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An investigation Andanalysis Of The Problems Facing The Teaching Of Mathematics At Adet Town Adminstration Secondary school Teachers West Gojjam Ethiopia.

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BAHIR DAR UNIVERSITY

COLLEGE OF SCIENCE

DEPARTMENT OF MATHEMATICS

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An investigation And Analysis Of The Problems Facing The Teaching Of Mathematics At Adet Town Adminstration Secondary school Teachers West Gojjam Ethiopia.

A Thesis Submitted to the Department of Mathematics in Partial Fulfillment of the Requirements for the Degree of Master of science in Mathematics.

By

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Declaration

I hereby declare that, this research is done by me under the supervision of Dr. Adem Mohamed Department of Mathematics, Bahir Dar University, in partial fulfillment of the requirements for the Degree of Master of Science in Mathematics. I am declaring that this research is my original work. I also declare that neither of this research nor any of its parts has been submitted to elsewhere for the award of any other degrees or certificates.

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Approval of the Thesis for oral defence

I hereby certify that i have supervised, read and evaluated this thesis entitled an investigation and analysis of the problems facing the teaching of mathematics at adet town adminstration secondary school teachers west gojjam ethiopia prepared by Simachew Debie under my guidance. I recommend the thesis to be submitted for oral defence.

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We hereby certify that we have examined this thesis entitled Aninvestigation And analysis Of The Problems Facing The Teaching Of Mathematics At Adet Town Adminstration Secondary School Teachers West Gojjam Ethiopia prepared and presented by Simachew Debie. We confirm that the thesis is approved for the Degree of Master of Science in Mathematics.

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Abstract

The purpose of this study was to identify and analyze the problems faced by teachers in teaching mathematics at Adet town administration secondary schools West Gojjam, Amhara Region, Ethiopia and also to find causes of such problems. The mixed method research design was adopted to conduct this study. Two government secondary schools at Adet town administration were selected for sample by purposive sampling method. Questionnaire, interview schedule and classroom observation were used as tools to collect necessary data. To gather information, questionnaire, interview and class room observation were conducted in schools. The researcher used mean for analysis and interpretation of data collected from questionnaire. The result further authenticated by qualitative data obtained from interview and class room observation. The researcher categorized whole data into problems related to teaching materials, problems related to teaching method, problems related to school administration, problems related to trainers, problems related to training and its transfer in classroom, and problems related to class size, classroom management, teacher's knowledge, seating arrangement, views of students. The researcher used puorpossive sampling technique.After analysis of the data, the researcher found that mathematics teachers in Adet town administration secondary schools were facing problems due to construction , selection and use of teaching materials,because of lack of ICT lab and internet, trainers ,views of students about learning mathematics and lack of regular supervision . From the above stated findings of this study, it can be concluded that teaching learning activities of mathematics are not satisfactory in Adet town administration. Because the teachers in Adet town administration secondary schools faced a number of problems due to construction and purchase of teaching materials, selection of teaching materials, use of medias, teachers' training and its transfer in real classroom teaching, views of students and finally due to weak school administration.

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List of Acronyms/Abbreviations

BDU: Bahir Dar University

CDT: Component Display Theory

CRC : Curriculum Resource centre

DEO: District Education Office

ENEA : Ethiopian National Examination Agency

EGSECE: Ethiopian General Secondary Education Certificate Examination

ICT : Information Communication Technology

MLC : Minimum Learning Competency

MoE: Ministry of Education

NCTM: National Council of Teachers of Mathematics

NBPTS: National Board for Professional Teaching Standards

TESO: Teacher Education System Overhaul

ZPD**:** Zone of Proximal development

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Education is a total process of development of human ability and behavior in an organized way which acquires a combination of knowledge skills and attitudes which are necessary for growth. Progress in education is very important for sustainable development, environmental protection, improvement in health. It improves civilization and productivity by producing educated and competent human power. In its broadest sense, an educated population is more productive than learned one irrespective of the type of the society (Ingemar & Saha, 1989).The ability of a country to attain rapid economic growth is highly dependent on the effectiveness on which its educational institutions and policies support knowledge generation, technological transformation and innovations. Knowledge generation and innovation are mainly acquired by learners in institutions that carry out formal education. In educational institutions, the teachers are the main agent in making learners competent, creative and innovator. It is also believed that the development of mathematics and the development of human civilization occurred together. It was created to fulfill human needs and later it was introduced into formal education system. Nowadays Mathematics is part of life for business sector and farmers.

According to Ezeugo and Awagah (2000) on account of social changes towards the knowledge society and new educational needs relating to strategies, methods and techniques for teaching Mathematics, new pedagogical trends look, promoting "learning by doing, experiencing and communicating", which relies on four educational pillars: to know what, to know why, to know how and to know who.

Dubinsky and McDonald (2001) proposed that mathematical knowledge should fulfill four basic functions: activating function (i.e. stimulating previously acquired knowledge in order to broaden it), triggering function (i.e. stimulating the acquisition of new information through coming up with new ideas), practical function (i.e. defining means of performing actions and activities), and educational function (i.e. enhancing positive emotions, creating attitudes and increasing motivation). The process of learning and self-improvement should depend on students understanding the structure, functions and integration of the brain, and learning skills. But live mathematics teaching accelerated best in such a classroom which is specially designed to encourage the use of available teaching materials. Clearly, everything depends

the resources at the school disposal. It is possible to give a new look of teaching, even in uncomfortable condition, if the teacher possesses the necessary conviction and creativity.

Bhatia (2005) said that the teacher tools have long consisted of chalk, blackboard, pencil and textbook. However, today it uses demonstration models of various shape and sizes, drawing instruments, graph stencils, measuring instruments and many pictures pamphlets, books and mathematical magazines. Films slides, over head projectors are being used in teaching mathematics in the modern classroom." But the learning system in the context of Ethiopian school is totally based on text books. Classrooms are not well equipped physically with teaching materials math lab, computer and collection of low cost and cost free materials that are essential for teaching and learning activities and not organized properly by concerned agencies. Some studies have also reviewed the problems affecting the teaching of mathematics.

Abebe and Woldehanna (2013) their school survey found that lack of pedagogical knowledge, particularly about applying student centered methods of teaching is one of the major challenges for primary schools teachers. They believed that the ways of preparation of teachers had greatly contributed to improving teacher quality. In order to understand mathematical concepts, the most important factor related to students' achievement in mathematics is the language of instruction, family income, and confidence in learning mathematics.

Belhu (2017) Furthermore, school and classroom learning environment are the other variable that mainly determines the performance of students (Kyriakides & Creemers, 2008). Accessibility of materials and facilities in the schools/classrooms are the core factors that affect the learning achievement of mathematics (Habtamu, 2017).

School contexts and facilities, students self-directed learning, and motivation influence students mathematics learning significantly (Ergogo, 2012). In general, in Ethiopian education system still, there is evident disconction between memorizing information in the grade room and applications in the real world and the main pedagogical strategy used by teachers is still lecture.

This study aims to systematically investigate these issues at Adet Town Administration Secondary School, providing insights into the specific challenges faced by mathematics teachers and students in the region. The findings are expected to contribute to the development of targeted interventions to improve mathematics education in the area, ultimately enhancing student learning outcomes and fostering a stronger foundation in

mathematics. This background sets the stage for a comprehensive investigation into the factors affecting mathematics education in Adet town administration secondary schools.

In Adet town administration secondary schools there were many problems facing teachers in teaching mathematics.These problems were related to classroom size, class room management, teachers knowledge, seating arrangement, views of students, school administeration, instructional materials, teachers training and its transfer in class room.This study therefore, focused on investigating problems facing in the teaching of mathematics at Grade 9 and 10 mathematics teachers in Adet town administration,West Gojjam, Ethiopia with particular reference to two secondary schools.

1.2 Statement of the Problem

In Ethiopia evidence suggests that instructional program has traditionally dependent upon teacher centered method of teaching, making students to become passive recipients of information rather than being active is adopted in most classrooms. Studies have shown that most secondary school students achieve very low in mathematics. Teacher Education System Overhaul (TESO) program was introduced in (2001) and emphasized the implementation of participatory, student center in the per-service and in-service programs of teacher education within other major programs (MoE, 2002) and the Ministry of Education (200) emphasized the importance of implementing student center approaches in teaching at various levels to promote the development of problem-solving capacities and competencies of the students. Mathematics is one of the subjects given in the secondary school curriculum in Ethiopia. Despite the fact that, it has been admitted that the subject plays an important role in learners' future education and career-related outcomes learners have shown low results in the subject. Statistics show that student's results in mathematics in the Ethiopian grade 10 Secondary school examinations has been poor over the years as reported by the Ethiopian National Examination Agency [ENEA] (2010), the majority of secondary school students scored below the average passing mark (50%); this showed that both students and teachers have no better understanding of mathematical concepts and procedures through different domains of the mathematics curriculum.

Moreover, according to National Educational Assessment and Examinations Agency [NEAEA] Directorate Addis Ababa (2014) result obtained from grade 10 students' academic achievement in the five subject tests (English, Mathematics, Biology, Chemistry and Physics). Each test was composed of multiple choice items from grades 9 and 10 contents based on the Minimum Learning Competency (MLC).The mean score for mathematics (37.01) were found the least.Recommendations from the study were given. Among those, the

existence of wide variations in achievement scores not only between groups but also within group calls for individualized approaches of teaching second, teachers should be trained and become familiar to techniques that help to diagnose and intervene at individual student level and lastly teachers need to incorporate greater differentiation of teaching practices into their classroom. Such differentiation's should address the needs of both low and high achieving students.Many scholars have stated that lack of appropriate teaching methodology as a major factors responsible for students poor achievement in mathematics. Other factors teachers not use instructional materials distinguishing among others observed by the researchers. A study by Yimam and Dagnew Kelkay (2022) in an Ethiopian classroom setting revealed that students had difficulties in learning and understanding basic descriptive statistical concepts and procedures. To this end, teachers should develop their problem solving skill and thereby become good models for their respective students.

