easily summarized in numerical from, but can be analyzed through narrative, description and /or direct quotation of statement from the participants' opinions.

3.6 Pilot – test

Before the instruments were used for data collection, two teachers from Adama University gave comments which helped to modify some parts of the questionnaire, interviews and observation checklists. After this was shown to the advisor in order to comment the extent to which the items were appropriate in security relevant information to the researcher. Some amendments were made by the comments obtained from the advisor. The instruments pilot-testing was made in Mojo GSS in East Showa Zone. Four teachers including department heads and principals filled the questionnaires. Interviews were also conducted to one school principal of Mojo GSS students and experts in Education Office of Mojo town. Both the rating form and the checklists were tested in two classroom sessions of the selected GSS by the researcher. Finally, refinement was made on the instruments according to the constructive suggestions and hints that were obtained from the advisor and field testing. Accordingly, from the questionnaire four items were modified. Two items from observation checklists were completely changed and one question from interviews was modified. One item was added to school principals and experts interviews.

CHAPTER FOUR
PRESENTATION AND ANALYSIS OF DATA

This part of thesis deals with presentation, analysis and interpretation of data. The data obtained through the questionnaires, observations, interviews, achievement test and documentaries were presented, analyzed and interpreted so as to answer three basic research questions raised.

The presentation, analysis and interpretation of the data obtained from the respondents were done both quantitatively and qualitatively under three major themes. These themes are: - the attitude of mathematics teachers and their students towards the current mathematics curriculum, the achievement of objectives for grade 9 and 10 mathematics syllabi and their successful implementations, and factors influencing the implementation of grade 9 and 10 mathematics curriculum.

4.1 The Perception of Mathematics Teachers and Students' perception towards the Current Mathematics Curriculum in GSS

Attitude towards mathematics curriculum is defined as a general emotional disposition toward the school subjects of mathematics syllabus. Generally, a positive attitude toward mathematics curriculum is valued, because, it is an important school out come. It is often positively, although tightly, related to achievement and it may increase one's tendency to elect mathematics course in school and possible one's tendency to elect careers in mathematics or mathematics related fields (Haladyna et al, 1983). In this section the attitude of mathematics teachers and their students towards the current mathematics curriculum are examined based on the data obtained through questionnaires and teachers interview.

4.1.1 Perception of mathematics teachers' towards the implementation of mathematics curriculum

As indicate in chapter one, identifying the perception of mathematics teachers towards the implementation of mathematics curriculum was among the basic question of this study. It is important because of the fact that positive or negative attitude of mathematics teachers towards

the current mathematics curriculum will have its own the major that influence the implementation of mathematics curriculum as intended in syllabus in the school. It is obvious that the attitude of individuals to a particular subjects or issues emerges from their knowledge of the subject.

One of the general secondary school in East Showa Zone under the study, general secondary school in East Showa Zone of Oromia Region is administered by the ministry of Education (MOE). The attitudes of thirty (30) mathematics teachers in general secondary school were measured using five points Likert scale. The data about the teachers' attitude was collected through teacher questionnaire and presented in table below.

Table 3: Perception of mathematics teachers' on the new mathematics curriculum

No	Statement	Mean Value
1	Students have the little background knowledge of mathematics in general secondary school	4.8
2	The general secondary school mathematics syllabus contains variety of learning methods that can minimize students' participation	3.8
3	Students in general secondary school learn mathematics with enthusiasm	2.4
4	The organization of the content and learning activities of mathematics syllabus is appropriate for teaching students in general secondary school	2.3
5	The major role of mathematics teacher in general secondary school should be to encourage students to memorize all definitions, theorem, rules and axioms instead of worry about their proof	3.8
6	Most of the content of mathematics curriculum are beyond the ability of the students in general secondary school	4.1
7	There are adequate exercises at the end of each topic of mathematics textbooks	4.1
8	The syllabus and teacher guide are helpful for mathematics teachers in planning and implementation process	4.4
9	Since low achieve students of final examination admitted to GSS the mathematics syllabus is difficult for students in GSS	4.4
10	Concepts and contents in the teaching materials are not complex but they clear for teachers and students	4.9
11	Methods and technique of teaching suggested in the materials encourage more of teachers explanation and guide discussion	4.2
12	The aims and objectives of mathematics syllabus are appropriate	3.3
Grand mean		3.9

As can be seen in table 3, as the mean value 4.9 and 4.8 indicated that the majority of teacher respondents strongly agree on the concepts and contents in the teaching materials are not complex but they clear for teachers and students, and students have the little background knowledge of mathematics in general secondary school. Moreover, as mean value 4.4 for statement 8 indicated that the teacher respondents agreed about the syllabus and teacher guide are helpful for mathematics teachers in planning and implementation process. In this table, the mean value 3.3 of the responses of statements one shows that the teachers agreed with the acceptability the aims and objectives written in mathematics syllabus are appropriate. However, the mean value 4.2 of the responses for statement 11 indicated that the teachers' respondents agreed on the methods and technique of teaching suggested in the materials encourage more of teachers' explanation and guide discussion. Thought they disagreed about the aims and the objectives of mathematics syllabus are compatible to aims and objectives of GSS program, most of the (mean value 3.8) agree the general secondary school mathematics curriculum contains variety of learning methods that can minimize students' participation.

The mean value 2.3 of the responses for statements show the majority of the teachers respondents disagreed on the organization of the content and learning activities of mathematics syllabus is appropriate for teaching students in general secondary school. But, as the mean value 3.8 for statement 2 the teachers' respondents are agreed on the mathematics syllabus contains variety if teaching methods that can minimize students' participation respectively.

For item 3, the mean value 2.4 of the responses for statements show the majority of the teacher respondents disagreed on the students learn mathematics with enthusiasm in general secondary school. But, as mean value 4.1 indicated that the teachers also agreed on the statements "Most of the content of mathematics curriculum is beyond the ability of the students in GSS" and "There are adequate exercises at the end of each topic of mathematics textbooks" respectively.

Regarding statements 5, the mean value 3.8 indicate that the teacher respondents' agreed on the major role of mathematics teacher in general secondary school should be to encourage students to memorize all definitions, theorem, rules and axioms instead of worrying about their proof.

Generally, the attitude of mathematics teachers' measurements revealed that 83.3% of the respondent's teachers' show positive attitude the implementation of mathematics curriculum

and the grand mean 3.9 confirmed that relatively most of the teachers have positive attitude towards the implementation of mathematics curriculum. However, 16.7% of the respondent teachers show negative attitude towards the implementation of mathematics curriculum in general secondary school.

Certain factors such as aptitude, achievement, sex, motivation teachers' quality and teaching learning environment are known to correlate with attitude towards mathematics. Among these factors teachers quality, the learning environment and the motivation are the most powerful causal determinants of attitude towards mathematics (Haladya, et al, 1963: 19 – 20). Since motivation is one of the determinants factors to attitude of mathematics teachers, the mathematics teachers were interviews about their interest and motivation of teaching the mathematics curriculum in general secondary school. Accordingly, Mojo GSS mathematics teacher (Mr. A) said:

> *I am interested to teach the mathematics subjects but mathematics syllabus is not appropriate for students in the general secondary school because its contents are vast and cannot be finished within allotted time. But also the students' are not interested to learn mathematics subject in the general secondary school because the student are said to think mathematics subject is difficult to other subject. And also some of teachers are not to be motivated to teach the GSS mathematics in the school.*

A seems disappointed because of a little attention given by the school community for mathematics teaching. In the same way another Bora GSS mathematics teacher (Mr. B) said:

> *I am very interested to teach the mathematics subject in this school, but students do not have good academic background knowledge in mathematics and they are also not curious to learn mathematics since they think that it has no usage. In addition, some of the mathematics teachers talk about teaching GSS mathematics in the GSS is waste of time and also principals do not give much attention for mathematics subjects. These and other issues discourage me to be ill – motivated to teach mathematics.*

Both Mr. A and Mr. B are interested to teach mathematics, but some conditions in their school do not initiate and motivate them to mathematics subject with passion. As indicated the conditions are in such a way that student's row background knowledge of mathematics, the students are less eager to learn mathematics, absence of good support from administration and little attention was given from the principals. The third Wonji GSS mathematics teacher (Mr. C) also expressed his feeling quite similar to that of Mr. A and Mr. B.

When he say:

> *… When you took at the students' academic status it seemed teachers have are not up to their grade level even if it is presumed that they have completed grade 9 and 10. So, teaching GSS mathematics syllabus in the general secondary school is unplanned and his create different problems during the implementation.*

As the result, thought the data in the table 3 revealed that it seemed teachers have positive attitude, according to the interview result they were not motivated to teach mathematics subject in general secondary school due to vast contents of the syllabus, low academic background knowledge of students, little support and attention from principals and administration and students lack of willingness to learn the mathematics subjects.

4.1.2 Students' perception toward the implementation of mathematics curriculum

It is believed that mathematics curriculum plays a crucial role for the development of science and technology. It has also wide application in real life situations. Hence, it has been given for pupils in any school or education institutions as basic. Despite this fact, some studies confirmed that many of the students do not perform well in mathematics syllabus and they have low interest to learn mathematics curriculum. Khalid's' (2004) research about enhancing mathematics syllabus in Brunei Technical School indicated factors that influence the attitude of students towards the mathematics curriculum is an intimidating subject to the students and they tend to shy away from mathematics syllabus as its represents unfamiliar and difficult territory. With this understanding, this study includes assessment of the students' towards the currently to implement of grade 9 and 10 mathematics syllabus. The data obtained from the study by asking some open ended and closed ended questions in the questionnaire. It reveals the case as follows.

Table 4: Students' perception toward learning of mathematics subjects as perceived by them

No	Statements	Students Respondents (N = 450)	
		f	%
1	How much is your interest to learn mathematics?		
	A. Very high	171	38
	B. High	120	26.7
	C. Medium	99	22
	D. Low	30	6.7
	E. Very low	30	6.6
2	If your answer for question 1 is number "low or very low" which of the following do you think the reasons?		
	A. The syllabus is not design for school	-	-
	B. Poor teaching methods of teachers	12	20
	C. The subject is difficult	48	80
3	To what extent learning mathematics increases your knowledge and skills?		
	A. To large extent	296	65.7
	B. To some extent	121	26.8
	C. Not sure	33	7.5
4	Do have a habit of participating in different mathematics clubs in your schools?		
	A. Frequency	49	10.9
	B. Rarely	55	12.2
	C. Not at all	346	76.9
5	Is there a group work practice in your mathematics class?		
	A. Yes	310	68.9
	B. No	140	31.1
	C. Not sure	-	-
6	Do you have interest to continue in mathematics stream in your future career?		
	A. Frequency	175	38.9
	B. Rarely	116	25.8
	C. Not at all	159	35.3

Table 4: Students' perception toward learning of mathematics subjects as perceived by them

No	Statement	Students respondents (N = 450)	
		f	%
7	Do have a practice of reading reference books for mathematics subjects?		
	A. Frequently	155	34.4
	B. Rarely	116	25.8
	C. Not at all	179	39.8
8	If your response your question number 9 is rarely which of the reason restricted you?		
	A. Teachers does not recommend us to refer add how reading materials	23	19.8
	B. Lack of experience to use library	74	63.8
	C. Poor facilities of the library	19	16.4
9	To what extent did the implementation of grade 9 and 10 mathematics lesson motivate your interest in learning and teaching mathematics curriculum?		
	A. To large extent	36	8
	B. To some extent	130	28.9
	C. Not at all	284	63.1

As can be seen in the table 4, 38% of the students answer that they have very high interest to learn mathematics curriculum in the school. Among the students who replied "low or very low" interest to learn the mathematics curriculum 20% of the indicate the reason as poor teaching methods of teachers and 80% of the students indicated the reasons as the mathematics subject is difficult respectively. Student in general secondary school believed that learning mathematics increase their knowledge to the large extent since the data show as 65.7% related learning mathematics in their school increase their knowledge to large extent.

For item 4, 76.9% of respondent students indicated that they didn't have practice of participating in co-curricular activities such as different mathematics clubs. Only 10.9% of respondents indicate that the habit of participating in mathematics clubs as "frequently". Beside, the data from observation notes in the respective school also shows the absence of mathematics club activities.

