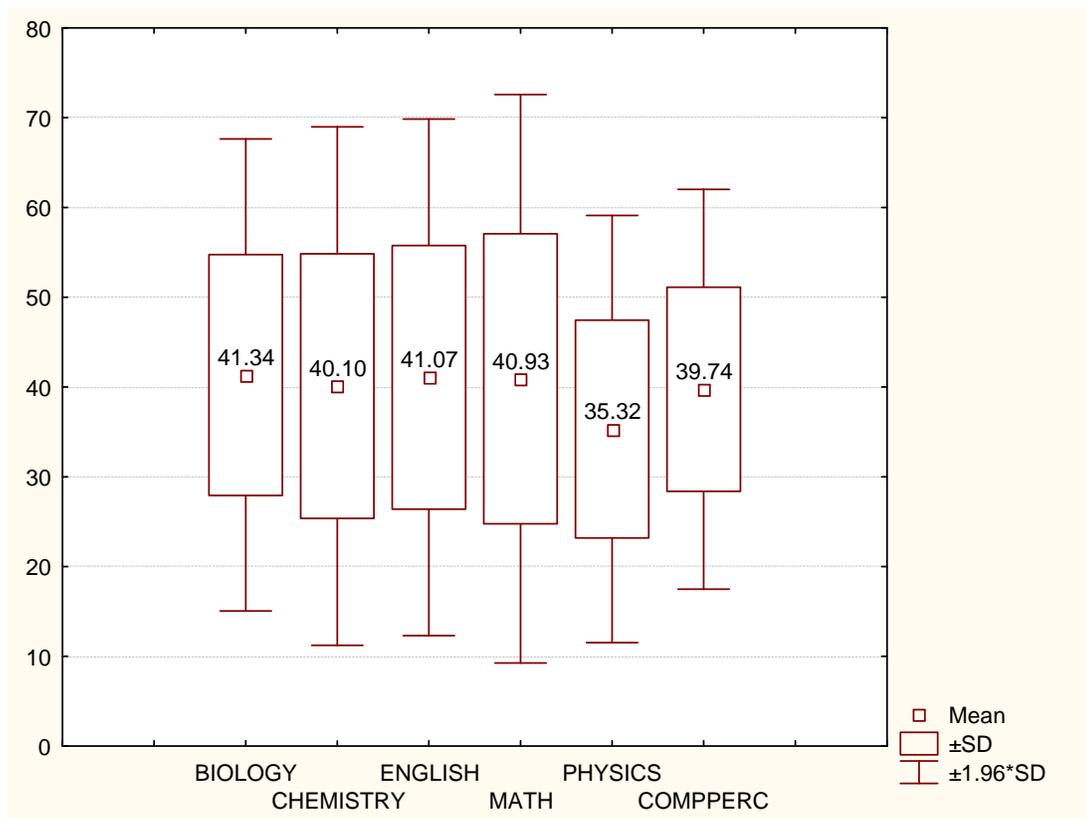


ETHIOPIAN SECOND NATIONAL LEARNING ASSESSMENT OF GRADE 8 STUDENTS



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Acronyms

BESO I:	Basic Education System Overhaul
BESO II:	Basic Education Strategic Objective
ELIP:	English Language Improvement Project
ENBA:	Ethiopian National Baseline Assessment
ERGESE:	Evaluative Research of the General Education System in Ethiopia
ESDP:	Education Sector Development Program
ESR:	Education Sector Review
ETP:	Education and Training Policy
FDRE:	Federal Democratic Republic of Ethiopia
ICDR:	Institute of Curriculum Development and Research
EMIS	Educational Management Information Service
IEA:	International Association for the Evaluation of Educational Achievement
IIEP:	International Institute for Education Planning
MLA	Monitoring Learning Achievement
MOE:	Ministry of Education
NAC:	National Advisory Council
NCES	National Center for Education Statistics
NAEP:	National Assessment of Educational Progress
NLA:	National Learning Assessment
ESNLA:	Ethiopia Second National Learning Assessment
NOE:	National Organization for Examinations
PISA:	Program for the International Student Assessment
EFA	Education for All
REB:	Regional Education Bureaus
SACMEQ:	South African Consortium for Monitoring Educational Quality
SNNPR:	Southern Nations, Nationalities and People's Region
SPC:	School Pedagogical Center
TWG:	Technical Working Group
USAID:	United States Agency for International Development

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CHAPTER ONE: INTRODUCTION

1.1. Ethiopia

Ethiopia, covering an area of 1,133,380 sq. km (Keller, 2004), is located in the North Eastern part of Africa. The country is bounded in the North by Eritrea and Djibouti, in the East and South East by Somalia, in the South West by Kenya, and in the West and North by Sudan.