In an ideal educational environment, the teaching of mathematics is characterized by skilled educators who employ effective teaching methods, utilize diverse instructional resources, and foster an engaging classroom atmosphere. Students are encouraged to think critically, apply mathematical reasoning to real-world problems, and develop a positive attitude toward the subject. The curriculum is designed to be relevant and inclusive, catering to the needs and interests of all learners, thus promoting a deep understanding of mathematical concepts and their applications. However,at Adet Town Administration Secondary School in West Gojjam, Ethiopia, several significant challenges impede the effective teaching and learning of mathematics.

Inadequate Teacher Training: Many mathematics teachers lack sufficient training and professional development opportunities, leading to difficulties in delivering lessons that meet the diverse needs of students.

Resource Shortages: The school is facing lack of essential teaching materials, including textbooks, digital tools, and manipulatives, which are vital for engaging students and enhancing understanding.

Curriculum Misalignment: The existing mathematics curriculum may not effectively connect with students' everyday experiences, making it hard for them to relate to and engage with the subject matter.

Negative Attitudes of Students :A prevailing negative perception of mathematics among students can lead to decreased motivation and participation, which adversely affects their academic performance.

Overcrowded Classrooms: High student-to-teacher ratios hinder personalized instruction, making it challenging for teachers to address individual learning needs and provide adequate support.

Socioeconomic Challenges: External factors such as poverty and limited family support can impact students' educational experiences, contributing to lower academic achievement in mathematics. In this research, efforts will be made to minimize these problems through a comprehensive approach that includes:

Need Assessment: Conducting surveys and interviews with teachers and students to identify specific challenges and areas for improvement in mathematics instruction.

Professional Development: Proposing targeted training programs for mathematics teachers to enhance their pedagogical skills and content knowledge, ensuring they are better equipped to engage students.

Resource Mobilization: Collaborating with local educational authorities and stakeholders to secure necessary teaching materials and resources that can facilitate effective mathematics instruction.I am also a mathematics teacher at secondary school and facing many problems. Therefore, it was necessary to study the teaching learning problems related to mathematics education in Adet town administration secondary schools so as to get a better picture of the situation and to identify means and ways to improve the teaching learning process. It was important to find major problems facing teachers in teaching mathematics strategies that improve teachers understanding of mathematics concepts. Therefore, this study initiated me to fill these gaps in many ways: first, it would conduct Adet secondary schools, particularly with a focus on mathematics education; second, it was focused on how to investigate the problems facing in the teaching of grade 9 and 10 mathematics education in Adet town administration secondary schools.

1.3 The objectives of the problem

1. To identify major problems facing teachers in teaching mathematics in secondary school.
2. To investigate major problems facing teachers in teaching of mathematics in secondary schools.
3. To assess the availability and adequacy of teaching materials and resources used in mathematics instruction.
4. To evaluate the effectiveness of current teacher training programs and professional development opportunities related to mathematics education.

1.4 Research Question

Since secondary school is the base of higher education, it would be appropriate to discuss the problem faced by mathematics teachers at secondary school. The study tried to explore and analyze the problems faced secondary mathematics teachers in Adet town administration. The study intends to answer the following questions :

i. What are the primary challenges facing mathematics teachers at Adet Town Administration Secondary School?
ii. What are the causes of such problems in teaching mathematics?
iii. What strategies can be implemented to address the identified problems in the teaching of mathematics?
iv. How do students attitudes toward mathematics impact their learning outcomes in this context?
v. How do classroom conditions (e.g. class size, environment) affect the effectiveness of mathematics teaching?

1.5 The significance of this study

The study will contribute a lot in identifying problems once they know what they are. Thus the study is important for the reason that it will help to provide information to the concerned agencies to reform and improve the mathematics teaching at the secondary school. Also it will help to improve mathematics teaching especially for untrained teacher similarly the result of this study will provide some materials for the improvement of professional position of teachers by removing the problems related to their profession. The significances of this study are presented in the following ways:

- This study helps to identify the major problems faced by secondary school mathematics teachers in teaching mathematics.
- This study helps to give indications for the improvement in solution of the problems.
- This study helps to investigate problems facing mathematics teachers in secondary schools. Finally, it is also hoped that the findings and the recommendations of the study may serve as an input for other researchers to carry out the same study in a wider scale and in depth.

1.6 Delimitation of the Study

The study was limited to the governmental schools at Adet town administration focucing on grade 9 and 10 only due to shortage of budget. It is not couvering the private schools because there is no private secondary school.

1.7 Operational Definition of Key Terms

The meaning and definition of terminologies used in this study differ from department to department and from individual to individual. But, the terminologies are defined here from my perspective. Such terminologies are defined as follows.

Teacher: A teacher is an individual who facilitates learning by imparting knowledge, skills, and values to students. They typically work in educational settings, such as schools or universities, and employ various methods to engage students and promote understanding. Teachers create lesson plans, assess student progress, and adapt their teaching strategies to meet diverse learning needs. Beyond academics, they often play a vital role in shaping students' social and emotional development.

Problem: A problem is a situation or condition that presents a challenge, difficulty, or obstacle that requires a solution or resolution. It often involves a gap between the current state and a desired state, prompting analysis and action to overcome the issue. Problems can range from simple, everyday issues to complex, multifaceted dilemmas in various contexts, such as personal, social, or technical realms.

Investigation: is a systematic process of inquiry aimed at discovering facts, uncovering information, or solving a problem. It involves gathering data, analyzing evidence, and drawing conclusions based on findings. Investigations can occur in various fields, including science, law enforcement, journalism, and research, and may include methods such as observation, interviews, experiments, and document analysis. The goal is to gain a deeper understanding of a subject or to resolve specific questions or issues.

Analysis: Analysis is the process of breaking down complex information or concepts into smaller, more manageable parts to understand and interpret them better. It involves examining data, identifying patterns, and drawing conclusions based on evidence.

Cognitive learning: is a theory of learning that emphasizes the role of mental processes in acquiring knowledge and understanding. It involves active engagement with information through processes such as thinking, problem-solving, and memory. Unlike behaviorist approaches, which focus on observable behaviors, cognitive learning considers how individuals process, organize, and integrate new information. Techniques associated with

cognitive learning include active learning strategies, critical thinking, and metacognition, which help learners become aware of their own learning processes and improve their ability to apply knowledge in different contexts.

Development : refers to the process of growth, progress, or change over time, often in a specific context such as physical, emotional, social, or economic domains. In a broader sense, it can encompass various aspects:

1. **Human Development**: The physical, cognitive, and emotional growth of individuals across their lifespan.
2. **Economic Development**: The improvement of economic well-being and quality of life in a community or country, often measured by indicators like income, education, and health.
3. **Social Development**: The enhancement of social well-being, including factors such as community engagement, social justice, and the reduction of inequality.
4. **Organizational Development**: The process of improving an organization's effectiveness and capacity through change management, training, and strategic planning.
5. **A Group:** is a collection of individuals who come together for a common purpose, interest, or goal. Members of a group typically interact and communicate with one another, and they may share roles, responsibilities, or resources. Groups can vary in size and structure, ranging from small teams to large organizations, and can exist in various contexts, such as social, professional, or academic settings. The dynamics within a group can influence collaboration, decision-making, and overall effectiveness.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1 Introduction

Ethiopia is a signatory of a declaration for universal basic education. Since independence of the government has been doing everything possible to ensure that every child is entitled access to basic primary education.They usually start from perprimary, primary, secondary and even tertiary. More hopes of education are given by the present government for offering free primary education which is also compulsory. Number of books, research reports and papers and other booklets can be found that concern with curriculum instructional materials method and so on. Especially few of them, has been done in the related field. Review of some related literature is cited below.

Pandit (1999) mentioned on an article 'problem faced by mathematics teacher education in the implementation of three year B.Ed. level mathematics curriculum in Nepal. He concluded that mathematics teacher education program in Nepal is disturbed by so many factors such as lack of lecture's involvement in curriculum planning lack of efficiency to conduct teaching facilities and aids, students weak background in subject matter, lack of opportunity given to upgrade their knowledge and a huge number of personal problems are lectures.

About the problems in teaching mathematics, Pandit (1999) written in this article that teachers may face various problems in teaching mathematics. Such problems can be divided in to two parts: (i) Problems in mathematics education and (ii) Problems faced by them while teaching mathematics in real classroom situation and some remedial suggestions has also been given in his article.

Sharma (2000) did a research work on “A study on the availability and use of instructional materials in teaching mathematics at the primary school of Parbat district of Nepal.” He concluded that the availability of the materials was not found very encouraging most of the school expect the case of some materials such as meter scale, compass, clock model and abacus etc.

Basinet (2003) conducted his thesis entitled teaching problems faced by the mathematics teachers in existing curriculum of grade eight. He concluded that mathematics teaching and learning is not satisfactory at grade eight in Jhapa district. The teachers and students are facing many problems due to the lack of training, orientation opportunity for mathematics teachers. In existing curriculum, inadequacy of text book, lack of teachers’ guide and

reference books, lack of instructional materials, lack of physical facilities in the classroom, large class size, and defective evaluation system and so on.

According to Dale, a teacher with a sound and instancing of good teaching techniques, recognizes and uses good teaching procedures and appropriate teaching materials which are helpful and useful in transfer of learning. He realizes that audio-visual materials are usually means and not ends.

Thapa (2005) conducted a thesis entitled "A study on the problem faced by teacher in teaching mathematics at primary level". She concluded that teachers are facing many problems due to large class size, irrelevancy of teachers' guide, lack of instructional materials, and lack of supervisory help and so on. In mathematics teaching, teaching techniques are helpful in making lesson interesting, to explain the content and to remember it by heart during teaching techniques. An instructional strategy refers to pattern outcomes and to guard against others. There are several methods of teaching and some of them emphasize in the supreme source for teacher. Among them inductive method, discovery method, field trip method, discussion method, project method always emphasize on the active participation of the student.

Bhattarai (2005) conducted a study on the topic entitled "A study on problem faced by the mathematics students in existing curriculum" and concluded that mathematics learning in secondary school is disturbed by so many factors like lack of sufficient instructional materials, lack of physical facilities, teachers' negligence towards curriculum planning, students' weak background in subject matter etc. Most of the problems were created due to financial situation and lack of proper academic management. Baral (2008) in the study, "Problem faced by Mathematics teacher in teaching mathematics" indicated that there were number of problems relate to curriculum designing, textbook writing, teaching method, classroom situation, Students' background, teaching materials, teachers training and so on.