That is, it was observed that only there is a practice of forming different clubs at the beginning of the academic years. But, there is no such significant activity by the clubs through which students may gain different knowledge, skills and more than these positive attitudes towards mathematics subject. In this regard, a director (Denkoka GSS) while interviews also asserted that:

> *...we know that one of our responsibility as a school is forming of different clubs, but due many problems like readiness on the side of teachers and students, lack of assistance from different bodies, lack of resources (materials as well as time) etc, we cannot be able to run clubs as it is suggested in policy guide ling.*

This trend of the selected schools may have its own negative impact on students' attitude towards learning mathematics subject. Thus, absence of mathematics clubs activities in selected in schools may be considered as one of the major factors that influence the government general secondary schools encountered in translating of the intended mathematics curriculum in to practice.

Thought 31.1% of the respondent student reported that there is no group work activity doing mathematics instruction; 68.9% of the reported that there is a group work activity in mathematics teaching learning process.

Furthermore, the above data depict that almost similar percentage of respondent students (38.9% and 35.3%) do have interest to or not to study mathematics stream in their future career. Hence, this may be considered as a good practice of surveyed schools since they are able to prepared students for different stream. In this regard, the TGE (1994: 14-15) policy document shows that general secondary education (grade 9 and 10) is a special phase and part of the total process involved in education at which students develop different attitudes for the education, for a specific program (academic as well as vocational) of training and for the world of work.

On the other hand, thought significant number of students (34.4%) reported that they have been developed a practice of using additional reference books to have further knowledge in mathematics subject, 39.8% of respondent students didn't completely develop habit of reading reference books for these subject. Out of the students who replied they rarely or didn't have practice of reading reference books, they indicated the reasons as poor facilities of the library 16.4%; lack of necessary mathematics reference books and the library is not regularly opened

63.8%; and teachers do not recommended then to difference and additional reading materials and they do not motivate then to use the library 19.8%.

Most of the student respondents 63.1% replied that the implementation of grade 9 and 10 mathematics lesson motivate your interest in learn and teach mathematics curriculum in the school. This implies that the feeling of the student attitudes towards the implementation of the mathematics curriculum is negative. The student respondents reflected their feeling about learning general secondary school mathematics on the open ended question. They wrote:

- We demand to learn mathematics curriculum to develop our knowledge of mathematics and we need mathematics in our daily life situation but we have not sufficient mathematics reference book in the library.
- Learning general secondary school mathematics in our school is so good but the teachers did not have systematic teaching technique to teach us.
- Some of the students claim that mathematics is not our major subject so that we should not have given attention to learn it as major course.
- We required learning the general secondary school mathematics in order to purse the degree level our field.
- We did not have good feeling to learn the general secondary school mathematics curriculum because the content of the text book are wide and more of academic; the content should not be covered with the allotted and the mathematics teachers always hurry to finished the content of the suggested units. As the result, it is very difficult to use to understand the basic concept of the mathematics syllabus.

Generally, the data obtain from the students questionnaire about their perception revealed that they did not have good feeling to learn the general secondary school mathematics syllabus. The students have learned the mathematics subject more attentively when they are interested in the subject they learned. In relation to this, Schifield (1982) in his review of factors that influence the implementation of mathematics curriculum indicated that mathematics teachers and others mathematics educators generally believe that pupil learn more effectively when they are interested what they learn.

Alikein (1972) also suggested that students with positive attitude mathematics tends to like detail work, the view them as more persevering and self confident. As Steen (1989) stated the ability of individual to cope with mathematical demands of every daily life as employees, as presents, and as citizens depend on their feeling towards mathematics curriculum conveyed by school experiences. Therefore, the continual action should be taken towards creating and developing positive attitude of students towards the current mathematics curriculum. Therefore, the result of this study answer the first researcher question about the attitude of mathematics teachers and their student the current regarding to the implementation of mathematics syllabus in general secondary school.

4.2 The Achievement of Objectives for Grade 9 and 10 Mathematics Syllabi and their Successful Implementations

The achievement of educational objectives partly requires pupil's positive attitudes towards teaching of mathematics syllabus (Tekeste, 1990). In his findings Tekeste further remarks that pupils' attitude is an important factor in their potentials to receive education. A positive attitude towards learning mathematics facilitates effective and successful implementation of mathematics curriculum in schools whereas a negative attitude is a hindrance to pupils' successful implementation progress in school work.

4.2.1 Mathematics achievement differences in the different type of schools and in sex differences

Different studies emphasize a number of factors that influence the achievement of students in their perspective schools. The factors could be external or internal for the schools. Among the external factors the influence of student home background, personal and community characteristics are widely acknowledge. With reference to student home background well know influence to student achievement related to parental socio-economic status (SES), family configuration and parental support.

To examine gender difference in mathematics achievement in general and the change in these difference across grade levels in particular, a study by Hilton and Bergulnd (1974) reveals that there is no significance gender difference in mathematics achievement at grade five level.

However, the study discloses significant gender differences in favor of males at subsequent grade level (seven, nine, and eleven). Thus the data present below show the t-test for comparison of students' mathematics achievement between males and females students as follows. /See Appendix C/

Table 5: t-test for comparison of students' mathematics achievement between males and females students

No	Types of Government schools	Grade	Sex	No	Mean	S.D	t-value	t-critical value
1	Denkok GSS	9	M	19	60.32	18.76	4.278	2.396
			F	19	56.16	16.41		
		10	M	19	56.55	17.59	4.164	
			F	18	56.94	16.64		
		9 and10	M	38	58.44	18.17	4.221	2.000
			F	37	56.55	16.52		
2	Mojo GSS	9	M	25	57.84	17.99	4.114	2.411
			F	28	54.18	15.83		
		10	M	25	64.2	19.97	4.381	
			F	27	54.93	16.05		
		9 and 10	M	50	61.02	18.98	4.247	2.000
			F	55	54.55	15.94		
3	Koka Ejersa GSS	9	M	22	56.95	17.71	4.092	2.295
			F	23	54.52	15.93		
		10	M	22	52.27	16.26	3.996	
			F	23	56.78	16.59		
		9 and 10	M	44	54.61	16.98	4.044	2.000
			F	46	55.65	16.26		
4	Bora GSS	9	M	18	54.11	16.83	4.071	2.392
			F	20	56.95	16.64		
		10	M	17	64.76	20.14	4.357	
			F	20	50.4	15.68		
		9 and 10	M	35	59.44	18.48	4.214	2.000
			F	40	53.68	16.16		
5	Wonji GSS	9	M	25	64.44	20.04	4.654	2.456
			F	28	58.6	18.23		
		10	M	25	49.92	15.53	3.998	
			F	27	55.74	17.34		
		9 and 10	M	50	57.18	17.78	4.326	2.000
			F	55	57.17	16.95		
6	Merging both schools	9	M	109	58.73	18.27	4.242	2.364
			F	118	56.08	16.61		
		10	M	108	57.54	17.90	4.18	2.329
			F	115	54.96	16.46		
		9 and 10	M	217	58.14	18.08	4.211	2.000
			F	233	55.52	16.37		

As show in table 5, for grade 9 students' mathematics achievement test scores in Denkoka GSS, the obtained t-value 4.278 is greater than t-critical value 2.396 for to tailed test at df66. It could, therefore, be said that the difference in mathematic achievement between grade 9 males and females students in Denkoka GSS is significant. Similarly, the calculate t-value for grade 10 students' mathematics achievement test score in Denkoka GSS 4.164 is greater than the t-critical value 2.396 for tailed test at df64. It could, therefore, be said that there is a significance difference in mathematics achievement between grade 10 males and females student in Denkoka general secondary school. In addition, when the mathematics achievement test scores of both grade (9 and 10) students considered together in Denkoka GSS, the obtained t-value 4.221 is greater than the t-critical value 2.000 for two tailed test at df111. It could, therefore, be concluded that there is a significant difference in mathematics achievement between male and female student in Denkoka general secondary school.

Regarding grade 9 students' mathematics achievement test scores in Mojo GSS, the calculated t-value 4.114 is greater than t-critical value 2.411 for to tailed test at df68. Therefore, it can be said that the difference in mathematic achievement between grade 9 males and females students in Mojo GSS is significant. Similarly, the calculated t-value for grade 10 students' mathematics achievement test score in Mojo GSS 4.381 is greater than the t-critical value 2.411 for tailed test at df72. Thus, it can be said that the difference in mathematics achievement between grade 10 males and females student in Mojo general secondary school is significance. In addition, when the mathematics achievement test scores of both grade (9 and 10) students considered together in Mojo GSS, the obtained t-value 4.247 is greater than the t-critical value 2.000 for two tailed test at df112. It could, therefore, be concluded that there is a significant difference in mathematics achievement between male and female student in Mojo general secondary school.

As statement 3, for grade 9 students' mathematics achievement test scores in Koka Ejersa GSS, the obtained t-value 4.092 is greater than t-critical value 2.295 for to tailed test at df65. It could, therefore, be said that the difference in mathematic achievement between grade 9 males and females students in Koka Ejersa GSS is significant. Similarly, the calculate t-value for grade 10 students' mathematics achievement test score in Koka Ejersa GSS 3.996 is greater than the t-critical value 2.295 for tailed test at df63. It could, therefore, be said that there is a significance

difference in mathematics achievement between grade 10 males and females student in Koka Ejersa general secondary school. In addition, when the mathematics achievement test scores of both grade (9 and 10) students considered together in Koka Ejersa GSS, the obtained t-value 4.044 is greater than the t-critical value 2.000 for two tailed test at 106df. It could, therefore, be concluded that there is a significant difference in mathematics achievement between male and female student in Koka Ejersa general secondary school.

Regarding items 4, for grade 9 students' mathematics achievement test scores in Bora GSS, the obtained t-value 4.071 is greater than t-critical value 2.392 for to tailed test at df66. It could, therefore, be said that the difference in mathematic achievement between grade 9 males and females students in Bora GSS is significant. Similarly, the calculate t-value for grade 10 students' mathematics achievement test score in Bora GSS 4.357 is greater than the t-critical value 2.392 for tailed test at df71. It could, therefore, be said that there is a significance difference in mathematics achievement between grade 10 males and females student in Bora general secondary school. In addition, when the mathematics achievement test scores of both grade (9 and 10) students considered together in Bora GSS, the obtained t-value 4.214 is greater than the t-critical value 2.000 for two tailed test at df111. It could, therefore, be concluded that there is a significant difference in mathematics achievement between male and female student in Bora general secondary school.

Final, for grade 9 students' mathematics achievement test scores in Wonji GSS, the obtained t-value 4.656 is greater than t-critical value 2.456 for to tailed test at df76. It could, therefore, be said that the difference in mathematic achievement between grade 9 males and females students in Wonji GSS is significant. Similarly, the calculate t-value for grade 10 students' mathematics achievement test score in Wonji GSS 3.998 is greater than the t-critical value 2.456 for tailed test at df65. It could, therefore, be said that there is a significance difference in mathematics achievement between grade 10 males and females student in Wonji general secondary school. In addition, when the mathematics achievement test scores of both grade (9 and 10) students considered together in Wonji GSS, the obtained t-value 4.326 is greater than the t-critical value 2.000 for two tailed test at df114. It could, therefore, be concluded that there is a significant difference in mathematics achievement between male and female student in Wonji general secondary school.

Merging the five types of government secondary schools together, for grade 9 students mathematics achievement test scores, the obtain t-value 4.242 is greater than the t-critical value 2.364 for five tailed test at df114. Hence, it can be said that the difference in mathematics achievement test between grade 9 male and female students of general secondary schools in East Showa Zone is significant. Similarly, the calculate t-value for grade 10 students' mathematics achievement test scores in general secondary school 4.18 is greater than the t-critical value of 2.329 for five tailed df112. It could, therefore, be said that the difference in mathematics achievement between grade 10 male and female students' of general secondary schools in East Showa Zone is significant. Besides, when the mathematics achievement test scores of both grades (9 and 10) students' considered together in general secondary school, the obtained t-value 4.211is greater than the t-critical value 2.000 for five tailed test at df112. It could, therefore, be concluded that there is a significant difference in mathematics achievement between male and female students at the general secondary schools in East Showa Zone of Oromia Region.