Located in the sub tropical zone, Ethiopia possesses varying topography mainly plateaus, highland chains at the center, and low lands at the coastal areas. The climate varies from very hot to very cold temperature and from arid to high rainfall areas following the topography. The principal rainy season of the country is between June and September, whereas dry season is from October to May with short lived and weak rain in February and March.

Wide variations in land structure, soil type and climate are the main determinants for the diversified agricultural products, vegetation, wild life and mineral resources in Ethiopia. The nature of the plateaus and other factors like deforestation, over grazing, poor land management and the cultivation system in the high lands accelerate the degree of erosion of the top soil causing low productivity.

1.1.1 Population and Culture

With an estimated population of 68.6 million (World Bank, 2003), Ethiopia is the third populous country in Africa next to Nigeria and Egypt. Different nationalities and ethnic groups having diversified cultures and more than 80 spoken languages inhabit the country. Of these languages, about 22 are used as media of instruction in schools. Amharic is the Federal Government's working language. There are two dominant religions, Christianity and Islam, which have a long history and many followers in the country.

Since August 1995, Ethiopia has become a Federal Democratic Republic constitutionally. It comprises 9 regional states and three city administrations. Four of the regions are not only large in size but also have better infrastructure. Two of the regions are city administrations while the rest are considered as emerging regions.

1.1.2 Economy

Traditional agricultural and pastoralist practices employ about 80% of the population. The most important food crops grown primarily for local consumption are cereal grains. Coffee, cotton, oil seeds, pulses, fruits, vegetables as well as leather and skin are some of the commercial products used for export and internal processing as well.

In addition to the backwardness and the low productivity of the agricultural sector, the mining and industrial sectors are also at a lower level of development. But some promising potentials and developments are being observed around the production of hydro-electricity, airlines and other communication sectors. The main financial sources of the government are some local revenues, loans and donor funds. The Ethiopian currency is called Birr; about 8.60 Birr is equivalent to one US dollar.

1.1.3 Education System

Ethiopia is one of the least developed countries in the world. Social indicators (health and education) have remained at a lower level compared to other Sub-Saharan countries. The country is hard hit by recurrent drought. About 44% of the total population is living below poverty line (MOFED, 2002). Infant mortality rate is relatively high. Life expectancy is about 42.1 years (World Bank, 2002) with a declining trend due to HIV/AIDS.

The government of Ethiopia (FDRE) has set up various policies and strategies that could alleviate poverty and guide the overall development of the society. Special focus in the development policies has been given to rural and agricultural development. In general, there are four specific areas of emphasis in the development strategy of the government: agriculture led industrialization, justice and civil service reform, government decentralization and empowerment, and capacity building in public and private sectors.

The strategy and program framework of capacity building, in particular, focuses on education in order to increase the production of trained his manpower and upgrade the competence of the existing labor force in Ethiopia. Special attention in the development of the education and training system has been given to ensure access to primary education for all citizens, and simultaneously improve the quality and relevance of the sector for the expected socio-economic development.

To this end, the government of Ethiopia issued a new Education and Training Policy (ETP) in 1994. Overall, ETP was a response to the observed crises in the Ethiopian education sector, and it aimed at ensuring equity, accessibility, quality and relevance of the education. The following strategies were formulated to realize the goals of ETP:

- Restructuring of the education system (new educational structure)
- Administrative change through decentralized management
- Curriculum change – development of new curriculum
- Use of local languages as media of instruction
- Changes in teacher training and professional development opportunities (new teaching career structure)
- New approaches to classroom and national examinations
- Change in educational finance (introducing cost sharing in upper secondary and tertiary education)

Particular priority areas of the ETP are curriculum change, decentralization and teacher education.

The Ministry of Education has formulated a 20-year development strategy to implement the ETP. The Education Sector Development Program I (ESDPI), implemented from 1997-2002, was the first phase of the 20-year program followed by the ESDP II (2002-2005).

The overall objectives of the ESDP II regarding primary education focus on the inculcation of good citizenship and actualization of the goal of universal primary education by the year 2015.

The program has also set directions regarding assessment and quality improvement. These include:

- conducting assessment studies on selected languages of nations and nationalities that are used as media of instruction,
- developing learning competency guidelines to assess the profile of education standards at each level for each subject,
- producing manuals for promoting continuous assessment, and
- carrying out national educational assessment on Grades 4 and 8 to assess the skill development level of students in key subject areas.