Objha (2011) conducted a thesis entitled "A study on the problem faced by mathematics teachers in teaching mathematics at secondary level". He concluded that most of the problems arise because of large class size, irrelevancy of teachers guide book in the sense of teachers' needs, lack of instructional materials, adequacy of teacher training, lack of supervisory help, lack of physical facility etc.

Khanal (2012) conducted a thesis entitled "A study on the problem faced by teacher in teaching mathematics at higher secondary level" and concluded that few numbers of students participation in the mathematics classroom, lack of moral education, lack of parents teacher association, lack of administrative support for the development of mathematical materials.

Students are utilized in participationof programs, difficulties to the teachers in the sense of result oriented system not well participatory approach of both students and teachers in teaching in classroom, lack of friendly relations with teacher and students, lack of preplan and confidence of teacher, lack of appropriate teaching methods, lack of diagnostic test and oral test, lack of supervision, lack of opportunity to join mathematical conferences, seminar, lack of political support for educational sector, lack of parent's responsibilities problems faced by teacher in teaching mathematics at higher secondary level.Poudel (2015) conducted a thesis entitled "Problem faced by mathematics teacher at higher secondary level" and concluded that most of the teachers showed lack of moral education, economic crisis of administration, lack of supervision, lack of proper teaching environment, lack of student's awareness towards mathematics class, lack of appropriate teaching plans and materials, lack of students' participation, poor educational background of students. Trained and skilful teachers were not implementing their knowledge. There was lack of mathematical program like seminar, conference etc.

2.2. Theoretical Framework

2.2.1 Instructional Material Theories

Instructional material theories assume that there is a direct link between the materials that the teachers use, and the students' learning outcomes. These outcomes include higher abilities to learn, quality strategies to learn and perform classroom activities and positive attitude towards learning. Further, these theories assume that instructional materials have the capacity to develop into students the highest order of intellectual skills as they illustrate clearly, step by step how to follow the rules/principles and elaborate on the concepts, all of which have positive impact on solving new problems by analyzing the situation and formulating a plan (Gagné et al. 2005) According to Gagne et al, instructional material can be used to develop higher learning abilities to the learners through self-teaching or guided learning. This implies that the instructional materials mainly comprise "eliciting performance" and "providing feedback on performance correctness," in addition to "providing learning guidance" for guided discovery learning. Many of Gagné's 9 ideas have broad implications for secondary teachers in community secondary schools in Rombo district. Many of these ideas have capacity building undertones with themes of students' acquisition of knwledge and problem-solving skills. However, the theory does not relate to whether or not students can think critically in what aspects or how they can solve a particular problem by themselves. However, I have the opinion that the purpose of instructional materials or technology in

education is to stretch students' imagination and to encourage them to solve problems in their lives.Similar ideas are held by Lev Vygotsky (1978) Russian psychologist who held a view that tools and signs, which are in a form of instructional materials, have the capacity to develop in student's higher level of thinking, which is important in problem-solving activities.

2.2.2 Sociocultural Theory of Teaching, Learning, and Development

Sociocultural theory of teaching, learning and development is the second theory that framed this study. According to Vygotsky (1978) human mind develops through interaction with materials in the learning process where people learn from each other and use their experiences to successfully make sense of the materials they interact with. These experiences are crystallized in 'cultural tools', and the learners have to master such tools in order to develop specific knowledge and skills in solving specific problems and, in the process, become competent in specific profession. In the classroom, these tools can be a picture, a model, or pattern of solving a problem. Most often however, such tools are combinations of elements of different orders, and human language is the multi-level tool combining culturally evolved arrangements of meanings, sounds, melody, rules of communication, and so forth. Few studies have specified the impact of professional training in developed Countries. In the US, some recent papers try to assess the effects of certified programs and those of new programs with reduced requirements prior to teaching (Kane, Rock and Stagier, 2006; Boyd et al., 2005). Few effects are found and they are at most small. On the contrary, two papers find a large impact of training in other countries.

In France, Bressoux (1996) Studies the effect of teachers' training on third-grade pupils 'achievement, comparing certified and uncertified teachers. Bressoux finds that training substantially improves students' scores in mathematics. Angrist and Lavvy (2001), evaluating the effect of in-service teacher training in Jerusalem schools, find significantly positive causal effect of this program on pupils' tests scores. Their cost effectiveness analysis suggests that teacher training may provide a less costly means of improving pupil achievement scores than reducing class size or adding school hours. The findings on the training effect are very close to those found by Bressoux (1996): the training of novice teachers largely promotes students' learning in mathematics.

2.2.3. Vygotsky's Sociocultural Theory and the Zone of Proximal development (ZPD)

Perhaps the best known concept of Vygotskian theory is that zone of potential development (ZPD). Initially, it was elaborated for psychological testing at school. Vygotsky stated that testing should be based not only on the current level of a child's achievements but also (and mainly) on the child's potential development. He claimed that the actual level of development (level of independent performance) does not sufficiently describe development. ZPD is the distance between what a person can do with and without help. It is defined as the difference between actual level of development as determined by independent problem solving and the higher-level of potential development as determined through problem solving under guidance or in collaboration with more capable peers (Vygotsky, 1978). The term proximal (nearby) indicates that the assistance provided goes just slightly beyond the learners' current competence complementing and building on their existing abilities (Cole & Cole, 2001).To arrive at this position Vygotsky had to come to grips with two types of reductionism-biological, which is the normal maturing of the physical brain and sociological, the appropriation by the child of society's cultural assets (language, etc) thrust upon it by adults. It is within this latter area thatVygotsky placed his ZPD by arguing that rather than having education dragging behind in sociological development it must anticipate, it must "run ahead". This meant distinguishing between actual and potential development. Actual level is determined by tasks that a person is capable of solving by themselves and potential, the one at which the help of instructions necessary. Vygotsky recognized that the distance between doing something independently and with the help of another indicated stages of development, which do not necessarily coincide in all people. In this way he regarded an instructors "teaching "of a student not just as a source of information to be assimilated but as a lever with which the students thought, with its structural characteristics, is shifted from level to level. (Yaroshevsky, 1989)

In other words learning in the ZPD refers to performing a range of tasks that the person cannot yet handle alone but can accomplish with the help of instructors or more capable peers. As people engage in cooperative dialogues with more capable partners, they take the language and make it part of their private speech and use this speech to organize their independent performance in the same way. They acquire the methods of collaborative performance and use them in their independent performance later. Learning in the ZPD awakens a variety of internal developmental processes that are able to operate only when

people interacting with more experienced people. These processes are happening externally, in between two minds and they are called inter-mental processes.

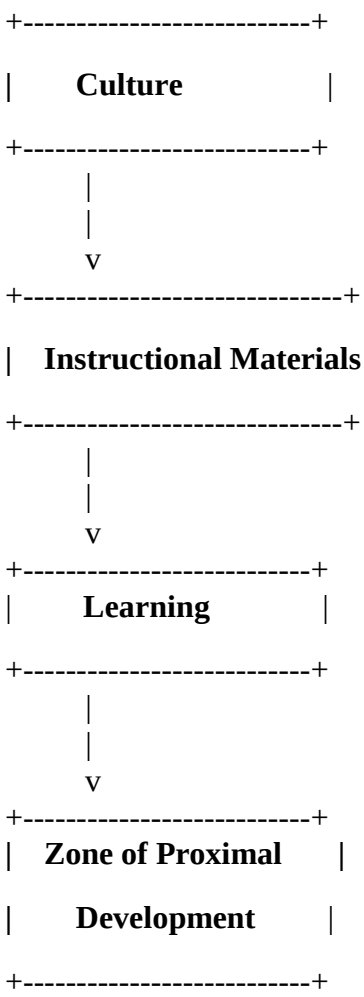
The process when the adult and the instructor come to a shared understanding is called“inter subjectivity” by contemporary psychologists. It is very important to achieve inter-subjectivity to enable the next stage - internalization - to occur. The processes then become internalized and turn into a part of the child’s independent achievement; that is, they become infra-mental (within one mind). According to Vygotsky (1978), developmental processes do not coincide identically with learning processes.

2.2.4 Social Learning

Daniels, (2001) looked at the nature of the 'social' within the ZPD. He claimed that in many ways the concept of ZPD lay at the heart of Vygotsky's social account of learning. Vygotsky, he says, was concerned with developing an account in which humans were seen as 'making themselves from the outside ‘through acting on things in the world they engage with the meanings that those things assumed within social activity. He in fact developed a way in which social and participatory learning takes place.

As Zinchenko (1996) explains, Vygotsky gave primacy to the sociopsychological nature of internalization, the general course of which, he believed, went from the individual to the internally individual. In other words, people’s relations - culture - are what are internalized. Kaptelinin (1996) also describes this social internalization and acquisition of abilities as being characterized by the transformation "from inter-subjective" to "intra-subjective" mental actions.