An investigation was made on mathematics achievement difference between male and female student in general secondary school. Consequently, a significance difference was found between male and female in government secondary school. Males had substantially higher achievement (mean = 58.44) as compared with females (mean = 56.55) in Denkoka GSS, males had substantially higher achievement (mean = 61.02) as compared with females (mean = 54.55) in Mojo GSS, males had substantially higher achievement (mean = 54.61) as compared with females (mean = 55.65) in Koka Ejersa GSS, male had substantially higher achievement (mean = 59.44) as compared with females (mean = 53.68) in Bora GSS and males had substantially higher achievement (mean = 57.18) as compared with females (mean = 57.17) in Wonji GSS. But, when the subjects in these five schools were taken as a single population, a significant difference was found between males and females in the general secondary school. Males had substantially higher achievement (mean = 58.14) with females (mean = 55.52). This implies that males perform better than females in mathematics. Some the earlier studies in the area reported similar findings (Benbow and Stanely, 1983; Yoseph, 1997).

4.3 Factors Influencing the Implementation of Grade 9 and 10 Mathematics Curriculum

4.3.1 School Related Factors

These parts of the study present the possible school related factors that influencing the implementation of mathematics curriculum. This end the data collected through questions (school principals, department heads, teachers and students) has been used. Alongside with information collected from classroom observation on teachers and students activities were employed.

4.3.1.1 Teacher Related Factors

A. Teacher qualification, professional experience and teacher area of specializations

Regarding teacher's qualification, Ayalew (1991) stated that, teaching is not a mere occupation where people can go without the professional of the requisites qualification. It requires expert knowledge, specialized skills, and a feeling of responsibility. Poor performance of students in mathematics at general secondary school may results from low qualification of mathematics teachers, professional experience, area of specialization and attitude. Accordingly, these issues were investigated in the following section. On the basis of this, qualification level was ones the items of the questionnaires to determine preparation for teaching mathematics curriculum. Accordingly, the results have been presented in table 6.

Table 6: level of academic qualification, years of service and area of specialize of mathematics teachers.

Items	Teachers Response(N = 30)		
	Male	Female	%
1. Qualification			
A. BSc or BED	27	3	100
B. Diploma	-	-	-
2. Your service years			
A. 1 – 6	3	1	13.3
B. 7 – 13	10	2	40
C. 14 – 24	8	-	26.7
D. 25 – 30	4	-	13.3
E. 31 and above	2	-	6.7
3. Area of specialization			
A. Mathematics Major	27	3	100
B. Mathematics Minor	-	-	-

From the data collected, it has been found that 100% of the teachers have qualification at degree level (BSC or BED). In this respect, all the major of mathematics teachers seems have adequate qualification. This seems contrary to the Ethiopia Education Policy: the minimum required qualification to teach at GSS level is at least a first degree (MOE, 2001). As consequence, this could be one of the major problems that influence student's academic performance.

In developing countries, some of the teachers improved their capacity through self learning and teaching experience (Fuller, 1987). He also stated that, teaching proficiency in organizing instruction and motivation students positively related with their teaching experience. It is assumed that a rich background of teaching experience increases teacher's ability to instruct effectively. Thus, in most case it is expected that the higher the learning experience of mathematic teachers, the better is their teaching performance.

With regard to professional experience in teaching mathematics at GSS, majority of them do have a good deal of teaching experience. As indicated by respondents, the majority of mathematics teachers (which the sum total of respondents who have taught between 7 – 13 to 14 – 24) have taught between them 7 to 24 years where as 6.7% of them have taught more than thirty one years and 13.3% of then have taught between 1 – 6 years. On the basis of what of the study group has reflected, it may argue that the member of mathematics teachers who appear to have adequate numbers years of experience is in significant.

With regard to the field of specialization, as it can seen from table 6, mathematics teachers with mathematics major area of specialize account 100% while mathematics minor accounted about zero percent (0%). This implies that, the mathematics teachers where specialized on the subjects they are teaching.

4.3.1.2 Curriculum Related Factors

a) Mathematics teacher use of curriculum materials

It is obvious that the mathematics teacher syllabus, reference text books and mathematics teacher guide books are valuable documents that service as a reference material for educational objectives, contents determination of teaching aids, the teaching learning strategy and means of evaluation or implementation process. Thus, one can use then in the absence of student's reference text books.

Similarly, when the mathematics teachers guide books, reference text books and students' text books are available, the absence of the syllabus may not seriously influence the implementation process due to the fact both of them are the outcomes of the mathematics syllabus. But since mathematics teachers guide books, as it is name implies, is the materials that directs the mathematics teachers and the students text books is the source of information, it is difficult think effective implementation of the mathematics curriculum, when the mathematics teachers guide books and students text books are not use.

Table 7: Mathematics teacher's response about their use of curriculum materials

Item	Alternative	f	%
What are your sources of information that you use in order to enrich mathematics instruction?	A. Mathematics text book	16	53.3
	B. Mathematics reference book	8	26.7
	C. Other related reference book	3	10
	D. Teachers guide book	3	10
	E. Others	-	-

In order to achieve effective teaching learning process, classroom mathematics teacher after use text book as one of single source of information. Text books are used as reference materials and instructional means for the learning process of students. As McNeil pointed out book text book are instruction tools for most the mathematics teacher's views of the "correct" path to use the text book: follow the text, each the text and the test text, or to use it has a reference for students to draw one as they pursue their classroom investigations (Ns McNeil, 1999: 291). Thus, mathematics text books and mathematics reference books are playing important role source of information to enrich mathematics since the above table depicts 53.3% and 26.7% of the mathematics teacher declared that mathematics text book and mathematics reference books are their mains tools for the teaching of mathematics respectively. About 10% of the respondents appear to supplement the mathematics reference books and mathematics text books by other related reference materials and teachers guide books. The significant number of mathematics teacher 80% heavily relied on the text books and mathematics reference books. This means the mathematics teaching in the school seems to be highly book oriented. In order to assess the appropriateness and relevance of the mathematics topics questionnaires summarized in table 8.

Table 8: Views regarding the appropriateness of mathematics topics and its impact on students' performance

Items	Teachers respondents (N = 30)					
	Yes		No		Not at all	
	f	%	f	%	f	%
1. Contents of mathematics are vast to understand	18	60	9	30	3	10
2. Is the suggested the implementation of teaching methods are appropriate during mathematics curriculum?	27	90	3	10	-	-
3. Are the suggested teaching aids appropriates for mathematics curriculum?	27	90	3	10	-	-
4. Can the content of the textbook be finished in the allotted time?	12	40	15	50	3	10

Little more than half (60%) of mathematics teachers confirmed that mathematics topics of grade 9 and 10 are difficult to understand. About 30% of the respondents' teachers agreed that the contents of the subjects for the grade 9 and 10 are not difficult. As to appropriateness of the suggested methods in the curriculum, documentary analysis of the mathematics syllabus for grade 9 and 10 was carried out. Furthermore, structured question were posed to mathematics teachers in each sample school. As table 8, depicts 90% of the respondents' agreed that the suggested teaching methods are appropriateness. On topic of this, from the review of the related literature, it is apparently clear that mathematics can be best be taught through discussion, explanation, group work questioning and answering and inviting guest (MOE,1998).

On the other hand a documentary analysis looking at the syllabus for grade 9 and 10 was done to analysis the teaching methods. It is therefore, reasonable to conclude that the suggest grade 9 and 10 mathematics teaching methods in the syllabus are appropriate or adequate to teach mathematics for grade 9 and 10 of properly used.

To prove the appropriateness of the teaching aids suggested in the curriculum to teach mathematics at GSS with particular reference to grade 9 and 10, respondents' teachers were asked. Table 8 show that the from the respondents' teachers 90% of them agreed the suggested teaching aids for teaching mathematics are appropriate. As it was found out through documentary analysis, the suggested teaching aids in the syllabus of mathematics were

diagrams, cones, rectangles, circle, etc. Therefore, the suggested teaching aids for mathematics teaching in the syllabus appear to be appropriate to teach grade 9 and 10 mathematics.

Regarding items 4, 50% of the respondent teachers confirmed that the contents of mathematics for grade 9 and 10 could not be finished within the allotted time.

Therefore, the combined phenomena of un proportionality of the subject to the time allotted and the irrelevancy of the curriculum could influence the teaching learning process, might have and caused to reduced the interest of the students towards the implementation of mathematics curriculum learning. And these situations reduce the effective and efficient attainment of the students' academic performance.

4.3.1.3 Students Related Factors

Students related factors that have influence the pedagogical teaching learning conditions in mathematics are the student attitude toward the subject and students classroom behavior are issues to be discussed and analyzed as follows.

a) Student classroom behavior

Student's absenteeism, disciplinary problems and Vandalism influence their academic performance (Pastethwaite, 1994). Further he expressed those students' disciplinary problems and Vandalism influence mathematics teacher and students by reducing school effectiveness, inhibiting students learning and disrupting the school learning environment. So, the questionnaire was administrated for mathematics teachers to investigate which student behaviors influence their academic performance. The responses are summarized in table.

Table 9: Student classroom behavior

Behavior of student that influence their performance	Teachers responses(N=30)					
	Serious		Moderate		Minor	
	f	%	f	%	f	%
Students absenteeism	9	30	21	70	-	-
Disciplinary problems	6	20	15	50	9	30

As it can be seen from table 9, 70% and 50% of the respondents teachers argued that, students absenteeism and disciplinary problems moderate influence students' academic performance. The finding of this study coincide with the finding of Pastethwaite (1994) stated students disciplinary problems and absenteeism influence student academic performance.

4.3.1.4 Classroom Condition

A. Mathematics teachers' instructional classroom performance

Instruction is the mean by which delivering the intended factors that influence the implementation of mathematics curriculum in the classroom, Johnson as cited in Derebessa (2004: 26) defined instruction as "the interaction between the teaching agent and one or more individual intending to learn". During, the mathematics teachers' primary responsibilities are the students whom they teach mathematics curriculum. Therefore, a teacher's tends to entertain the design curriculum in term of the students learning in classroom. Thus, teachers' instructional classroom performance is the best indicators of whether what is intended in the mathematics syllabus is implemented or not. In the mathematics syllabus different activities of teachers are suggested in order to perform by them. Table 10 and 11 presents the data collected through classroom observation (rating scale and checklist).

Table 10: Mathematics teachers' classroom observation activities results in terms of some instruction considerations

No	Instructional consideration	Rating scale						Mean value
		Frequency		Rarely		Not at all		
	How often does the teacher	f	%	f	%	f	%	
1	Uses different instructional methods and techniques in lesson presentation?	3	10	15	50	12	40	1.7
2	Encourage the student to participate in discussion?	3	10	21	70	6	20	1.9
3	Encourage the student to task question which is not clear to them	-	-	6	20	24	80	1.2
4	Ask question to check whether the student understand the lesson?	9	30	17	56.7	4	13.3	2.2
5	Use group activities of students for collaborative learning?	-	-	8	26.7	22	73.3	1.3
6	Guides the learner during the group work?	-	-	5	16.7	25	83.3	1.2
7	Goes round to the student in classroom in order to check their class work?	14	46.7	16	53.3	-	-	2.5
8	Relates the lesson to student real life situation?	4	13.3	19	63.3	7	23.4	1.9
9	Writes important ideas on the black or white board?	27	90	3	10	-	-	2.9
10	Gives equal attention for all students in the classroom?	26	86.7	3	10	1	3.3	2.8
11	Gives the student prompt feedback?	3	10	21	70	6	20	1.2
Grand mean								1.88

As can be from table 10, for item 1, the mean value 1.7 of the observation confirmed that the majority of the observed teachers rarely used variety of instruction methods during the lesson presentation. Regarding item 2, the mean 1.9 of the observed sessions indicated that the mathematics teachers rarely encouraged the students to participate in discussion and 80% of the observed sessions revealed that they did not the mathematics instruction. But, only 20% of the observed sessions indicated they rarely encourage the students to ask questions, thus, the mean value 1.2 of the observed session implies the majority of the observed teachers did not encourage the students to ask questions about the concepts which are not clear to them. For the

4 item, the mean value 2.2 of the observed sessions indicated that the majority of the teachers rarely asked the questions to check the students understanding of the lesson.

For item 5, in 83.3% of the observed sessions, the teachers did not use the group work methods for collaborative learning. Moreover, most of the observed sessions 73.3% indicated that they did not guide the learning during group work. However, during 53.3% of the observed sessions, most of them rarely moved round to student seats in classroom in order to check their work.