The implementation of the ETP has been underway for the last 12 years. One major measure taken is the decentralization of educational management following the federal structure of administration. According to this arrangement, all educational institutions, except the universities, are under the jurisdiction of the regional governments.

The previous twelve years of general education structure (6+2+4) has been changed into ten years. The new structure comprises 8 years of primary education subdivided into two cycles of basic education (1-4) and general education (5-8); a general secondary education (9-10) with a terminal (school leaving) examination, and a preparatory education (11-12). Those who could not join the preparatory program go to technical and vocational training that takes one to three years to complete. Those who successfully complete the preparatory program go to higher education of undergraduate studies (3-6 years).

The implementation of ETP has brought about encouraging results in terms of access to primary education and schooling in the country. Some of the milestones include the following.

- The Gross Enrolment Rate for primary education (1-8) increased from 45.8% to 64.4% between 1998/99 and 2002/03. The increase has been 18.7% for boys, 18.5% for girls and 18.6% for the total.
- The Net Enrolment Rate for primary education has increased from 39.6% in 1998/99 to 54% in 2002/03. The gender gap in net enrolment rate has decreased from 15.1% in 1998/99 to 13.4% in 2002/03.
- The proportion of qualified teachers has reached 30.9% in 2002/03 for upper primary (5-8).
- The pupil teacher ratio for primary education has risen from 51:1 to 64:1 between 1998/99 and 2002/03, which is a 25.5% increase. This indicates a rapid growth of enrolment rate at this level.
- The education share of government budget expenditure rose from 15.6% in 1997/98 to 18.8% in 2002/03.

1.2 Purpose of the Study

Education is moving from being a privilege for the few to becoming the right for all. However, this quantitative expansion has brought about serious challenges to its quality. Quality does not mean only what goes into schools, but also what goes in the mental and physical changes of children. It is important to develop the knowledge, skills, attitudes and habits of pupils in addition to giving emphasis to input factors.

Some developing countries have tried to assess and measure student achievement and improve their educational systems. Nevertheless, most countries still apply public examinations for certification, selection and promotion. Improving student learning has remained one of the most desired goals of educational processes.

In Ethiopia, quality assurance has been an important part of the reform process. To this end, the Ethiopian National Baseline Learning Assessment for primary education was carried out in 1999/2000. Currently, the Second National Learning Assessment is taking place in the country.

The main purpose of conducting the Second National Learning Assessment is to provide information about learning attainments by students and the factors that determine those attainments in the Ethiopian primary education so that attention is paid to the improvement of the system as a whole.

1.3 Key Research Questions

1. To what extent did Grade 8 students achieve the stated curriculum in key subjects and to what degree does their performance vary across regions, gender, location and medium of instruction?
2. What do the students' background information and interest look like in relation to their overall achievement?
3. What do Grade 8 students' general attitudes, beliefs and preferences look like in relation to pro-social behavior and socially relevant issues at national and regional levels?
4. What are the factors that influence students' achievement in the primary schools of Ethiopia?
5. Is there any progress from the baseline regarding pupils' learning achievement?
6. What are the qualitative assessments and judgments of different groups (directors, teachers, students and the community) on the efficiency, problems and solutions concerning student learning in schools?
7. What are the possible implications of the findings of the study for improving student performance and school quality in Ethiopia?

1.4 Specific Objectives of the Study

The Ethiopian Second National Learning Assessment of students in Grade 8 has the following specific objectives:

1. Analyze the national student learning achievement results in Grade 8 English, mathematics, biology, chemistry, physics and student attitudes in socially relevant issues
2. Analyze Grade 8 students' achievement in English, mathematics, biology, chemistry and physics results by gender, location, and region
3. Find out Grade 8 students' general attitude towards socially relevant issues at national and regional level
4. Determine the relationship between Grade 8 students' background variables and their overall achievement in the given subjects
5. Determine the level of Grade 8 students' learning progress from baseline by comparing scores obtained in the first and second national learning assessment
6. Provide baseline data for Grade 8 student attitudes on socially relevant issues
7. Explain the factors that influence Grade 8 students' achievement
8. Assess the opinions and judgments of different groups: directors, teachers, students and the community on the efficiency and problems of learning in schools
9. Summarize the implications of the findings of the Second National Learning Assessment for the improvement of school quality and effectiveness in Ethiopia

1.5 Significance of the Study

Student learning assessment involves a systematic process of collecting relevant, valid and timely information about the outcomes of schooling so that decisions are made about the learning and development of students, curriculum, educational programs and educational policy. Student learning assessment provides the necessary feedback and objective evidence required to maximize the outcomes of educational efforts. Such assessments summarize what learners know, understand, and can do in relation to some or all of the learning goals determined in the curricula.