Here is a simple textual representation of a conceptual graph illustrating the relationships between instructional smaterials, culture, learning, and the Zone of Proximal Development (ZPD):

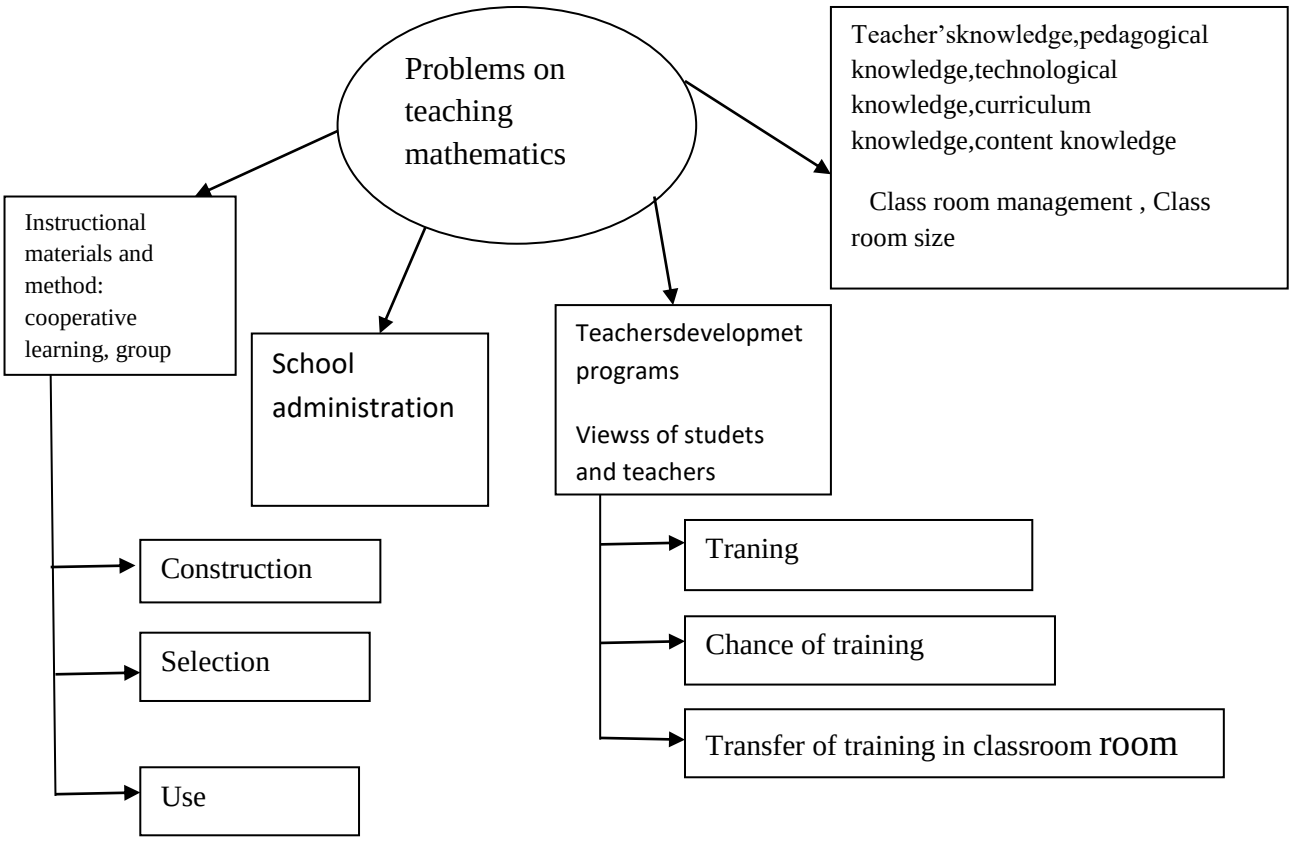


Explanation of the Graph

Culture influences the Instructional Materials, shaping their relevance and effectiveness for learners.Instructional Materials facilitate Learning by providing resources and tools that engage students.Learning occurs within the Zone of Proximal Development (ZPD), where students can achieve more with appropriate support.This visual representation highlights the flow of influence among these concepts, illustrating how they interact to enhance the learning process.

2.3 Conceptual Framework

On the basis of theoretical reviewin second chapter of this study, the relation methodological process and variables research problems is shown in the following mental figure of researcher to get expected output:



2.4 Summary

The quality of education that teachers provide to students was highly dependent upon what teachers did in the classroom. Thus, in preparing the students of today to become successful individuals of tomorrow science and mathematics teachers need to ensure that their teaching is effective. Teachers should have the knowledge of how students learn science and mathematics and how best to teach. Changing the way we teach and what we teach in science and mathematics is a continuing professional concern. Efforts should be taken now to direct the presentation of science and mathematics lessons away from the traditional methods to a more student centered approach. The science curriculum for secondary school has been designed as to provide students with the knowledge and skills in science and mathematics develop thinking skills and strategies to enable them to solve problems and make decisions in everyday life (Ministry of Education, 2002). This would be functional when teachers identify problems facing in teaching mathematics at secondary schools and overcome problems in teaching learning process.

CHAPTER THREE
RESEARCH METHODS AND PROCEDURES

3.1 The Research Design

According to Opoku, Ahmed, and Akotia (2016) a research design shows a framework for data collection and analysis, as well as the technique to be followed in the way that improves the validity of the research investigation. The type of research will dictate the right research methodologies that should underpin the research and data-collection methods to be used. Regardless of the method or methodology adopted for the study, the data-collection techniques employed must be suitable and capable of meeting the objectives of the study "ibid".The concern of this study was an investigation and analysis of the problems facing the teaching of mathematics at Adet town adminstration secondary school teachers West Gojjam, Ethiopia .This study was descriptive both quantitative and qualitative .

3.2 Population of the study

In educational research, the population of interest is usually a group of teachers, students, or other individuals who possess certain characteristics (Creswell, 2014) . Thus, in this study, the population constituted 50 Grade 9^{th} and 10^{th} secondary school mathematics teachers found in Yilmana Densa district. According to the education office of Yilmana Densa district, this district has 6 towns, one of them Adet town administration was selected purposively. There are 6 general secondary schools found in this district. Of these, secondary schools 2 schools in Adet town administration were selected purposively. A sample size is the number of individuals or observations included in a study or survey. It is a crucial aspect of research design because it affects the validity and reliability of the results. A larger sample size generally leads to more accurate and generalizable findings, while a smaller sample size may not adequately represent the population and can introduce higher margins of error.

3.3 Sample and sampling techniques

Two government secondary schools were selected in Adet town administration, West Gojjam, Amhara Region and Ethiopia. To collect the most comprehensive source of data possible, sampling decisions was made. Purposive sampling is particularly useful in qualitative research, where depth of understanding is more important than generalizability to a larger population. A purposive sampling method was used in selecting the schools and classes. Because I am teaching at Adet secondary School and to take more time do the research .More over the number of populations are small in number .The researcher selected 15 Mathematics teachers teaching Grade 9^{th} and 10^{th} from two secondary schools by simple random sampling. Random sampling is a fundamental technique in quantitative research,

particularly when the goal is to make generalizations about a larger population based on the sample data.

And the researcher also applied interviews, observations and questionnaires with teachers to obtain information about their perception toward problems facing teachers in teaching mathematics.The researcher asked open ended questions, structured or unstructured interviews and class room observations.

3.4 Research Method

This study adopted descriptive research to identify problems facing teachers in teaching mathematics using both quantitative and qualitative.

Johnson and Onwnegbuize (2004) defined "mixed method research is formally defined as the class of research where research combines both quantitative and qualitative research techniques,methods,approaches,concepts or language into a single study."Qualitative method to study the selected issue in depth and to assess attitudes, behaviors, and opinions of respondent's. Quantitative method help the researcher to study the selected issue numerically. Qualitative data was collected by using frequentclass room observation and interview.

3.5 Sources of Data

Both primary and secondary data were used in this study. Secondary data collected through consulting different publications relevant to the study from internet and other documents from the study area. But the primary data was the main sources of the analytical section of this study which were carried out through different tools and techniques.

3.6 Data Collection Instruments

The following instruments were used for data collection.These were questionnaire, Classroom observation and interview.

1.The questionnaire was developed by the researcher with the help of the advisor. It included items based on conceptual framework and related to various problems which were being faced by secondary school mathematics teachers in Adet town administration. The area of problems were relating to class size, class room management, teachers subject knowledge, seating arrangement, views of students, construction of teaching materials, selection of teaching materials, use of teaching materials, trainers, opportunity for training, transfer of training in classroom and school administration.At the end of each section of questionnaire, the respondents were requested to comment on the areas that are not covered in the questionnaire. The numbers of questionnaires were 32 a total of related problems.

2.The interview schedule was used for the qualitative information. Five teachers were selected andinterviewed for this purpose. The open ended questions were asking them with

the help of interview guidelines thatwere developed by the researcher with the help of the supervisor. Interview guidelines were constructed in such a manner that they can find the problems with its causes faced by mathematics teachers while teaching mathematics at secondaryschool.

3. The classroom observation form was also used for qualitative information. The researcher used the classroom observation form depending on the objective of the study to observe the classroom practice in mathematics teaching. Five teachers and their classes were selected for this purpose. In general, qualitative data was collected using frequent observation and interview.

3.7 Scoring Procedure

For scoring purpose, weight of 5,4,3,2,1 were assigned to the statement SA= Strongly agree, A=Agree, U=undecided, DA = Disagree, SDA = Strongly disagree respectively for positive statements and 1, 2,3,4,5 was assigned to the statements SA, A,U, DA,SDA respectively for negative statements. Mean value calculated. Total score of five point likert scales is 15 and hence the mean is 3. Therefore, if the mean value of a statement is less than 3 then the statement considered as a problem area otherwise not.

3.8 Data Collection Procedure

The researcher went to the sample school along with questionnaire, observation form, and interview schedule and request letter given by Department of Mathematics Education. After this, the researcher explained the purpose of the visit. Then the researcher asked the teacher of the school included in the sample to fill questionnaire honestly. Also the researcher observed the class of selected teachers. Moreover, the researcher asked the interview to the selected sample teachers by using open-ended questions keeping the scheduled time.

3.9 Data Analysis Procedure

After collecting data, I analyzed and interpreted using both quantitative and qualitative method. I used five point likert scales as a statistical tool for the analysis of questionnaires. Mean value used to find whether a statement is problematic or not and qualitative theme and their interpretation was done by narrative techniques.

Mean was used to locate the central position of the responses to the statements of respondents in the likert scales of teachers as a whole in the. The mean can be as follows:

$$\text{Mean} = \frac{\text{Total rank score of a statement}}{\text{Total number of teachers response}}$$

If the calculated mean is less than three then it concludes that the statement is problematic and it is strongly favorable to it. Otherwise it is not a problem. Next, the researcher analyzed

and interpreted the qualitative data thematically obtained from interview schedule and class observation form.

Thematic analysis is primarily a qualitative research method, but when applied to quantitative data, it often involves a slightly different approach, typically called "quantitative thematic analysis" or "thematic analysis of quantitative data." This method focuses on identifying and quantifying themes within numerical data sets, often through coding responses from surveys or interviews that include open-ended questions.

Framework analysis is a systematic approach to data analysis commonly used in qualitative research. It provides a structured way to sift through qualitative data, allowing researchers to identify key themes, concepts, and relationships. This method is particularly useful for policy research, applied social research, and evaluations. Here's an overview of its main components.