For item 9, in most of the observed (90%), teachers frequently wrote important concepts or ideas on black board. But in item 8, the mean value 1.9 of the observed sessions confirmed that the most of the observed teachers rarely related the mathematics concepts to the student real life situation or on the subjects in mathematics in the classroom teaching. For items 10 and 11, 86.7% of the observed sessions indicated that teachers frequently gave equal attention for all students in mathematics classroom teaching and 70% of the observed sessions indicated that they rarely gave students prompt feed back to their work respectively.

A variety of teaching methods were employed by mathematics teachers in order to enhance the students understanding of the classroom. However, the result of the data presented in table 10, revealed that mathematics teachers rarely used variety of teaching methods, rarely encourage the students to involve discussions, did not initiate then to ask questions, rarely check whether the students understand or not, did not any group work activities, related the lesson to the students real life situation or on subsets, rarely gave students prompt feedback for their works. But, they frequently wrote important ideas concepts on black board and gave equal attention for all students. Generally, the grand mean 1.88 of the observed sessions indicate that the most of the observed teachers rarely performed the instructional considerations as set in grade 9 and 10 mathematics syllabus in general secondary schools.

Tables 11: Mathematics teachers classroom observation activities results in terms of lesson presentation variables

No	Lesson presentation variables	Yes		No	
	Did the mathematics teacher	f	%	f	%
1	Prepare the weekly or daily lesson plan?	12	40	18	60
2	Start lesson on time?	2	6.7	28	93.3
3	Write lesson topic on the chock board?	28	93.3	2	6.7
4	Specify the objective of the lesson clearly?	10	33.3	20	66.7
5	Checks the previous home work?	9	30	21	70
6	Revise the previous lesson before starting the new lesson?	11	36.7	19	63.3
7	Encourage the student to use the text book in the classroom?	13	43.3	17	56.7
8	Uses text book for teaching learning process in classroom?	29	96.7	1	3.3
9	Give class work, home work and assignment?	23	76.7	7	23.3
10	Summarize the main points of the lesson?	3	10	27	90
11	Illustrate lesson with more exercises?	8	26.7	22	73.3
12	Use teaching aids in the classroom?	6	20	24	80
13	Allow the student to present what they have done in group?	12	40	18	60
14	Properly use the black board?	18	60	12	40
15	Manage the classroom?	27	90	3	10
	Mean percentage	-	46.9	-	53.1

As table 11 depicts that 60% of observed sessions indicated that the observed teachers did not prepare weekly lesson plan and 93.3% of observed sessions confirmed that they did not start the lesson on time. However, 93.3% of observed sessions indicated that they wrote the lesson topic on the black board before they star presenting the lesson. In the table 11, we see that 66.7% of observed sessions indicated that the teachers did not specific the objectives of the lesson to the students. In 63.3% of observed sessions, the teachers did not revise the previous lesson before starting the new in classroom and as 70% of observed sessions indicated most of them did not check whether the students did home work or not. Thought, in 96.7% of observed sessions the majority of observed teachers used the text book for mathematics instructions, 56.7% of observed sessions indicated did not encourage the students to use their text book during mathematics instructions. The table exhibited that 76.7% of observed sessions indicated that the teachers gave class work, home work and assignment for in students in order to assess

or evaluate their performance in mathematics whereas 90% of observed sessions indicated that they did not summarized the mathematics points of the lesson. In addition, 80% and 60% of observed sessions indicated that they did not use teaching aids and did not allow the students to present what they have done in group in the classroom. Nevertheless, 73.3%, 60% and 90% of observed sessions indicated the teachers illustrate the lesson with more examples, properly used the black board and manage the classroom effectively in the classroom respectively.

Generally, the mean percentage (46.9%) of the observed sessions revealed that the teachers did the lesson presentations variable whereas the mean percentage (53.1%) of the observed sessions showed that the teachers did not do the lesson presentations variables effectively in the classroom.

As it is understood from table 11, the mathematics teachers did not use variety of teaching methods and teaching aids in order to enhance the teaching learning process of mathematics syllabus in general secondary school. This is contrasted with the theory that teachers were done well to explain the demanding topics of mathematics using variety of media and method of teaching so that they can assist students with different learning styles (Mojis and Reynolds, 2003: 7). Use of variety of teaching strategies accommodates various students learning styles and provides opportunities for students that are helped them to be motivated and constructed their understanding of the concept involved. Starting the lesson with a review and practice of what was learn during the previous lesson, for examples, by check up home work as this will permit the teacher to finds out to what extent this content will need to be taught.

B. Classroom environment for teaching mathematics subject

The implementation of grade 9 and 10 mathematics syllabus in the school will be effective if the school and classroom environment should be supportive atmosphere for the implementation process. In order to be effective the two need to be complementary (Mojis and Reynods, 2003). Thus, to examine the favorability of the environment in the school and classroom the following points are considered under this section.

a) Classroom climate

In this study, the focuses the major factors that influence the classroom climate are availability of required materials resources, the numbers of the students in the classroom and the classroom management. It reveals as follows.

Table 12: Assessment of class size as responded by mathematics teachers

No	Items	Alternative	f	%
1	What is average class size your general secondary school	A. < 55 students	-	-
		B. 56 – 65 students	10	33.3
		C. 66 – 75 students	20	66.7
2	Do you think that the number of student in class has created a problem on proper the implementation of mathematics curriculum	A. Yes	7	23.3
		B. No	21	70
		C. Not sure	2	6.7

As can be seen from the table 12, the majority of the respondent mathematics teacher 66.7% reported that the number the student in class in 66 up to 75 in mathematics instruction and most of the mathematics teacher respondents 70% reported that the number of student in class has not created a problem for the implementation of mathematics syllabus. But, 23.3% of the mathematics teachers' respondents affirmed that the number of student per class created a problem on the proper implementation of the syllabus. A chance give for mathematics teacher in the questionnaire to mention some of the problems faced as a result of large class size. Thus, according to their response the most repeatedly emphasized problems are possibility of checking and unable to correct class work and home work, in ability to conduct continuous assessment of the student performance, difficult to use learner center approach of the teaching and it is hard to control (manage) the classroom.

The most important classroom climate is again the relationship between mathematics teachers and students. The way the mathematics teachers interact with students can influence the classroom environment either negatively or positively. If there are disruptions inside or outside the classroom, the classroom environment negatively affected. Thus, the data about the classroom management is presented in the table next and followed analysis.

Table 13: classroom management as responded by students

No	Items	Students respondents (N = 450)		
		Alternatives	f	%
1	Does your mathematics teacher start the lesson on time?	A. Yes	231	51.3
		B. No	219	48.7
2	If you response question number 1 are "no" what do you think is the reason?	A. Breaking time going for too long	49	21.2
		B. Disordered transactions for breaking time	61	26.4
		C. In effective management of student coming in the classroom	121	52.4
3	Is there disruption or disturbance from outside or inside the classroom when you are learning mathematics?	A. Yes	322	71.6
		B. No	128	28.4
		C. Not sure	-	-
4	If you response question number 3 are "yes" what types of disruptions?	A. Head coming in to make announcement	22	6.8
		B. Teachers from other classroom coming with questions	-	-
		C. Students coming in with various requests	88	27.3
		D. Too much noisy around the classroom	165	51.2
		E. Ill motivated student other issues in class during discussion	47	14.7

As can be seen in the table 13, the majority of the participant of the student in the study 51.3% responded that the mathematics teacher did start the lesson on time. The respondent students reasoned out why the mathematics teacher starts the lesson too late. Accordingly, 52.4% of the student respondents reported that in effective management of student coming in to classroom, 26.4% of the respondents' disordered transactions form breaking time and 21.2% of the respondent reported breaking time going for too long. An obvious but of the neglected element of effective classroom management is starting the lesson on time. Reasons for lesson starting late are various, among other prior lesson running late, breaking time going on for too long, chaotic transactions form breaking time to lesson, and in effective management of student coming in to classroom (Roynods and Mojis, 2003: 37). To alleviate thus problems the mathematics teacher can keep disruption to a minimum by schooling a number of set procedure for dealing with lesson starts.

The majority of the respondents 71.6% confirmed that there is no disruption or disturbance from outside or inside the classroom. But, 28.4% of the replied there is disruption out of these respondents, 51.2% of the indicated too much noisy around the classroom, 27.3% of the indicated student coming in with various requests and 14.7% of the indicated ill – motivated students talk each other different other issues in class during mathematics instructions.

The result of the study revealed that most of the conditions in the classroom are good but lack of teaching aids, lateness of the teacher to start the lesson on time due to in effective management of the student, coming to class and too much noisy around the classroom make some how the classroom is not conductive.

b) Teachers assessment techniques

Teaching depends on assessment action research sustained teaching relies on the abilities to analyze how students are learning and to diagnose what they need. At the end of the lesson, a mathematics teacher implements what took place by focusing on concept that students have learned. Knowledge they have acquired and skills they have displayed. Preparation also relies on the critical in signed in to individual attainment (Collingford, 2004: 150). Thus, assessment is inevitable. In grade 9 and 10 mathematics syllabus different types of assessment techniques are suggested such as class work or class activities, home work, group or individual assignment, oral questions, test and examination.

Table 14: students' response on extent of mathematics teachers' uses of assessment techniques

No	Items	Alternative	f	%	Mean value
1	How often does your mathematics teacher give you class work and class activities?	A. Always	206	45.8	4.1
		B. Frequently	66	14.7	
		C. Sometimes	178	39.5	
		D. Rarely	-	-	
		E. Never	-	-	
2	How often does your mathematics teacher give you group or individual assignment?	A. One per week	58	12.8	3.1
		B. Twice per week	18	4	
		C. Once per month	199	44.2	
		D. Twice per semester	175	38.7	
3	Does the mathematics teacher assess your mathematics performance based on?	A. Continuously assessment	420	93.3	4.0
		B. Mind examination & final examination in semester	30	6.7	
		C. Only one final examination per semester	-	-	
		D. Any other way	-	-	
4	How often does your mathematics teacher know whether or not you understand the lesson he teach in the classroom?	A. By asking question one by one	150	33.3	2.6
		B. By waiting for "yes" answer	-	-	
		C. By asking "are there questions?"	180	40	
		D. By checking the class work	120	26.7	

In the general secondary school mathematics syllabus different types of assessment techniques are suggested like class work or class activities, home work, assignment, test and oral questions as well as final examination in semester. In the syllabus, it also indicated the major factors that influence the student's performance should be carried out continuously. Here, it is scrutinized that how mathematics teachers use the assessment techniques as suggested in the syllabus during the implementation process.

Table 14, show that extent mathematics teacher' uses of assessment techniques perceived by students. In this table, the mean value 4.1 of the students replied that the mathematics teachers frequently gave them class work and class activities. However, 39.5% of the students'

respondents replied that the mathematics teachers sometimes gave them class work and class activities for the students.

Regarding item 2, most of the student respondents 44.2% reported that the mathematics teachers gave group or individual assignments for the students once per month. In addition, most of the student respondents 93.3% responded that the mathematics teachers assess or evaluate the student performance based on continuously assessment only. But, some of them 6.7% said that the mathematics teachers assessed the student performance based on mind examination & final examination in semester. From this data, one can see that some of the mathematics teachers did not employ continuously assessment techniques to assess the student performance.

For item 4, the mean value 2.6 of the students respondents answered that the mathematics teachers knew that the student understand the lesson his teach in the classroom during the implemented of mathematics instruction.

Hence, it can be asserted that, the mathematics teacher did not use the assessment techniques indicated in the mathematics curriculum. Thus, the result of the study revealed that one of the weaknesses of teaching mathematics curriculum in the general secondary school is the absence of continuously assessment to promote learning.

During interview sessions, the thirty mathematics teachers' were also asked about the assessment techniques they used for evaluating the student performance in mathematics subject. As, Mr. A said:

> *Still I did not continuous assessment to evaluate performance because the class size large, and the allotted time is not sufficient to check and correct the students work continuously. Moreover, students did not have adequate mathematics reference books in the library so as to do the given assessments properly. But, I evaluate their performance using only mid semester examination and final examination in a semester.*

Mr. A complains that the number of the students in class, the shortage of time and in adequate mathematics reference books in the library did not permit him to conduct continuous assessment. In continuous assessment techniques, it needs variety of source of information about the student knowledge, skills and activity in performing a task. Source of information include general impressive as well as written tests, pupils set of assessment as well as rating

scale, marking course work as well as checklist, assessment as well as practical tests. One of the weaknesses of continuous assessment is time consuming (Cullingford, C. 2004, 154). Continuous assessment needs ample time and comfortable classroom environment. Due to lack of time and unfavorable conditions of classroom environment many mathematics teachers' turn down to assess the students' performance continuously. According to Mr. B said:

> *I assessed students understanding of mathematics syllabus during mathematics instruction by using class work, home work, and assignments. But, I did not always check students work and did not give then feedback, because in addition to teaching mathematics I have worked as outside of the school.*

According to Koka Ejersa GSS mathematics teacher (Mr. D) said:

> *I only evaluated the students' performance at the end of a semester with final examination. There for, I sometimes assessed the students' performance in mathematics curriculum by using home work, class work and assignment.*

Mr. D explained that he was not following the objective of grade 9 and 10 suggested in the mathematics syllabus. He only evaluated the student performance at the end of the semester by final examination. But, Denkoka GSS mathematics teacher (Mr. E) also said:

> *In order to assess the student understanding and the ability of mathematics, actually I used oral questions, class activities or class work, home work and assignment. Moreover, the student have been evaluated by mid semester examination and final examination in semester. However, the problem was they did not perform well because they have not learned mathematics with interest.*

The interview results revealed that the mathematics teacher have no really continuous assessment techniques in order to evaluated the students performance in mathematics syllabus. Because a large class size, in sufficient times allotment in teaching mathematics, poor facilities of the library, heavy work load, in sufficient of mathematics materials restricted then to use continuous assessment.

Generally, most of the mathematics teachers' lack of pedagogical centers of mathematic teaching in the school because they use only lecture or explanation and question and answer methods of teaching. Since some of the mathematics teachers were qualified with applied mathematics, they did not have the knowledge of pedagogical strategy to instruct the subject. These mathematics teachers did not learn pedagogy during the per-service training.

The result which revealed the low capability of the mathematics teachers' in using variety of teaching methods to teach mathematics in the school is also substantiate by self report of the mathematics teachers themselves. According to Russel (1998), a pedagogical strategy that helps the mathematics teachers' to understand support the mathematics progress of the entire range of student in the classroom.

4.3.1.5 Organizational Related Factors

Goodland (1984:220-223) in his book of "A Place Called School" noted that the task of school as an organization is primarily enhancing the skill and knowledge of people in the organization. This goal of school can be achieved through holding the various piece of the organization together in a productive relationship. It also creates common culture of expectations around the use of those skills and knowledge and holding individuals' contributions to the collective results.

Among them the management structure of school, communication channel among people involved in the implementation and provision staff of development programs are considered as organization related factors for the conception of this study.

a) School management structure

The management structure of a school has its own position for successful implementation curriculum materials. Since the management structure of the school facilities the coordination of resources (human, materials, financial and time), identify the role relationship of different parties in the school and put how to solve problems that arise in the implementation activities. Therefore, the present investigation intended to examine the nature of school management structure in the surveyed school as follow:

Table15: school management structure as perceived by teacher.

No	Issues	Responses (N = 30)			
		3 (Very convenient)	2 (Convenient)	1 (Not convenient)	Mean value
1	The extents to which the current management structure of your school facilitate the implementation of mathematics curriculum?	8(26.7%)	6(20%)	16(53.3%)	1.7
2	The extents to which the current management structure of your school coordinate the available resource for effective implementation of curriculum materials?	9(30%)	8(26.7%)	13(43.3%)	1.9
3	The extents to which the current management structure of your school create a positive role relationship with government bodies for ETP of the country?	7(23.3%)	11(36.6%)	12(40%)	1.8
4	The extents to which the current management structure of your school can easily solve problems that arise in teaching-learning process?	8(26.7%)	7(23.3%)	15(50%)	1.8
Grand mean					1.8

As it has been depicted in table 15, only 26.7% of respondent teachers perceived that the current organization structure of their schools facilities the implementation of mathematics curriculum very conveniently, whereas, 20% and 53.3% of teachers expressed their views as convenient and not convenient respectively.

For item 2, the mean value 1.9 of the respondent teachers indicates that their school structure could coordinate the school resources conveniently for the teaching-learning process of mathematics subjects. Moreover, the mean value 1.8 of the responses teachers show that the current management structure of their school did completely create a positive role relationship

with government bodies in relation to ETP of the country. Similarly, the mean value 1.8 of the respondent teachers is convenient with regard to problem solving capacity of the school management structure.

Therefore, the analyses of the above data show that the surveyed schools don't have conductive management structure. That is, it cannot be able to facilitate, coordinate, solve problems easily and create a positive role relationship with other parties for effective implementation of curriculum materials.

b) The nature of communication in the school

Curriculum implementation is a collaborative or teamwork. To bring these trends, effective communication channel among school communities should be developed in the school. It is through such channel clear understanding and acceptance of duties and responsibilities inserted on the part of each partly. Thus, the data presented below show the nature of communication that ii developed among school communities.

Table16: the nature of communication channel from teachers' point of view.

No	Issues	Responses (N = 30)		
		Frequently	Rarely	Not at all
1	The extent to which you discuss issues of mathematics curriculum implementation with school principals?	16(53.3%)	10(33.3%)	4(13.4%)
2	The extent to which your school hold departmental meeting in related to issues of mathematics curriculum?	4(13.3%)	8(26.7%)	18(60%)
3	The extent to which you discuss issues of teaching methods and or/assessment techniques with students?	20(66.7%)	8(26.6%)	2(6.7%)

In this regard, table 16 depicts that of the respondent teachers (53.3%) rated as frequently about the culture of discussions of mathematics curriculum implementation with their principal, whereas 33.3% and 13.4% related as rarely and not at all respectively. Beside, most interviewed principals (5 in number) reported that the existence of good communication channel between them and the teachers. According to the interviewed principal, some of

academic problems arise in the teaching learning process could be solved through discussion with teachers and students.

However, the above table 16 displayed that the existence of weak departmental meeting in surveyed schools. That is, majority of respondent teachers (26.6% and 60%) rated as weak and totally absence of departmental meeting in relation to mathematics curriculum implementation in their schools respectively.

Moreover, the above table displayed that 66.7% of respondent teachers reported the existence of frequently practice of discussion between teachers and students about teaching learning process, whereas 26.6% and 6.7% reported as rarely and not at all respectively. In the same view, the observation data agreed with data. That is, it was observed in the surveyed schools, the existence of almost promising interaction trend between teachers and students with regard to their academic problems.

Thus, in surveyed schools there is good communication culture between teachers and students which can be consider as one successful practice the surveyed schools, but not guarantee alone for achievement of students.

Table17: the nature communication channel as perceived by students.

No	Issus	Responses (N= 450)		
		Frequently	Rarely	Not at all
1	The existence to which you discusses issues related to the teaching learning process of mathematics subject with your teachers	272(60.4%)	131(29.1%)	47(10.5%)
2	The existence to which you discusses issues of mathematics curriculum implementation with school director.	95(21.1%)	250(55.6%)	105(23.3%)
3	The existence to which you discusses issues of mathematics curriculum implementation with yours peers (others students)	293(65.1%)	69(15.3%)	88(19.6%)

Schools are established to serve student, students' achieved is to goal of instruction and therefore, all activities of a school should be accountable for student achievement. In order to achieve such school goals there should be a culture of interaction between students and others

school community, particularly with teachers and principals. In this connection, table 17 shows that 60.4% of respondent students rated as frequently about the pattern of discussion issues of mathematics curriculum implementation with their teachers, whereas only 10.5% of responded the absence such trend.

The success of intended objectives cannot be realized without the interaction of the school principal and students, because both do have prominent position in the school system. In this regard, table 17 shows that insignificant percentage of respondent students (23.3%) indicated the absence interaction between students and principal. And, 55.6% of the respondent students rated as rarely. This implies that there is no so much promising communication channel between principals and students in the surveyed schools. This practice has its own negative impact the teaching-learning activities of the mathematics subject and consequently student's achievement.

Moreover, the above table depicts that almost equal percentage of respondent students (65.1% and 19.6%) indicate their experience of discussing issues of mathematics subject with their peer as frequently and not at all respectively.

In these regard Snyder et al. (1996: 416) affirmed that student communication with teachers, principals and their peers about the teaching learning process increase confidence on their study, valuing the school for their achievement and increases their readiness for the teaching learning process. Therefore, from the data presented above and followed by discussion, the context of communication channel in surveyed schools is good, particularly teacher with student and school principals.

c. The provision of staff development programs in school

Wossenu (2001: 52) noted that if we need successful implementation of innovation in the school which includes new curriculum, new content, new teaching approaches, new technology etc, almost inevitably need continuous staff development programs. It is through professional development program (both pre-service and in-service) possible to introduce the content, value and strategies of innovation on the part of implementation.

Based on this fact, the present study intended to assess the provision of in-service training for principals and teachers in the surveyed school as follow:

Table18: staff development program in the from teachers point of views.

No	Issues	Responses (N=30)			
		Yes	No	Not at all	Mean value
1	Have you participated in any in-service training programs (seminar, workshop, or any other) with regard to mathematics curriculum implementation?	22(73.3%)	8(26.7%)	-	2.7
2	Do you think that the in-service training you have taken is relevant or important for your classroom performance?	13(43.3%)	17(56.7%)	-	2.4
3	Do you think that you need more training programs to increase your classroom performance?	26(86.7%)	4(13.3%)	-	2.8
Grand mean					2.6

The data in table 18 reveals that 73.3% of respondent teachers have received in-service training in relation to mathematics curriculum implementation. But, as mean value 2.4 of the responses for statement 2 indicated that the teachers' respondents do not believe the implementation of the training programs they participated for effective implementation of their respective curriculum.

These data implies that the surveyed schools have put their efforts to provide in-service training programs for mathematics teachers, but it is not in line with the interest of teachers. Regarding this, Schermerborn (1989: 254) noted that good training programs should at least address the following five steps: assess needs, set objectives, select method, implement the program and evaluate the program. Thus, one of the factors that create the gap between

teachers and in-service training programs is due lack of these steps, particularly the need assessment step.

Teachers also asked to give their opinion about the need of more addition in-service training programs to increase their performance in the teaching learning process. However, the mean value 2.8 of the respondent teachers indicated that they need more additional but relevant training to improve their performance.

According to McNeil (1990: 230) noted that in school situation, professional development of teachers and other staff members has a major purpose of enriching the educational opportunities and consequently students' performance. Moreover, in-service training programs should related the goals of school with individual teacher role in achieving those objectives set in curriculum materials. Thus, mathematics teachers of surveyed school are in problem or facing challenges with regard to relevant professional development programs.

CHAPTER FIVE

Summery, Conclusion and Recommendation

5.1 Summery

This study intended on the factors influencing the implementation of mathematics curriculum in general secondary schools in East Showa Zone of Oromia Region. Descriptive survey approach was selected as the method of the study. In line with this, five general secondary schools were selected and the data was collected from the mathematics teachers, mathematics department head, principals and students. Questionnaires, observation, interviews, and documentary sources were used as data collection instruments. A total of five principals, five mathematics department heads, thirty mathematics teachers and four hundred fifty students have participated in this study.

Based on the analyses made on the data secured through the above instruments in the specified area, the summery of the findings of the study are made as follows.

1. Mathematics teacher has the positive perception towards of the implementation of mathematics curriculum and some of them have negative perception. According to the interview, most of mathematics teachers were not motivated to teach mathematics in the schools because low background knowledge of students, the students are not interested to learn mathematics, principals gave little for mathematics instruction in the school and lack of supported from the administrations.
2. Relatively large number of the students (38%) has very high interest to learn the suggested mathematics curriculum in the general secondary school because (20%) of them indicated the poor teaching methods of mathematics teachers. Furthermore, most of the students (73.3%) reported that the implemented of grade 9 and 10 mathematics curriculum is not appropriate for general secondary school. Although most of the respondent students (65.7%) responded that the learning mathematics increased their knowledge to the great extent, the majority of them (63.1%) reported that teaching learning process of grade 9 and 10 mathematics lesson did not motivate them to learn mathematics. Generally, the students have low attitude towards the current mathematics curriculum.