Grounded Theory Analysis is a qualitative research methodology aimed at generating theory from data systematically collected and analyzed. Unlike traditional research approaches that start with a hypothesis, grounded theory begins with data collection and allows theories to emerge from the data itself.

3.10 Validity and Reliability of the Instruments

Reliability of tools refers to consistency of tools and validity of tools refers to appropriateness of tools. Reliability is necessary but not sufficient condition for validity. Reliability and validity of an instrument means reliability and validity of the interpretation and use to be made of the results obtained by using that instrument.

The "reliability of the questionnaire was checked by Cronbach's alpha from the pilot study" Cronbach's alpha is a statistical measure used to evaluate the reliability, or internal consistency, of a set of items (questions) in a questionnaire. A high Cronbach's alpha (typically above 0.70) suggests that the items measure the same underlying construct, indicating that the questionnaire is reliable.fers to the process of assessing the internal onsistency of the questionnaire used in the research.

To calculate Cronbach's alpha, follow these steps:

Collect Data: Administer the questionnaire to a sample group (pilot study).

Calculate Item Variances: For each item (question) in the questionnaire, calculate the variance.

Calculate Total Variance: Calculate the total variance of the scores across all items.

Use the Formula:

$$\alpha = \frac{N}{N-1}(1 - \frac{\sum {\sigma_i}^2}{{\sigma_t}^2})$$

Where:

N = number of items (questions)

${\sigma_t}^2$ = variance of t${\sigma_i}^2$ = variance of each individual item the total score (sum of all items)

Interpret the Result: Values close to 1 indicate high reliability.

Values below 0.70 may suggest that the questionnaire may need refinement.

Using Cronbach's alpha is a standard practice in research to ensure that the questionnaire items are consistently measuring the intended constructs, thereby enhancing the validity of the research findings.For its validity, the prepared questionnaires were distributed to many people (professionals) to edit the ambiguity of the instrument. It was also ensured by applying established tools in local context.

To test the trustworthiness of qualitative data, several strategies can be employed to ensure validity and reliability. Here is one common methods:

Peer Debriefing

Definition: Engaging with colleagues or peers to discuss findings and interpretations.

Implementation: Regularly meeting with peers to review data, interpretations, and conclusions, which can provide alternative perspectives and reduce bias.

3.11 Ethical Issues

Before addressing other procedures, the researcher requested and took ethical clearance of approval from Bahir Dar University. And then Secondary schools in the study area were administered by the Yilmana Densa district education office and in this regard the researcher was quested the district education office (Yilmana Densa district Education Office) and was received consent letter to carry out the study. The researcher went to the selected secondary schools at Yilmana Densa district and obtained each school principal and inform about the study.

Following this procedure, the researcher contacted each of Grade 9 and 10 mathematics teachers who were chosen for the research and let them to sign the consent form. To secure the participants' identities, codes (TA, TB, TC, TD and TE) used instead of their real names and addresses.

3.11.1. Informed consent

The researcher assured that written consent was necessary. The purpose of the study was explained to participants, and they would be ensured of their name do not necessary.They can leave the study at any moment. According to Bless, Higson-Smith, and Kagee (2006) the

researcher should inform participants about the study and what they must do to participate. An inform consent form was requested of each participant, indicating that they had fully perceived the information present to them. The researcher was described the study's aim and why they include in the sample.

3.11.2. Confidentiality

To maintain participant confidentiality, the information they would give, particularly personal information, would be kept private and would promise not to expose to someone else. Through a written notice, all participants would be ensured of their names do not ncessary. To protect their identities and ensure confidentiality, they were given false name. In this study, to ensure confidentiality, pseudonyms would use for the three mathematics teachers using the letters of the alphabet TA, TB, and TC. To ensure confidentiality, the participating schools will code using the letters of the alphabet, from A to B.

3.11.3. Data anonymity

The research data collected from the respondents were not exposed to any external body and due to this fact, it should be confidential. The researcher was promissed for all respondents, the raw data would be opened only to the researcher and the researcher's supervisor.

CHAPTER FOUR
ANALYSIS AND INTERPRETATION OF DATA

The data for this study were collected from two schools in Adet town administration. These two schools were located in Adet town. The collected data were tabulated and analyzed according to the objectives of the study. The tabulated data were statistically analyzed and interpreted by using statistical tool (mean value) . The data were analyzed item wise in the various problems related to teachers who teach mathematics at Adet town administration secondary schools. The researcher used class observation form (Appendix IV) to observe the class regularity for three days in each sample school. Direct observation was done day in the classroom and the classroom behavior was carefully observed by different outlook of setting and noted. With the help of semi-structured interview schedule, the interview was taken with the teacher. The interaction with the respondents was categorized according to their category and then different themes were given in the text of interview or in the observation note. These themes were considered as a code and the similar code version of respondents were collected together and finally the themes were explained in their perspectives.

The data were collected from construction of teaching materials, selection of teaching materials, use of teaching materials, trainer, chance for training, training in classroom, class size, class room management, teacher's knowledge, seating arrangement, views of students and school administration.

Thus the collected information were analyzed and discussed under the following topics:

- Problems related to construction of teaching materials
- Problems related to selection of teaching materials
- Problems related to use of teaching materials
- Problems related to trainer
- Problems related to chance for training, training in class room (Training and materials)
- Problems related to school administration
- Problems related to class size, class room management, teacher's knowledge, seating arrangement, views of students.

4.1 Problems Related to the Construction of Teaching Materials

It should not be surprising that current research has established a significant relationship between the use of manipulative materials and students' classroom. Learning theorists have suggested for some time that children's concepts progress through direct interaction with the environment, and teaching materials provide a vehicle through which this can happen. This message has been conveyed in a number of ways: Piaget (1971) suggested that concepts are formed by children through a reconstruction of reality, not through an imitation of it;Dewey (1938) argued for the provision of first hand experiences in a child's educational program; Bruner (1960) indicated that knowing is a process, not a product and Dienes (1969) whose work specially relates to mathematics instruction; suggested that children need to build or construct their own concepts from within rather than having those concepts imposed upon them. In view of this, it can be claimed that teaching materials are of great importance and play a vital role in meaningful learning of mathematical concepts. For the understanding of the problems in construction of teaching materials, the researcher raised some questions like economical support from school administration, income source of school and free time of teachers. These are the area of problems of construction of teaching materials. For effective mathematics teaching, the materials should be of appropriate size and colorful. Now the researcher tried to elaborate the following problems in detail related to construction of teaching materials.

Figure 4.1 Problems related to construction of teaching materials

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEANA
		SA	A	U	DA	SDA	
1	I have got economical support for purchase and construction of instructional materials from the administration.	0	4	2	6	3	2.47
2	Our schools do not have any prerequisite to support in the construction and purchase of instructional materials.	3	6	2	2	2	2.6
3	The administration has provided me sufficient free time to construct and use instructional materials.	0	2	2	3	8	1.87
4	There are no sufficient free time even to think about construction and use of instructional materials.	2	8	0	2	3	2.74

Source: own survey,2023

From the above table, it is seen that the mean of first statement is 2.47 which is less than three and indicates that this statement is problematic.Similarly, the mean of second statement is 2.6 which is less than 3 and indicates that this statement is a problem.Therefore, it is concluded that teachers are not getting economical support for purchase and construction of instructional materials from the administration. Also schools do not have financial provision to support in the construction and purchase of instructional materials. In this regards, the teachers responded as: All facilities of the school depend on the school i.e. from the students' payment for registration and from selling grasses and trees. These incomes used to buy reference books, papers, pens dusters and chalk. The schools have no any additional financial income .In the future we will design a project to get financial support from NGOS and from the school communities.

The above views of teachers indicate that there is a shortage of materials in the school and therefore the school administration cannot afford any economical support to teachers for construction and purchase of teaching materials. The aim of school administration is to handle such problems with the help of some supporters.

The mean of third statement is 1.87 which is less than three and indicates that this statement is a problem for teachers. Also the mean of the fourth statement is 2.74 which is also less than three and indicates that this statement is problematic. That is there are not enough free times for teachers for construction and purchase instructional materials. In this regards, the teacher responded as: we have maximum load in the school .we have no more free time. We are making plans for the next lesson and we giving tutors. We have additional responsibilities in and out of the school. We devote our free time for the purpose of the school.

The above view of teachers cleared that teachers were not getting more free time to construct and purchase instructional materials. Also they can't give their own time for the purpose because they had additional responsibilities in and out of the school. Therefore it is concluded that not getting more free time is also one of the problems faced by mathematics teachers in Adet town administration secondary schools.

Figure 4.2 Problems related to selection of teaching materials

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
5	There is no specific room such as store room or math lab to manage, select, use and demonstrate instructional materials	0	10	3	1	1	2.54
6	Math lab is available in our school.	0	4	2	8	1	2.1
7	I do not have ICT skills to search in internet and then to select appropriate and innovative instructional materials in internet.	0	2	2	8	3	3.8
8	I am very good at computer and ICT skills to search select and use instructional materials.	0	10	3	2	0	3.54

Source: own survey,2023

From the above table, it is seen that the mean of fifth statement is 2.54 which is less than three and indicates that is a problem .Again the mean of sixth statement is 2.1 which is also less than three and indicates that this statement is a problem for the teachers .That is there is no specific room such as store room or math lab to manage, select, use and demonstrate instructional materials .This is created problems for teachers .In this regards, the teachers responded as: We have no math lab room .Even we do not have the knowledge of how math lab works. There is only one room for media production and used for store instructional media. The above view of teachers cleared that there was a problem in using mathematics lab because there was no separate room for mathematics lab in selected schools. The teachers did not have any understanding about mathematics lab. So, it is concluded that teachers were unsighted in selecting and using teaching materials in the classroom teaching.

The mean of seventh statement is 3.8 which is greater than three and indicated that this statement is not problematic. Then, the mean of the eighth statement is 3.54 which is also greater than three and indicated that this statement is not a problem for the teachers. Thus the teachers have ICT skills to search in the internet and then to select appropriate instructional materials.