3. There is statistically significance difference in mathematics achievement between five government general secondary school in favor of Mojo and Wonji school students. There is statistically significance difference in mathematics achievement between male and female students in general secondary school in favor of males.
4. Regarding the actual classroom performance of mathematics teachers in the schools, out eleven instructional considerations in the observation rating scale only two (42.4%) were frequently observed. The 90% and 86.7% instructional considerations which most frequently observed were that the mathematics teachers wrote important points (ideas or concepts) on the black boards and they also gave equal attention for all students in the classroom. This, it was observed that most of the mathematics teachers rarely performed the instructional considerations in the classroom.
5. Regarding assessment techniques, the majority of the respondent students (93.3%) reported that the mathematics teacher evaluated the student performance based on continuous assessment. In addition, (45.8%) of the respondents students affirmed that the mathematics teachers always gave class work and class activity to the students respectively. However, 66.7% of the respondent mathematics teachers affirmed that the number of students in a classroom was 66 up to 75. Most of the mathematics teacher (70%) reported that this class size have no created any problem on proper the implementation of mathematics curriculum.
6. All of the mathematics teachers were not introduce with the way of implementation of syllabus in the general secondary schools by any means. As the result, most of the respondent mathematics teachers (50%) indicated that there was a lot discussion between mathematics department heads, principals mathematics teachers on issues related to mathematics syllabus. 50% of the teachers' respondent indicated that no supervision service provided by principals, mathematics department heads or supervision for mathematics instructions.
7. The data collected pertaining to factors influencing the implementation of mathematics curriculum revealed such as according to their order, were the students' traditional belief of mathematics as difficult subject, poor background knowledge of the students, little attention was given from principals or mathematics instructors, in appropriate application of the syllabus for other fields in school program, the irrelevant of the syllabus with the

ability of the students, in adequate supply of curriculum and instructional materials and absence of in start students effectively.

8. According to the data from mathematics teacher questionnaire 53.3% of the respondent mathematics teachers confirmed that they were using text books in the teaching learning process. The response revealed that, thought they were available, teachers guides and the syllabus were not in use. But classroom observation checklist revealed that the mathematics teachers' were using the student's text books in the classroom as a source.
9. The data collected concerning the major factor revealed that, out of some randomly suggested the major factors, the most factor according to their order were large class size, shortage of mathematics reference book, mathematics teachers work load in adequate of allotted period and mathematics teacher lack of interest to the professional. The objective of grade 9 and 10 mathematics syllabus suggested the students should be achieved during continuous assessments and the implementation is successfully but the some of the respondents' mathematics teacher did not use continuous assessment to evaluate the students' performance. According to this, the reasons were insufficient time, lack of curricula and instructional materials and unfavorable environment of the school and classroom.
10. The data show that schools management structures in the selected schools are not conductive for effective teaching-learning process of mathematics subjects. For instance, half of the respondent teachers and all of interviewed principals didn't believe that the current management structure of their organization facilities or coordinate the available resource. Similarly, all principals indicated that their schools couldn't be able to create positive role relationships with government bodies for successful curriculum implementation process.
11. Lastly, the data revealed that thought the provision of staff development programs as perceived by teachers were adequate, majority (56.7%) didn't believed that the training programs were in line with their interest as well as the demand of curriculum materials. As result, 86.7% of these teachers indicated the need more additional, but relevant training programs to understand the nature of mathematics curriculum materials.

5.2 Conclusions

From the data collected and analyzed by way of factors influencing the implementation of mathematics curriculum in general secondary school under the study, it can be concluded that:

- The students have low perceptions towards the implementation mathematics curriculum because most of them feel that it is not designed for them and it has little application in their occupations. The perceptions of mathematics teachers towards mathematics curriculum is more of positive but they are ill – motivated to teach the mathematics curriculum in general secondary schools as a consequence of low academic background of the students, lack of students' interest to learn general secondary school mathematics and little attention give for principals and administration for mathematics curriculum.

- The average scores of students in mathematics test significantly differ according to the type of school in which they are following. Types of school in which students attend influence the result of the learners in mathematics achievement. In this respect, Mojo and Wonji GSS is conductive learning sector for students to have better results in mathematics achievement. The significance difference observed in mathematics achievement between male and female students in favor of males has a great implication on unequal participation of males and females in achievement.

- The students traditional belief of the mathematics subject as difficult, low background knowledge of the students little attention was given by the principals to mathematics instruction, in appropriate application of the syllabus to other occupations in schools and the irrelevant of the syllabus to the students ability in the government schools were the most prominent factors which negatively influence the implementation of mathematics curriculum in GSS.

- Creating conductive teaching-learning context for mathematics curriculum implementation such as developing good communication channel among schools community (teachers-principals', teachers-students and students-students).

5.3 Recommendation

Investing resource is not the only key to improve the quality of education, particularly in the teaching-learning process of mathematics subjects. So that more has to be done to keep the relevance, appropriateness and utilization of resources for successful implementation of mathematics curriculum materials.

In light of the findings of the present study, it seems reasonable to suggest the following ideas for better implementation of mathematics curriculum in the selected schools.

- Mathematics teachers in the suggested schools have a positive perception towards mathematics curriculum but some of them have negative perception towards the implementation of grade 9 and 10 mathematics syllabus; so that this indicates the need for some improvement of the curriculum implementation. Therefore, curriculum designers at regional level were advised to study the problem deeply in order to improve the syllabus.
- Mathematics teachers and their respective schools can design various mechanisms to develop better attitudes on students' towards learning of mathematics subjects. For instance, besides improving the classroom practice, students need to be aware of the role of mathematics clubs activities to bring the desirable attitudinal changes and make use of these clubs intensively.
- The findings also show the need to bridge the gap between male and female students in mathematics achievement. Thus, it might be better if opportunities are given for female students to be seen as model mathematics students so that the attitude of the students towards mathematics subject could be changed. It might also be advisable for mathematics teacher to focus on classroom activities and encourage female students to actively participate in the classroom instruction. In addition, teacher training institutions should give special attention to the gender issue and train teachers in a way that they could assist, help and guide the female students in learning mathematics.
- Shortages of relevant material resources in the library of the schools were found to be the major factors influencing the implementation of mathematics curriculum. Therefore, MOE

through Zone and Wereda Education Offices need to supervise the activities of these schools in general and availability of material resources in particular.

- The absence of information and communication technology in the teaching-learning processes as whole, in particular for mathematics subjects was also investigated in the study. To solve his challenge, the Governmental general secondary schools as well as others general secondary schools can form partnership or association and negotiate with concerned bodies (MOE, Tele, EMPDA etc) through their association.
- The students' perception towards the implementation of grade 9 and 10 mathematics syllabus is very low because they seemed that the contents of the mathematics are difficult to them, they are not interested to learn the given mathematics and they think that learning the GSS mathematics is not appropriate for GSS that is they did not see its connection to their occupation. Hence, in order to develop positive attitudes of students', the contents of mathematics should be related to their needs and interest. Therefore, as much as possible the concerned bodies should modify or revise or change the mathematics syllabus according to the needs of the students and the objectives of the GSS programs.
- Since the study is very limited in its scope to come up with all critical problems being presented in the implementation of curriculum in the zone, interested researchers in the field should conduct the study in order to investigate the problems uncovered in this study.

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APPENDICES

Appendix A

Addis Ababa University College of Education and Behavioral Studies

Department of Science and Mathematics Education

Questionnaire for grade 9 and 10 mathematics teachers

Dear Teacher

The purpose of this questionnaire is to gather data for study leading to MED in mathematics. It is administrated to survey your views and to collect the first hand information in order to factors influencing the implementation of mathematics curriculum in general secondary schools. It also looks for plausible solution to improve mathematics curriculum in general secondary school. Since the success of this study highly depends on your valuable responses you're kindly requested to be frank towards all items provided in the questionnaire. All information and data you provide will be used only for the purpose of this academic study.

Thank you in advance!!

For your kindly cooperation

Part 1: Please circle the letter corresponding to your response and write your response on the space provided in brief when it is necessary.

1. Name of the school----------
2. Sex: A. Male B. Female
3. Age: A. <20 years B. 20 – 30 years C. 31 – 40 years D. > 41 years
4. Qualification: A. Diploma B. BSC/BED C. MSC/MED
5. Specialization: A. Mathematics B. Physics C. Others
6. Total year of service as mathematics teachers
   A. <20 years B. 20 – 30 years C. 31 – 40 years
7. What is the average class size in your general secondary school?
   A. Below 55 students B. 56 – 65 students C. 66 – 75 students

8. What your source of information that you use in order to enrich mathematics curriculum?
   A. Only mathematics text book
   B. Other related reference text book
   C. Mathematics reference book
   D. Teacher guide

Part 2:

Direction: Each of the statement in this question expressed in the feeling or attitude towards mathematics. You are to indicate, or a five point scale, the extent of agreement the attitude expressed in each statement and your own personal feelings.

5= Strongly Agree 4 = Agree 3= Undecided 2= Disagree 1= Strongly Disagree

Mark (√) the point which indicates how closely you agree or disagree with the attitude expressed in each statement as it concern you.

Table 4.1: Perception of mathematics teacher's on new mathematics curriculum

No	Statement	1	2	3	4	5
1	Students have the little background knowledge of mathematics in general secondary school					
2	The general secondary school mathematics syllabus contains variety of learning methods that can minimize students' participation					
3	Students in general secondary school learn mathematics with enthusiasm					
4	The organization of the content and learning activities of mathematics syllabus is appropriate for teaching students in general secondary school					
5	The major role of mathematics teacher in general secondary school should be to encourage students to memorize all definitions, theorem, rules and axioms instead of worry about their proof					
6	Most of the content of mathematics curriculum are beyond the ability of the students in general secondary school					
7	There are adequate exercises at the end of each topic of mathematics textbooks					
8	The syllabus and teacher guide are helpful for mathematics teachers in planning and implementation process					
9	Since low achieve students of final examination admitted to GSS the mathematics syllabus is difficult for students in GSS					
10	Concepts and contents in the teaching materials are not complex but they clear for teachers and students					
11	Methods and technique of teaching suggested in the materials encourage more of teachers explanation and guide discussion					
12	The aims and objectives of mathematics syllabus are appropriate					

Part 3: Mark (√) the point which indicates how closely you yes, no or not sure with the attitude expressed in each statement as it concern you.

No	Statement	Yes	No	Not sure
1	Are there sufficient reference books in the library?			
2	Are the suggested teaching aids appropriate?			
3	Are there sufficient mathematics text books for the students in the general secondary school?			
4	Contents of mathematics topics are vast to understand			
5	Is the suggested teaching method appropriate?			
6	Can the content of the text book be finished in the allotted time?			

7. How do you often discuss issues of mathematics curriculum implementation with school principal?

   A. Frequently B. Rarely C. Not at all

8. How do you often hold department meeting in relation to the teaching learning of your respective subjects?

   A. Frequently B. Rarely C. Not at all

9. How do you often discuss issues of teaching and assessment methods you employed in the classroom with your students?

   A. Frequently B. Rarely C. Not at all

10. What is your opinion about the current management structure of your schools in facilities the implementation of mathematics subjects?

    A. Very convenient B. Convenient C. Not convenient

11. How do you rate the capacity of your school management structure in coordinate available school resources (human, material, time and finance) for effective implementation of the mathematics curriculum materials?

    A. Very convenient B. Convenient C. Not convenient

12. How do you rate the capacity of your school management structure in creating of positive role relationship with government bodies for implementation the education and training policy of the country?

    A. Very convenient B. Convenient C. Not convenient

13. How do you rate the capacity of your school management structure in solving problems arise in the teaching learning process?

A. Very convenient B. Convenient C. Not convenient

14. Have you participated in any in-service training programs (seminar, workshop, or any other) with regard to mathematics curriculum implementation of grade 9 and 10?

A. Yes B. No

15. Do you think that the in-service training programs you participated have positive impact your classroom performance?

A. Yes B. No

16. Do you think that you need more additional in-service training programs to increase your classroom performance?

A. Yes B. No C. Partially

17. Overall Comments

17.1 According to your view, what are the challenge have been confronting the major factors that influence the implementation of Mathematics curriculum in the school?

_____

_____

_____

_____

17.2 What are the possible solutions do you suggested to overcome these and other challenges for better the major factors that influence the implementation of Mathematics curriculum in general secondary school?

_____

_____

_____

_____

Appendix B

Addis Ababa University College of Education and Behavioral Studies

Department of Science and Mathematics Education

Questionnaire for grade 9 and 10 students

Dear Students

The main purpose of this questionnaire is to collect relevant information about the factors influencing the implementation of mathematics curriculum in general secondary schools (grade 9 and 10). You are, therefore, kindly requested to give appropriate information on the issue related to the study. The success of this study directly depends upon your honest and genuine response to each question. The data you supply will be used only for the purpose of the academic issue and also treated with almost confidentially.

THANK YOU!!

Part 1:

Direction: Indicate your response for each of the following questions by circling the letter you choice and by writing a brief statement or phrases word on the space provided.

1. Name of the school:_____
2. Grade and Section:_____
3. Sex: A. Male B. Female
4. Age: A. 14 – 17 years B. 18 – 25 years C. > 26 years
5. How often does your mathematics teacher give you group or individual assignment?
   A. One per week B. Once per month C. Twice per week D. Twice per month
6. How often does your mathematics teacher give you class work and activities?
   A. Always B. Frequency C. Sometimes D. Rarely E. Never
7. If your response for question number 6 is D or E which of the following reason?
   A. Shortage of text book
   B. The teacher is not interested to give class work or class activities
   C If any other reason, please specify_____

8. Does the mathematics teacher assess your mathematics performance based on?
   A. Continuous assessment
   B. Only one final exam or semester
   C. Mind exam and final exam in a semester
   D. Any other way_____
9. How often are corrections given to the home works and assignments you have done?
   A. Always B. Some times C. Never
10. How much is your interest to learn mathematics?
   A. Very high B. High C. Medium D. Low E. Very low
11. If your answer for question number 10 is "low or very low" what do you think is the reasons?
   A. syllabus is not design for school
   B. Poor teaching methods of teacher
   C. The subject is difficult
   D. If any other reason, please specific_____
12. How often do you discuss issues of curriculum implementation with the school principals?
   A. Frequently B. Rarely C. Not at all

13. To what extent learning mathematics increases your knowledge and skills?
   A. To large extent B. To some extent C. Not sure
14. How often do you discuss issues related to the teaching learning process of mathematics subjects with your teachers?
   A. Frequently B. Rarely C. Not at all
15. Do you have interest to continue in mathematics stream in your future career?
   A. Frequently B. Rarely C. Not at all
16. Do have a habit of participating in different mathematics clubs in your schools?
   A. Frequently B. Rarely C. Not at all
17. Do have a practice of reading reference books for mathematics subjects?
   A. Frequently B. Rarely C. Not at all
18. Do you believe there is a difference between boys and girls in their Mathematics achievement?

A. Yes B. No C. Not at all

19. If your response your question number 17 is "rarely "what do you think is the reason?
    A. Teachers does not recommend us to refer add how reading materials
    B. Poor facilities of the library
    C. Lack of experience to use library
20. To what extent did the teaching and learning of grade 9 and 10 mathematics lesson motivate your interest in learn mathematics.
    A. To large extent B. To some extent C. Not at all
21. How do you often discuss issues of mathematics curriculum implementation with your peer's (others students)?
    A. Frequently B. Rarely C. Not at all
22. How does your mathematics teacher know whether not you understand the lesson he teach in the classroom?
    A. By asking question one by one
    B. By waiting for "yes" answer
    C. By asking "are there question?
    D. By checking the class work
    E. If there is any other mechanisms please specific_____

Part 2: Mark (√) the point which indicates how closely you yes, no or not sure with the attitude expressed in each statement as it concern you.

No	Statement	Yes	No	No answer
1	Do you think Mathematics is hard to understand?			
2	Do you have adequate time for study at home?			
3	Do you think grade 9 and 10 mathematics syllabus is appropriate for school?			
4	Do teachers encourage you to participate during the implementation of Mathematics curriculum in the classroom discussions?			

5. Does your mathematics teacher start the lesson on time?
    A. Yes

B. No

C. Not at all

6. If your response for question number 5 is “no” what do you think is the reason?

   A. Breaking time going for too long

   B. In effective most of students coming in to classroom

   C. Disordered transaction from breaking time to classes

7. Is there a group work practice in your mathematics class?

   A. Yes B. No C. Not sure

8. Is there disruptions or disturbance from outside or inside the classroom

   A. Yes B. No C. Not sure

9. If your response for question number 8 is “yes” what type of disruption?

   A. Teacher from other classroom coming with question

   B. Student coming in with various requests

   C. Too much noisy around the classroom

   D. Ill motivated students other issues in class during discussion

10. What do you think are the major factors that influence the implementation of Mathematics curriculum?

_____

_____

_____

_____

Appendix C

The Revised Distribution of Mathematics Scores from Documentaries Of Grade 9 and 10 Governmental General Secondary Schools

Grade 9 (Denkoka GSS)

Males

Code No	X
GSS/01/2014	67
GSS/02/2014	85
GSS/03/2014	45
GSS/04/2014	54
GSS/05/2014	45
GSS/06/2014	34
GSS/07/2014	32
GSS/0820114	91
GSS/09/2014	65
GSS/10/2014	63
GSS/11/2014	39
GSS/12/2014	39
GSS/13/2014	83
GSS/14/2014	58
GSS/15/2014	93
GSS/16/2014	89
GSS/17/2014	69
GSS/18/2014	70
GSS/19/2014	25

Females

Code No	X
GSS/01/2014	77
GSS/02/2014	55
GSS/03/2014	55
GSS/04/2014	42
GSS/05/2014	65
GSS/06/2014	71
GSS/07/2014	43
GSS/0820114	34
GSS/09/2014	53
GSS/10/2014	49
GSS/11/2014	66
GSS/12/2014	63
GSS/13/2014	64
GSS/14/2014	86
GSS/15/2014	46
GSS/16/2014	39
GSS/17/2014	71
GSS/18/2014	59
GSS/19/2014	29

Note: x represents mathematics score.

Grade 10 (Denkoka GSS)

Males

Code No	X
GSS/01/2014	88
GSS/02/2014	67
GSS/03/2014	46
GSS/04/2014	54
GSS/05/2014	34
GSS/06/2014	33
GSS/07/2014	30
GSS/0820114	92
GSS/09/2014	44
GSS/10/2014	56
GSS/11/2014	58
GSS/12/2014	64
GSS/13/2014	38
GSS/14/2014	55
GSS/15/2014	93
GSS/16/2014	89
GSS/17/2014	46
GSS/18/2014	31

Females

Code No	X
GSS/01/2014	57
GSS/02/2014	79
GSS/03/2014	63
GSS/04/2014	19
GSS/05/2014	56
GSS/06/2014	49
GSS/07/2014	49
GSS/0820114	49
GSS/09/2014	78
GSS/10/2014	49
GSS/11/2014	66
GSS/12/2014	58
GSS/13/2014	64
GSS/14/2014	55
GSS/15/2014	46
GSS/16/2014	17
GSS/17/2014	81
GSS/18/2014	90

Grade 9 (Mojo GSS)

Males

Code No	X
GSS/01/2014	78
GSS/02/2014	66
GSS/03/2014	54
GSS/04/2014	42
GSS/05/2014	30
GSS/06/2014	18
GSS/07/2014	97
GSS/0820114	87
GSS/09/2014	77
GSS/10/2014	67
GSS/11/2014	57
GSS/12/2014	47
GSS/13/2014	37
GSS/14/2014	87
GSS/15/2014	60
GSS/16/2014	33
GSS/17/2014	66
GSS/18/2014	76
GSS/19/2014	86
GSS/20/2014	96
GSS/21/2014	25
GSS/22/2014	31
GSS/23/2014	37
GSS/24/2014	43
GSS/25/2014	49

Females

Code No	X
GSS/01/2014	44
GSS/02/2014	67
GSS/03/2014	90
GSS/04/2014	44
GSS/05/2014	44
GSS/06/2014	44
GSS/07/2014	44
GSS/0820114	44
GSS/09/2014	65
GSS/10/2014	76
GSS/11/2014	87
GSS/12/2014	59
GSS/13/2014	59
GSS/14/2014	59
GSS/15/2014	65
GSS/16/2014	46
GSS/17/2014	27
GSS/18/2014	34
GSS/19/2014	34
GSS/20/2014	55
GSS/21/2014	60
GSS/22/2014	65
GSS/23/2014	70
GSS/24/2014	25
GSS/25/2014	78
GSS/26/2014	77
GSS/27/2014	44
GSS/28/2014	11

Grade 10 (Mojo GSS)

Males

Code No	X
GSS/01/2014	88
GSS/02/2014	78
GSS/03/2014	67
GSS/04/2014	58
GSS/05/2014	47
GSS/06/2014	66
GSS/07/2014	89
GSS/0820114	78
GSS/09/2014	39
GSS/10/2014	45
GSS/11/2014	57
GSS/12/2014	47
GSS/13/2014	65
GSS/14/2014	87
GSS/15/2014	77
GSS/16/2014	33
GSS/17/2014	33
GSS/18/2014	76
GSS/19/2014	86
GSS/20/2014	96
GSS/21/2014	96
GSS/22/2014	34
GSS/23/2014	25
GSS/24/2014	89
GSS/25/2014	49

Females

Code No	X
GSS/01/2014	62
GSS/02/2014	62
GSS/03/2014	80
GSS/04/2014	51
GSS/05/2014	46
GSS/06/2014	76
GSS/07/2014	34
GSS/0820114	34
GSS/09/2014	34
GSS/10/2014	34
GSS/11/2014	35
GSS/12/2014	49
GSS/13/2014	59
GSS/14/2014	70
GSS/15/2014	65
GSS/16/2014	46
GSS/17/2014	54
GSS/18/2014	66
GSS/19/2014	55
GSS/20/2014	66
GSS/21/2014	60
GSS/22/2014	49
GSS/23/2014	70
GSS/24/2014	25
GSS/25/2014	91
GSS/26/2014	77
GSS/27/2014	88

Grade 9 (Koka Ejersa GSS)

Males

Code No	X
GSS/01/2014	66
GSS/02/2014	45
GSS/03/2014	78
GSS/04/2014	34
GSS/05/2014	34
GSS/06/2014	34
GSS/07/2014	78
GSS/0820114	93
GSS/09/2014	47
GSS/10/2014	89
GSS/11/2014	57
GSS/12/2014	55
GSS/13/2014	55
GSS/14/2014	55
GSS/15/2014	55
GSS/16/2014	55
GSS/17/2014	32
GSS/18/2014	16
GSS/19/2014	44
GSS/20/2014	79
GSS/21/2014	68
GSS/22/2014	84

Females

Code No	X
GSS/01/2014	69
GSS/02/2014	63
GSS/03/2014	88
GSS/04/2014	63
GSS/05/2014	59
GSS/06/2014	17
GSS/07/2014	39
GSS/0820114	39
GSS/09/2014	39
GSS/10/2014	43
GSS/11/2014	79
GSS/12/2014	89
GSS/13/2014	66
GSS/14/2014	32
GSS/15/2014	44
GSS/16/2014	77
GSS/17/2014	54
GSS/18/2014	43
GSS/19/2014	56
GSS/20/2014	48
GSS/21/2014	79
GSS/22/2014	29
GSS/23/2014	39

Grade 10 (Koka Ejersa GSS)

Males

Code No	X
GSS/01/2014	55
GSS/02/2014	65
GSS/03/2014	87
GSS/04/2014	43
GSS/05/2014	23
GSS/06/2014	15
GSS/07/2014	49
GSS/0820114	77
GSS/09/2014	47
GSS/10/2014	89
GSS/11/2014	67
GSS/12/2014	56
GSS/13/2014	77
GSS/14/2014	19
GSS/15/2014	48
GSS/16/2014	55
GSS/17/2014	23
GSS/18/2014	16
GSS/19/2014	32
GSS/20/2014	79
GSS/21/2014	68
GSS/22/2014	60

Females

Code No	X
GSS/01/2014	69
GSS/02/2014	69
GSS/03/2014	69
GSS/04/2014	44
GSS/05/2014	44
GSS/06/2014	56
GSS/07/2014	37
GSS/0820114	76
GSS/09/2014	52
GSS/10/2014	51
GSS/11/2014	63
GSS/12/2014	34
GSS/13/2014	66
GSS/14/2014	31
GSS/15/2014	18
GSS/16/2014	66
GSS/17/2014	66
GSS/18/2014	66
GSS/19/2014	56
GSS/20/2014	43
GSS/21/2014	49
GSS/22/2014	88
GSS/23/2014	93

Grade 9 (Bora GSS)