Figure 4.3 Problems related to use of teaching materials

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
9	It is difficult to complete the whole course in time if instructional materials are used in teaching and learning activities.	2	9	1	1	2	2.47
10	I use instructional materials during teaching learning activities but the administration does not care and support to sustain it.	1	10	4	0	0	2.2

Source: own survey,2023

From the above table, it is seen that the mean of ninth statement is 2.47 which is less than three and indicates that is a problem. Hence, it is difficult to complete the whole course in time when the teachers use instructional materials in teaching. Again the mean of tenth statement is 2.2 which is also less than three and indicates that this statement is a problem for the teachers. Therefore the teachers are using instructional materials during teaching learning activities but the administration are not caring and supporting to sustain it. In this regards, the teachers responded as: We understand as teaching materials are essential for meaningful learning. But no more production and use of teaching materials in the classroom regularly.We are focusing on course coverage because we are applying the plan, there is supervision. And even there were some prepared teaching materials, there is no wise use of the materials. Some teachers are careless .The school administration do not follow attentively. From the above view of teachers, it is concluded that teachers were facing the problems in using teaching materials in the classroom. There was pressure upon teachers to complete the whole course in time from the district office and they gave more attention to complete the whole course in time than to use teaching materials in the classroom. Though teachers wanted to use teaching materials, they were not using teaching materials in the classroom. The school administration was not responsible to pay attention for teaching materials and to sustain most of the teachers were found to be not using instructional materials even they believed that they were using materials. The reality was found by observing their classes. Some episodes of their observed classes are as follows:

Episode 1

"One day the Mathematics teacher entered in to the class with daily lesson plan using materials which were related to the topic. He wrote the topic: **surface area and volume of cylinders**. And then he wrote the formula of lateral surface area (A_L = **Ch),** total surface area ($A_T = A_L + 2A_B$) and volume (V =$A_B h$) of cylinder with geometrical figure.

He reviewed the previous class about the area and volume of prisms .He also defined a right circular cylinder as its height(h) is perpendicular to the base radius .Then he let the students to solve the related problems using formula with examples: Find the lateral surface area(AL) , total surface area (AT) and volume(V) of a right circular cylinder with radius 4cm, height 12cm .Then he solved the example and summarized and allowed to students to do the remaining problems of the text book as home work."

The teacher did not use physical teaching materials (models) even if such materials were available in the school.

From the above observed class, it is found that the teachers were not using available instructional materials. He just gave the concept of real materials orally only but not practically. So, the students were confused. It was also seen that teachers were teaching their class without any pre-plan, that's they could not summarize and complete the class in time. Regarding this problem, teachers responded as: Even there are teaching materials the school administration do not give care and no separate room to keep it and use longer time and also no repairing rather avoid the materials. Even most teachers have no interest to use media.

The above mathematics teachers' view cleared that there were not enough mathematical teaching aids. It was also seen that there was lack of teaching materials due to the lack of additional income source. The school administration was not responsible to pay attention for teaching materials and to maintain it. Moreover, there was no protection for available teaching materials because there was no separate room to keep instructional materials. Such materials were kept in staff room randomly in addition to there was no stipulation for repairing the damage materials.

The above reality was found by observing their classes. Some episodes of their observed classes are as follows:

Episode 2

“One day a Mathematics teacher entered the class with daily lesson using materials, and then he cleared the black board and wrote the topic: statistical data. He reviewed the previous lesson .Then he wrote the following questions:

1) What is statistics?
2) What are statistical data?
3) What is a sample?
4) What is population?
5) What are quantitative and qualitative data?
6) What is population function?

However, students were not participating actively. Only one student out of 40 students gave some answers. Then the teacher gave the answers for the above questions like: statics is the science of collecting, organizing, presenting, analyzing and interpreting data (quantitative information) in order to draw conclusions and so on.Finally, he summarized the lesson and gave home work.’’

The above observation shows that the teacher was not using student centered teaching methods. It is also seen that there was lack of participation in student to answer and teachers were incapable to develop creativeness in students. This also proved that individual teaching was not accomplished in the class.

Most of the time, I used student centered method.Here I used teacher centered method, why? Because, no more students participated.To cover the daily lesson I answered the questions listed above.

There was contradiction between teachers' view and the reality found by observing the class. Teacher mostly uses lecture-method while teaching mathematics.

According to policy statements of NBPTS accomplishing teacher display a "readiness to work collaboratively", participate in "Collaborative efforts to improve the effectiveness of the school" and "cultivate a critical spirit in appraising the schooling." In modern senses, teacher should use the student centered method, co-operative and more collaborative learning in the classroom teaching that makes learning more effective.

The CDT theory specifies that instruction is more effective to the extent that it contains all necessary primary and secondary forms. Thus, a complete lesson would consist of objectives followed by some combination of rules, examples, recall, practice, feedback, helps and mnemonics appropriate to the subject matter and learning task. In the modern sense, teacher should have good presentation in the classroom practice that is:

- Planning the presentation in the view of two way communication between teacher as facilitator and learner.
- Planning each and every topic in the hierarchy of knowledge, understanding of knowledge, understanding, skill and higher ability based on objectives.
- Awareness about fundamental concept of difficulty.
- Planning illustration from simple to complex for the coverage of objectives appropriately.
- Providing maximum opportunity to learner in developing knowledge, understanding skill and higher ability of problem solving by themselves.

The above analysis shows that the problems on mathematics teaching learning are lack of medias, lack of clarification of terms, not giving feedback and suggestion to improve in mathematics learning.

The causes of the bove problems are not well participatory approach of both students and teachers while teaching mathematics in classroom, lack of preparation of teacher, lack of diagnostic test and oral test, lack of use of real model (materials), and lack of proper teaching learning method.

Figure 4.4 Problems related to trainer

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
11	Training plan/schedule is organized in our school for teachers to improve teaching learning activities.	0	1	2	2	10	1.6
12	Refreshment course (training) is organized frequently for us.	0	4	6	5	0	2.94
13	I did not participate in any seminar conducted on mathematics yet.	3	5	3	3	1	2.6
14	Training is not based on need and demand; it is only for formality and up-grading.	2	10	1	2	0	2.2
15	I deliver the knowledge and teaching strategies in class-room whatever I have learned in the training program.	0	5	3	4	0	2.49

From the above table, it was seen that the mean of the eleventh statement was 1.6 which is less than three and indicated that this statement was problematic. Again the mean of the twelfth statement was 2.94 which is less than three and indicated that this statement is a problem for the teachers. Thus there is no training schedule in most of the school for teachers to improve teaching learning activities.

The mean of the thirteenth statement was 2.6 which is less than three and indicated that this statement was a problem for the teachers.

Next, the mean of the fourteenth statement was 2.2 which is also less than three and indicated that this statement was also a problem for teachers. Therefore many teachers have not participated in any seminar conducted on mathematics and this created a problem for the teachers.The mean of the fifteenth statement was 2.46 which is less than three and indicated that this statement was a problem for the teachers. In this regards, the teachers responded as our school does not have any training schedule for the teachers. Some teachers are only getting training sometimes, such training are about gender equality, HIV Aids, life skill, rights and duties of citizens not relating about teaching learning process. We do not participate any seminar given on subject matter.Training is not given in our need rather the government simply send us for formality and for up-grading vertically. (Teachers voice)

The above teachers' view indicated that though they were willing to participate in the training in certain interval, they were not getting because the school has no proper schedule for the teachers' training. The teachers were not getting participated in such training which was related to teacher's professional development. Instead, the training was conducted on other topics such as: gender equality, HIV Aids, life skill, rights and duties of citizens. The teachers were also not participated in any seminar conducted on subject matter which could be very essential for teachers for their professional development to increase students' achievement.

Application of training skills in real classroom teaching/ situation is the most important aspect of the study/ training. If there is no transfer of training skills, then the investment of time, money and labor will be useless and there would be question mark behind the whole package. Researcher observed the trained mathematics teachers' classroom and found as follows:

Episode 3

One day the teacher entered the class with daily lesson plan using materials like ; duster, text book and chalk.He wrote the topic :Regular polygons on the black board.Then he wrote the definitions of regular polygons, definitions of perimeter and area of regular polygons, about inscribed and circumscribed polygons and then the teacher discussed with the students about the definitions written above. Then the teacher taught it by giving examples such as 1. Find the perimeter and area of a regular quadrilateral with radius 5 units.

2. Show that the area A of a regular hexagon which is inscribed in a circle with radius r is $A = ½3r^2$. Students were asking about how the formula can be developed but the teacher simply checked students' copies and guided to their mistakes. Finally, he solved the examples, summarized and then allowed to students to do the remaining problems of the text book as home work."From this observation, it is seen that trained teachers were also not implementing their skills in the real classroom appropriately. In the observed school, there were some paper made materials related to the topic but the teacher did not use it. If he used those materials then it would be easier to make students clear about lateral surface area, total surface area, and volume of prism. The place of placing presentation and summerization skill of instructional materials gained in training session were not also found to be transferred in the real classroom.

Supervision is an important part of classroom teaching that wares and gives feedback to the teachers for transfer of training in classroom teaching. The head teacher, the school administrator and the school supervisor are especially responsible for supervising the class.

All the teachers were found to have in the help of supervision of the classroom teaching, however their supervision was restricted to know whether the teachers were in classroom or not and course would be completed in time or not. It was found that the school supervisors were used to come in their school for sometimes only and especially talked to the head teacher but they did not observe the classes regularly. According to the teachers, they never receive comment from the school administer and from the school supervisor. Moreover, they stated that they would try to make their teaching effective and meaningful through the teacher training. The causes of arising the above problems were teacher's carelessness, maximum work load, lack of encouragement, lack of supervision. Most of the teachers were not aware and accountable about educational training. If there is a regular supervision, with reward or punishment, then the transfer of teacher training skills would be successful. This would be possible also when trained teachers would be participated in some seminar given on mathematics.