Males

Code No	X
GSS/01/2014	43
GSS/02/2014	25
GSS/03/2014	91
GSS/04/2014	43
GSS/05/2014	35
GSS/06/2014	74
GSS/07/2014	43
GSS/08/2014	87
GSS/09/2014	47
GSS/10/2014	47
GSS/11/2014	47
GSS/12/2014	56
GSS/13/2014	89
GSS/14/2014	51
GSS/15/2014	54
GSS/16/2014	52
GSS/17/2014	22
GSS/18/2014	68

Females

Code No	X
GSS/01/2014	55
GSS/02/2014	79
GSS/03/2014	56
GSS/04/2014	37
GSS/05/2014	35
GSS/06/2014	32
GSS/07/2014	48
GSS/0820114	67
GSS/09/2014	29
GSS/10/2014	50
GSS/11/2014	63
GSS/12/2014	36
GSS/13/2014	66
GSS/14/2014	77
GSS/15/2014	59
GSS/16/2014	84
GSS/17/2014	57
GSS/18/2014	57
GSS/19/2014	83
GSS/20/2014	69

Grade 10 (Bora GSS)

Males

Code No	X
GSS/01/2014	48
GSS/02/2014	67
GSS/03/2014	29
GSS/04/2014	50
GSS/05/2014	63
GSS/06/2014	36
GSS/07/2014	66
GSS/0820114	77
GSS/09/2014	59
GSS/10/2014	84
GSS/11/2014	57
GSS/12/2014	57
GSS/13/2014	83
GSS/14/2014	93
GSS/15/2014	77
GSS/16/2014	67
GSS/17/2014	88

Females

Code No	X
GSS/01/2014	87
GSS/02/2014	46
GSS/03/2014	46
GSS/04/2014	47
GSS/05/2014	56
GSS/06/2014	89
GSS/07/2014	51
GSS/0820114	54
GSS/09/2014	52
GSS/10/2014	22
GSS/11/2014	68
GSS/12/2014	43
GSS/13/2014	25
GSS/14/2014	91
GSS/15/2014	43
GSS/16/2014	35
GSS/17/2014	74
GSS/18/2014	43
GSS/19/2014	23
GSS/20/2014	13

Grade 9 (Wonji GSS)

Males

Code No	X
GSS/01/2014	67
GSS/02/2014	78
GSS/03/2014	54
GSS/04/2014	42
GSS/05/2014	47
GSS/06/2014	66
GSS/07/2014	67
GSS/0820114	78
GSS/09/2014	87
GSS/10/2014	97
GSS/11/2014	57
GSS/12/2014	47
GSS/13/2014	37
GSS/14/2014	87
GSS/15/2014	60
GSS/16/2014	33
GSS/17/2014	66
GSS/18/2014	76
GSS/19/2014	86
GSS/20/2014	96
GSS/21/2014	77
GSS/22/2014	31
GSS/23/2014	37
GSS/24/2014	89
GSS/25/2014	49

Females

Code No	X
GSS/01/2014	88
GSS/02/2014	67
GSS/03/2014	90
GSS/04/2014	46
GSS/05/2014	46
GSS/06/2014	46
GSS/07/2014	46
GSS/0820114	46
GSS/09/2014	65
GSS/10/2014	76
GSS/11/2014	35
GSS/12/2014	59
GSS/13/2014	59
GSS/14/2014	59
GSS/15/2014	65
GSS/16/2014	46
GSS/17/2014	54
GSS/18/2014	55
GSS/19/2014	55
GSS/20/2014	55
GSS/21/2014	60
GSS/22/2014	49
GSS/23/2014	70
GSS/24/2014	25
GSS/25/2014	91
GSS/26/2014	77
GSS/27/2014	44
GSS/28/2014	67

Grade 10 (Wonji GSS)

Males

Code No	X
GSS/01/2014	66
GSS/02/2014	45
GSS/03/2014	67
GSS/04/2014	34
GSS/05/2014	23
GSS/06/2014	66
GSS/07/2014	68
GSS/0820114	87
GSS/09/2014	57
GSS/10/2014	77
GSS/11/2014	57
GSS/12/2014	74
GSS/13/2014	25
GSS/14/2014	45
GSS/15/2014	23
GSS/16/2014	4
GSS/17/2014	44
GSS/18/2014	44
GSS/19/2014	44
GSS/20/2014	15
GSS/21/2014	23
GSS/22/2014	54
GSS/23/2014	52
GSS/24/2014	89
GSS/25/2014	65

Females

Code No	X
GSS/01/2014	87
GSS/02/2014	62
GSS/03/2014	64
GSS/04/2014	51
GSS/05/2014	49
GSS/06/2014	49
GSS/07/2014	49
GSS/0820114	26
GSS/09/2014	56
GSS/10/2014	34
GSS/11/2014	89
GSS/12/2014	49
GSS/13/2014	59
GSS/14/2014	80
GSS/15/2014	65
GSS/16/2014	76
GSS/17/2014	54
GSS/18/2014	12
GSS/19/2014	55
GSS/20/2014	37
GSS/21/2014	79
GSS/22/2014	27
GSS/23/2014	27
GSS/24/2014	25
GSS/25/2014	92
GSS/26/2014	66
GSS/27/2014	86

Appendix D

Observation

Classroom observation

Name of the school_____

Code of the teacher_____

Grade and section_____ Date of observation_____

Lesson topics_____ Period____ Time from _____to _____

A/ rating scale: 3 = Frequency 2 = Rarely 1 = Not at all

No	Instructional consideration	3	2	1
1	How often the teacher uses different instructional methods and techniques in lesson presentation?			
2	How often the teachers encourage the student to participate in discussion?			
3	How often the teachers encourage the student to task question which is not clear to them			
4	How often the teachers ask question to check whether the student understand the lesson?			
5	How often teachers use group activities of students for collaborative learning?			
6	How often teacher guides the learner during the group work?			
7	How often the teacher goes round to the student in classroom in order to check their class work?			
8	How often teacher relates the lesson to student real life situation?			
9	How often the teacher writes important ideas on the black or white board?			
10	How often the teacher gives equal attention for all students in the classroom?			
11	How often the teacher gives the student prompt feedback?			

B/ Check list

No	Lesson presentation variables	Yes	No
1	Did the teacher prepare the weekly or daily lesson plan?		
2	Did the lesson plan match with the actual presentation of the lesson in the classroom		
3	Did the teacher write lesson topic on the black board or white board before starting presentation?		
4	Did the teacher specify the objective of the lesson clearly?		
5	Did the teacher checks the previous home work?		
6	Did the teacher revise the previous lesson before starting the new lesson?		
7	Did the teacher encourage the student to use the text book in the classroom?		
8	Did the teacher uses text book for teaching learning process in classroom?		
9	Did the teacher give class work, home work and assignment?		
10	Did the teacher summarize the main points of the lesson?		
11	Was there misunderstanding of some content element by the teacher?		
12	Did the teacher use teaching aids in the classroom?		
13	Did the student communicate (present) in classroom what they have done in group?		
14	Did the teacher properly use the black board?		
15	Did the teacher manage the classroom?		

Appendix E

Interview schedule

1. Interview for mathematics teachers

Date _____

Time interview started: _____local time

Time interview ended: _____ local time

1. How is the ability and interest of your students in learning grade 9 and 10 mathematics syllabus?
2. Do get the necessary support and assistance from principals, mathematics department heads and supervisors?
3. What do you think about the objective of grade 9 and 10 mathematics syllabi are achieved? Is the implementation successfully?
4. What do you think about the students' performance and ability in mathematics instructions in school?
5. What kinds of teaching methods do you use when teach mathematics in the classroom?
6. Do you have anything to add regarding the mathematics curriculum you are teaching here to GSS studies?
7. What are the major factors that influencing the implementation of Mathematics curriculum?

2. Interview for mathematics department heads

Date _____

Time interview started: _____local time

Time interview ended: _____ local time

1. What is your perception about the implementation of mathematics curriculum in the school?
2. How often do you make direct and clear contact with mathematics teachers?
3. What is your help for mathematics teacher so that they will implementation of mathematics syllabus?
4. In what way the school administration give necessary support for the implementation of mathematics curriculum in school?
5. How do you make a close contact with the concerned bodies in order to get supports for proper implementation of the syllabus?

6. What are the major factors that influencing the implementation of Mathematics curriculum?

3. Interview for principal schools

Date _____

Time interview started: _____local time

Time interview ended: _____local time

Q1- How do you evaluate the performance of mathematics teachers in achieving the intended objectives in terms of their knowledge, skill and attitude?

- **Following teaching methods/assessment method specific in curriculum materials.**

To answer this question, I have to start with the selection criteria of teachers. This organization highly emphasizes the knowledge, skill and attitude of teachers to teach in this school. Means, the priority given to highly for competence teachers, next the moral and ethical issues are considered. Thus, teachers who passed thought these steps can effectively follow the teaching methods or assessment techniques set in curriculum materials. But here, I don't mean that our mathematics teachers always follow the stated teaching strategies in curriculum. I, as director of the school discuss about this issues with teachers and students. Thus, I can suggest that from the discussion the factors not to employ the teaching methods are: teachers and students background, over loaded of time table, support from the organization, the nature of national examination etc. And also has adequate resource for mathematics subjects in the library. But, as to me utilization of this resource mathematics teacher is weak as comparing with the availability of resource.

Q2. How do you perform your task as director of the school to lead the organization through facilitating, coordinating, supporting and motivating teachers as well as students with regard to teaching learning of mathematics subject?

I think, it is to ask this question other parties or school communities about my activities in the school. But I want to tell you one fact: as director of school I have tried to my best to lead the teaching learning process in the school through orienting tasks for teachers, solving problems with teachers and students, supporting with teachers and students to achieve the intended objectives.

Q3. How do you evaluate the nature of school management structure to facilitate the teaching learning process of mathematics subjects?

- **Putting of duties and responsibilities for different parties.**

As I have said early, the structure of school management is highly interwoven with government school. Hence, I reserve to say that the current management structure of our school put the duties and the responsibilities of different parties clearly, I doubt on it.

Q4. How do you solve problems that arise in the teaching learning?

Most of the time we solve problems that arise in the teaching learning process through discussion with students and teachers so that we are able to solve problem in such ways. But, those problems which need decision from higher school administration take long time and resources. As result, it is too difficult to say that that the current management structure can solve problem as expected.

- **Communication channel among school communities**

I have said more with regard to the existence of good communication channel in this school. It may due to the existence of such good trend our students score good grades in the national examinations (ESGCE) since the current management structure developed these culture, we do have culture of solving problem with students, teachers, parents or any other through the discussion, or I can say in this practice can be consider as one of our strength to implement the curriculum material effectively.

Q5. Is your organization providing the appropriate support to you and mathematics teachers to achieve the objectives of ETP?

- **Professional development**

I don't know how can express my feeling with this regard. Generally one of good practice of government school is providing of professional development programs. They invest to upgrade the qualification of teaching staff through continuous staff development programs. For instance, I assigned as director of this school starting from 2002 E.C since the my organization has arranged different in service training programs in relation to the school

management system through summer programs or at any time. So that I can say I perform my duties this school based on knowledge and skill, I acquired through these in service training programs or I found the training programs as important for the position as well as for my performance as school director.

Q6. What the school is doing well in implementing the mathematics curriculum of grade 9 and 10? That is practice or experience of the school?

More than anything our school is able to prepare students for national examination. Accordingly, our students score good grades in mathematics subjects. This implies that the implementation strategies we use in this school have its own contribution for the achievement of students. The physical facilities this school is adequate as comparing with the number of students. Since we do have small number of students, we are able to know the interest of individual interest towards mathematics subjects. The school is committed to support the implementation of grade 9 and 10 mathematics curriculum through allocating of more budgets for these subjects since these subjects need supply of more additional resources.

Q7. What challenges you and / or your school has faced in implementation the ETP in general and the mathematics curriculum in particular?

Most of students considered mathematics subjects of difficult since this subject need some skill of mathematical solving problems so that the awareness of students towards this subject has its own contribution for limitation of successful implementation of the curriculum.

Almost there is no clubs activates in this school which has also influence the teaching-learning process of mathematics subjects. Thus, we have to develop mechanisms to use clubs for mathematics subjects.

Thought I don't have enough evidence to say that the mathematics curriculum is highly occupied with large contacts and methods which are difficult to cover the whole text book in a given academic calendar so that either we have to change the content of the textbook or search other mechanism to alleviate this problem with concerned bodies like ICDR. Our mathematics teachers' performance by itself has its own limitation on successful implementation trend of our school.