Figure 4.5 Problems related to chance for training, training in class room(Training and materials)

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
16	The trainers are not very good at contents to deliver the training.	0	2	3	5	5	3.74
17	Trainer is fully competent and well-qualified in contents.	0	8	4	3	0	3.33
18	Trainers are not well-experienced and skillful like in the use of ICT to deliver the training.	0	10	3	2	0	2.46
19	I do not make and then use daily lesson plan because. It is not practicable I do not have knowledge about it. It is a heavy teaching load. ``	0	2	3	8	2	3.66
20	The classroom is not equipped with a graph board.	3	6	1	2	3	2.73
21	There is no facility of internet access and ICT lab in the school to search, select and use instructional materials.	0	2	1	4	8	1.53

Source: own survey, 2023

From the above table, it seen that the mean of the sixteenth statement was 3.74 which is greater than three and indicated that this statement is not problematic. Next, the mean of sevenths statement was 3.33 which is greater than three and indicated that this statement is also not problematic. Thus the trainers are good at contents to deliver training and this did not create any problem for teachers. But the teachers had the following comments to make:

- Most of the teachers (respondents) said that the trainers had no proper techniques, way, method to deliverer the training.
- Most of the respondents said that the trainers were often in hurry.
- Almost all respondents said that the trainers had come to deliver the training for money only rather than to give some skills and techniques to the teachers.
- Almost all respondents said that the trainers had lack of experience.

The mean of the eighteenth statements was 2.46 which is less than three and indicated that this statement was a problem for teachers. Therefore trainers are not skilled like in ICT to deliver the training and this created a problem for teachers. Concerning this problem, the teachers responded as:

The trainer delivers the training in traditional ways even the the technology of ICT is available. The trainer uses color chalck, card board paper, marker, white board, to deliver the training. The trainer was not experienced because of lack of the modern technology.

The above teachers' view cleared that the trainers were not skillful like in using ICT while delivering the training, that's why they were not using ICI: Laptops, projectors, related software and other modern technology to deliver the training in interesting, meaningful and purposive way. The trainer was not well experienced because of lack of the modern technology. The trainer himself was confused and was trying to clarify the confusing subject matter by discussing with the participants in the training.

The mean of the nineteenth statement was 3.66 which is greater than three and indicated that this statement was not problematic. Thus the teachers are good in making and using the lesson plans. Though this was not a problem for teachers, the teachers had the following comments to make:

- ✓ Most respondents said that they have heavy teaching load to free time to making daily lesson plan.
- ✓ Some of the respondents said that it is not sensible and obstacle to complete the whole course in time.
- ✓ Some percent of the respondents said that they had no proper knowledge about this.

  The mean of twenty statement was 2.73 which is less than three and indicated that this statement was a problem for teachers. That is the classroom was not equipped with graph board in the most schools. This created problem for teachers.

The mean of twentyone statement was 1.53 which is less than three and indicated that this statement was problematic. That is there was no facility of internet access and ICT lab in the school to search, select and use instructional materials. This created problems for teachers. Concerning this problem, the teachers responded as:

There is no ICT lab in our school. In addition to this there is no internet access in our school If the access was available in our school I would use it in the teaching learning process and it could increase student's result.

The above teachers' view recommended that it is very important to have the facility of internet access and ICT lab in the school because the availability of these facilities is very important for meaningful teaching learning activities. Furthermore, it could not be imagined better students' achievement in the absence of internet access and ICT lab cause many abstract concept, which is difficult to understand, can be understood easily with the help of ICT. School administration is responsible for almost all activities those take place in school. It plays a vital role in construction and purchase of teaching materials, managing training program and many more. For the understanding of problems related to school administration, researcher raised five questions. Those questions with their mean weight age are tabulated below:

Figure 4.6 Problems related to school administration.

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
22	It is obligatory to me to take extra period due to insufficient mathematics teacher	6	4	3	2	0	3.93
23	Our school administration is not responsible to manage and construct necessary teaching materials.	8	2	2	3	0	2
24	Lack of refreshment training to teach difficult and rigor topic	2	10	2	0	1	2.2
25	Lack of facilities and award for good performance.	6	3	2	2	2	2.4
26	There is no library in our school.	0	0	2	6	7	4.33

Source: ownsurvey,2023

From the above table, it was seen that the mean of twenty two statementwas 3.93 which is greater than three and indicated that this statement is not a problem for teachers. Hence it is concluded that there was no obligationfor teachers to take extra period.

The mean of twenty three statement was 2 which is less than three and indicated that this statement is problematic.Therefore it is concluded that the administration is inactive and irresponsible to manage necessary instructional materials.

The mean of twenty fourth statement was 2.2 which is less than three and this indicated that this statement is problematic. Thus it is concluded that school administration could not managerefreshment training to teach difficult and rigor topics.

The mean of twenty fifth statement was 2.4 which is less than three and hence it was concluded that school administration had not managed reward for good performance of teachers.Additionally, there was no facility for mathematics journal, thesisand reference books in the schools.

The mean of twentysixth statement was 4.33 which is greater than threeand indicated that this statement is not a problem for teachers.

Regarding above problems, teachers responded that our school administration had no additional source of income. It often suffered from financial crisis. There was no provision for award for good performance of teachers and punishment for poor performance as well. To attract teachers towards teaching, teachers need good facilities and rewards for good performance according to their subject. But they are not getting such facilities.

From the above view of teachers, it is concluded that there are many problems regarding school administration and such problems hinders teachers' attraction on teaching and hence students' achievement in mathematics is affected as well. Therefore school administration is required to be careful, good and responsible to address teachers' problems.

Figure 4.7 Problems related to class size, class room management, teacher's knowledge, seating arrangement, views of students.

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
27	I can easily manage the class room during instruction.	10	3	2	0	0	4.53
28	Class size is matched with the standard.	8	3	3	1	0	4.2
29	Students have interst about learning mathematics .	0	1	2	2	10	1.6
30	Teachers have the appropreate knowledge to teach mathematics at their level.	5	6	2	2	0	3.93
31	The class room is not comfortable for instruction.	1	2	1	3	8	4
32	Students have good seating arrengement in the class.	4	3	3	3	2	3.27

Source: ownsurvey,2023

The mean of the twenty seventh statement was 4.53 which is greater than three and indicated that this statement was not problematic. Hence it is concluded that the teachers could easily manage the class room during instruction. The mean of thetewenty eighth statement was 4.2 which is greater than three and indicated that this statement was not problematic. Hence it is concluded that the class size was matched with the standard.The mean of twenty ninth statement was 1.6 which is less than three and indicated that this statement is problematic. Therefore it is concluded that the students have no interests about learning mathematics. Teachers gave reasons like students have no back ground knowledge, have less participation, most of the students scored below 50 percent and also they believed as the subject is hard in nature .Hence from the above point of view teachers concluded that students have no interest in mathematics during instruction.

The mean of the thirty stateents was 3.93 which is greater than three and indicated that this statement was not problematic. Hence it is concluded that the teachers have the appropriate knowledge to teach mathematics at their level.

The mean of the thirty one statements was 4 which is greater than three and indicated that this statement was not a problem. Hence it is concluded that the class room was comfortable for instruction since the number of students were small the class room can easily manageable.

The mean of the thirty two statements was 3.27 which is greater than three and indicated that this statement was not a problem. Hence it is concluded that Students seating arrengement in the class is comfortable for instruction.

The questionnaire includes an open ended question towards the end in which teachers were requested to express any other problem other than explained in the statement. A list of statement deemed as problem, otherwise hindrances to the profession voted by most of the respondents are as follows:

- Maximum teaching loads
- Lack of facility of internet access and ICT lab in the school to search
- Lack of student's interest in learning mathematics
- Weak school administration
- Provision or opportunities should provided where mathematics teachers, could sit, contemplate and interact about the problems and recommend optional solutions and alternatives to the problems
- Workshop and short time training about mathematics teaching learning activities should be provided to deal with the newly added topics. Such as probability, congruency and similarity, trigonometry, vectors, measurements, compound interest etc.

CHAPTER FIVE
SUMMAR, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The purpose of the study was to identify the levels and extents of problems faced by mathematics teachers. The main objective of this study was to identify and to analyze the major problems faced by teachers while teaching mathematics at secondary school in Adet town administration. The specific objectives of this study were to identify the problems faced by mathematics teacher due to the construction of teaching materials, to identify and analyze the problems related to selection of teaching materials, to identify the problems related to use of teaching method and materials to identify the problems related to trainer, to identify the problems related to training and its transfer in classroom with teaching materials, to identify the problems related to school administration ,to identify the Problems related to class size, class room management, teacher's knowledge, seating arrangement, views of students and to suggest some measures for the solutions of those problems. For the convenience of this study, the problems were categorized into seven different areas : construction of teaching materials, selection of teaching materials, use of teaching materials and method, training and its transfer in classroom teaching, trainer, school administration and class size, class room management, teacher's knowledge, seating arrangement, views of students.

This study was entirely survey type. The researcher developed questionnaire under the guidance of supervisor. The questionnaire, classroom observation and interview schedule were main tools of this study. The responses were collected from mathematics teachers of sampled schools in Adet town administration selected by purposive sampling method. The data collected from questionnaire were quantified based on Likert five point scale. Open questionnaire were included in each category of problems, and descriptive analysis of collected responses were carried out. As statistical indicator, mean was used for the analysis and such analysis was authenticated by qualitative data obtained by class observation form and interview schedule.

5.2 Major Findings

From the field survey and statistical analysis of the collected data authenticated by qualitative data, it was found that teachers had been facing a number of problems during the course of teaching mathematics at Adet town administration secondary schools. On the basis of analysis and interpretation of the data, the major findings of this study are presented below:

- Teachers did not construct and purchase appropriate teaching materials for teaching of mathematics.
- Most teachers did not use teacher centered method.
- Training was only for formality not for change to their professional development
- There was a lack of facility of ICT and internet for selection and use of teaching materials to teach mathematics.
- There were not sufficient teaching materials in schools and teachers are not using available teaching materials as well.
- The school administration did not manage well.
- Teachers were found not using student centered method, they mostly use lecture method.
- Schools did not have additional source of income.

5.3 Conclusion

Here the researcher discusses and compares the study result with published findings, Md.Khaleduzzaman (2022) "Problems of Teaching Mathematics at Secondary Level in Bangladesh and make some recommendations to improve teaching mathematics at Adet town administration secondary schools. This study identified major problems facing teachers in the teaching of mathematics.Large workloads were one of the major problems for teachers since it stopped them from preparing and delivering quality mathematics classes. (Hossain,2010) study also identified that teachers' workloads were beyond tolerable levels. School authorities need to consider workloads of mathematics teachers and try to find alternatives such as employing para-teachers or teaching assistants. Lesson plans are necessary for effective teaching and better management of large classes (UNESCO, 2006). The curriculum also suggests using lesson plans. Teachers did not use lesson plans, similar to in Sadat's (2011) study. teachers should be encouraged to prepare lesson plans and proper supervision systems should be in place to ensure compliance. A number of studies, including the present one, have reported that lecture method is most commonly used to teach mathematics. Other interactive teaching methods like group discussion, demonstrations, and learning by doing are not applied for teaching mathematics in practice (Stiggins, 2016). The researcher started this research with a view to studying the problems of teaching mathematics at Adet town administration secondary schools. Many subjects taught at this level. Mathematics was one of the major subjects that were compulsory for all secondary students. To investigate that, the researcher has studied the classroom practices, teachers use of teaching materials and teaching aids, teachers content knowledge, teachers technological knowledge, curriculum knowledge, Class room management, Class room size, training and so on. Hard content, lack of using teaching methods , lack of teacher training, weak school administration unavailability of teaching aids, unavailability of math lab and ICT lab make the subject un interesting.Most of the teachers do not take practical class on mathematics in their schools .The researcher has identified the problems of teaching mathematics. The experiences of the researcher say that the problems, From the above stated findings of this study, it can be concluded that teaching learning activities of mathematics are not satisfactory in Adet town administration. Because the teachers in Adet town administration secondary schools faced a number of problems due to construction and purchase of teaching materials, selection of teaching materials, use of medias, teachers' training and its transfer in real classroom teaching, views of students and finally due to weak school administration.

dentified here are more or less similar all over Adet town administration secondary schools.

Limitations the Research. Complexity of Design : Combining qualitative and quantitative methods can create a complex research design that may be challenging to implement effectively, leading to potential inconsistencies in data collection and analysis.

Integration Challenges: Merging qualitative and quantitative data can be difficult. Ensuring that findings from both strands are coherently integrated and interpreted can pose a significant challenge.

Resource Intensive: Mixed-methods research often requires more time, funding, and personnel compared to studies using a single method, which can limit feasibility, especially in resource-constrained setting.

5.4 Recommendations

On the basis of above findings and conclusions, the following recommendations are made:

- Government of Ethiopia should supply the essential and necessary teaching materials as well as should encourage the school administration to purchase and manage such teaching materials.
- The head teacher and the school management committee should create appropriate educational environment in the school.
- Teacher should create mathematical environment in both class as well as in school.
- Use of lesson plan with appropriate teaching methods and materials should be encouraged.
- Mathematics teachers should be resource persons for students. It means they must be competent in mathematics and should be good performers.
- Schools need to establish math lab and ICT lab.
- Teachers should be good at the use of ICT.
- Mathematics teachers are required to use suitable teaching method and materials for teaching and learning activities of mathematics to motivate students and to create interest in them about mathematics.
- Frequent short time training as well as ICT training should be organized for teachers for their better professional development.
- School administration should be strong and this is possible by making good and positive co-ordination among teachers head teacher and school management committee.
- Similar study can be carried out with large sample size and various schools of different parts of West Gojjam Zone Yilmana Densa district.

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APPENDEX - I

NAME OF SAMPLED SCHOOLS

S.N.	SCHOOL`S NAME	LOCATION
1	ADET SECONDARY SCHOOL	ADETTOWN ADMINISTRATION
2	SELAM BER SECONDARY SCHOOL	ADETTOWN ADMINISTRATION

APPENDIX-II

PROBLEMS FACED TEACHERS IN TEACHING MATHEMATICS SECONDARY SCHOOL SURVEY QUESTIONNAIRE FORM

Respected Teachers

I am a master's degree student of Mathematics Education, Department of Mathematics Bahir Dar University. I am doing a research entitled on" An investigation into the Problems Facing the Teaching of Mathematics the case of AdetTow Administration Secondary school teachers"as the partial fulfillment of my degree graduation. Teaching learning activities cannot be effective without identifying the actual problems within it as well as problem faced by teacher in teaching. So to complete this study, I have prepared some questionnaires for you. Researcher is very much thankful for your valuable help and would like to express gratitude to you and your institution. The information obtained from you is used only for this study and your answer is kept secret.

SimachewDebie

Department of mathematics

Bahir Dar

Section A

Teacher's Bio-Data Form

School's name:…… Qualification: Degree ☐ MastersDegree ☐

Age: ----------

Sex: Male ☐ Female ☐

Teaching experience: 0-5 years ☐ 6-10 years ☐ 11-15 years ☐

16-20 years ☐ above 20 years ☐

Training: ----------

Location: Rural ☐ Urban ☐

Section B

This is a humble request to you to read each of the statements described in the questionnaire carefully and express honestly your opinion by putting tick marks (√) at the appropriate space where

SA = strongly agree A = agree

U = undecided DA = disagree

SDA = strongly disagree

S.N.	STATEMENT	RESPONSES OF THE TEACHERS					MEAN
		SA	A	U	DA	SDA	
1	I have got economical support for purchase and construction of instructional materials from the administration.						
2	Our schools do not have any prerequisite to support in the construction and purchase of instructional materials.						
3	The administration has provided me sufficient free time to construct and use instructional materials.						
4	There are no sufficient free time even to think about construction and use of instructional materials.						

5	There is no specific room such as store room or math lab to manage, select, use and demonstrate instructional materials						
6	Math lab is available in our school.						
7	I do not have ICT skills to search in internet and then to select appropriate and innovative instructional materials in internet.						
8	I am very good at computer and ICT skills to search select and use instructional materials.						
9	It isdifficult to complete the whole course in time if instructional materials are used in teaching and learning activities.						
10	I use instructional materials during teaching learning activities but the administration does not care and support to sustain it.						
11	Training plan/schedule is organized in our school for teachers to improve teaching learning activities.						
12	Refreshment course (training) is organized frequently for us.						
13	I did not participate in any seminar conducted on mathematics yet.						
14	Training is not based on need and demand; it is only for formality and up-grading.						
15	I deliver the knowledge and teaching strategies in class-room whatever I have learned in the training program.						
16	The trainers are not very good at contents to deliver the training.						
17	Trainer is fully competent and well-qualified in contents.						
18	Trainers are not well-experienced and skillful like in the use of ICT to deliver the training.						
19	I do not make and then use daily lesson plan because.						

	It is not practicable I do not have knowledge about it. It is a heavy teaching load.						
20	The classroom is not equipped with a graph board.						
21	There is no facility of internet access and ICT lab in the school to search, select and use instructional materials.						
22	It is obligatory to meto take extra period due to insufficient mathematics teacher						
23	Our school administration is responsible to manage and construct necessary teaching materials.						
24	Lack of refreshment training to teach difficult and rigor topic						
25	Lack of facilities and award for good performance.						
26	There is no library in our school.						
27	I can easily manage the class room during instruction .						
28	Class size is matched with the standard.						
29	Students have interst about learning mathematics .						
30	Teachers have the appropreate knowledge to teach mathematics at their level.						
31	The class room is not comfortable for instruction.						
32	Students have good seating arrengement in the class.						

Any other problem:

..……

……

Adopted from a Thesis by SANJEET SAH December,2016

APPENDIX-**III**

GUIDELINES FOR INTERVIEW WITH MATHEMATICS TEACHER

School's name----------

Qualification: Degree ☐ MastersDegree ☐

Age: ---------- Sex: Male ☐ Female ☐

Teaching experience:0-5 years ☐ 6-10 years ☐ 11-15 years ☐

16-20 years ☐ above 20 years ☐

Training: ----------

Location: Rural ☐ Urban ☐

The interview with mathematics teacher was taken on the basis of following topics:

- ✓ Mathematical instruction, methods and materials, encouragement, relative question, lesson plan, effectiveness, use, time etc.
- ✓ Teacher's training and its transfer in classroom teaching.
- ✓ School administration
- ✓ Mathematical seminar, conference and training.
- ✓ Other special technique, strategies, activities of teachers while teaching mathematics
- ✓ Class room management, class size
- ✓ Teachers knowledge, students views
- ✓ Causes of problems and way to solution etc.

Adopted from a Thesis by SANJEET SAH December,2016 [36]

INTERVIEW QUESTIONS

1. Do your school facilities depend on the economic status of the school? Do you have additional sources of income ?
2. Do you have sufficient time to construct and use instructional materials?
3. Do you have specific room like store room or math lab to manage,select,use and dmonstrate instructional materials ?
4. Do you have ICT skills?
5. Dou you use teaching materials frequently in the classroom?whenever necessary
6. Does the school administration keeps teaching materials to sustain ?
7. Do you get any training to improve teaching and learnig acticities in your school?like ,Mathematical seminar, conference, etc.
8. Do you use lesson plan ? Do you use ICT during trainig ? Do you use ICT in teaching and learning process ?
9. Do you have strong school administration?
10. Do you manage the class room easily ?
11. Do you use /apply different teaching methods like :cooprative ,group discussion or any other during instruction frequently?
12. Do you think that teachers have enough knowlegde to teach mathematics in their level?
13. Is your class size large ? How much load do you have ?Is it normal ,underload or over load?
14. How do you see the students views about teaching and learnig mathematics ?
15. What do you think /suggest/ that the causes of the problems and ways to solutions ? (if any other)

Date ----------

APPENDIX-IV

CLASSROOM OBSERVATION FORM

School's name: ----------

Name of teacher: TA, TB, TC, TD, TE

Qualification: Degree ☐ Masters Degree ☐

Gender: Male ☐ Female ☐

Teaching experience: 1-5 years ☐ 6-10 years ☐ 11-15 years ☐

16-20 years ☐ above 20 years ☐

Training: ----------

Location: Rural ☐ Urban ☐

Class:……..Period:…… Time:……

Topic:…….

Total number of students:…… Male ☐ Female ☐

Time spend by teacher in the classroom…….

a. Mention the significant points of the lesson.

I. Selection and use of teaching materials

II. Use of teaching method like cooperative, group discussions or any other during instruction.----------

III. Transfer of training in classroom----------

b. Mention the observed problem in learning mathematics like, class room management

…….

c. Suggestion to improve the teaching of the lesson.

…….

Adopted from a Thesis by SANJEET SAH December, 2016 .