Over the last decade, substantial attempts have been made to expand primary education, and improve access, equity and efficiency in Ethiopia. Now the emphasis has shifted towards improving quality in all areas and in particular towards student learning achievement. This national learning assessment, therefore, provides an indication or feedback of where students' achievement in the country stands in relation to the stated profiles of the curriculum.

A student learning assessment can provide baseline information from which progress can be measured during and at the end of a key stage in education. Since it focuses on actual learning, it enables one to find out the extent to which an educational system is effective as a whole. If it is properly integrated into the system of education, student learning assessment can help actors and stakeholders to focus their collective attention, examine their assumptions, and create a shared academic culture dedicated to assuring and improving the quality of education. The Ethiopian Second National Learning Assessment is a nationwide program and a continuation of the Ethiopian National Baseline Learning Assessment. The first national assessment has provided a benchmark from which improvement can be measured. In this respect, the Second National Learning Assessment will serve as a key tool for monitoring changes or improvements since the time the Ethiopian National Baseline Learning Assessment was conducted. Since it includes new subjects, it also creates baseline data.

The Education and Training Policy of the Federal Government decentralizes education in the sense that regions plan and administer primary education under the guidelines and standards set by the Ministry of Education. Moreover, the policy states that primary school children should learn in their mother tongues. Regions implement the Education and Training Policy by taking into consideration their own specific conditions. This implies that some of the features of these regions affect the practice of primary education in relation to curriculum development, material preparation, teacher education, school management, teacher practices, school-community relations, language of instruction etc., and the extent to which students learn from their schooling. The Ethiopian Second National Learning Assessment contributes to monitoring how expected national standards have been implemented and if each of the regions has developed realistic mechanisms to convert national guidelines into local tools for school development.

Information on the relationship between student learning outcomes and school inputs provides an immense potential to policy makers to identify, allocate and manage the resources of education to improve quality. The Ethiopian Second National Learning Assessment provides such information along side the achievement results so that the most influential determinants of learning are properly known and managed.

Ethiopia expends a considerable amount of its public finance on education. In order for the education sector to justify this expenditure and retain support, both the government and the public require that the money expended produce the required skills. The Ethiopian Second National Learning Assessment provides access to such relevant information and this, hopefully, promotes accountability in the system.

1.6. Limitations of the Study

Tests were more of an objective type and this did not allow the measurement of high order thinking and skills students acquired in schools. The curriculum intends several proficiencies other than the ability to recognize and know the proper answers from the given alternatives. Future studies may consider the measurement of various domains of learning as much as possible.

Sample schools were not visited before the field work started. The consequence had been that current changes in the status of the schools demanded the replacement of few of the sampled schools. Data obtained from EMIS showed that some schools were full primary schools having Grades 1-8, but it was found out during the field study that these schools had only Grades 1-4.

Gambella region was not included in the study due the problem that prevailed in the area. The inclusion of such an emerging region would have provided further insight into how schools function in the relatively less developed regions of the nation.

1.7. Definition of Terms

National learning assessment: Sometimes is known as system assessments, assessments of learning outcomes or learning assessments. This activity may be defined as an exercise designed to describe the level of achievements, not of individual students, but a whole of the education system or a clearly defined part of it (Kellaghan and Greany, 2004). In the Ethiopian Second National Learning Assessment, the main exercise was to measure the level of student achievement of the whole primary education system by taking Grades 4 and 8 as particular parts for investigation. The assumption was that Grade 4 was a terminal point for investigating the outcomes of the first cycle primary education and Grade 8 for investigating the outcomes of the whole primary sector of education.

Student home background: There is the recognition that student home background variables are important determinants of student achievement. Chen (1996) reviews a lot of literature to identify three sets of variables related to home background that influence student achievement. These are home socio-economic status (SES), family configuration and parental support. Home socio-economic status is measured using such indicators as parental occupation, level of parental education, parental income and the prestige of parental occupation. Family configuration measures include family size, sibling sex and spacing, and birth position in a family. Measures of family support are both psychological and practical and include such factors as academic guidance and support, stimulation to explore and discuss ideas and events, language environment, academic aspirations and expectations, and work habits of a family. In the Ethiopian Second National Learning Assessment, student home background variables included the agreement between home and instructional language, student chore time, distance to school, number of family members in school, availability of television at home, availability of radio at home, and daily meals.

Student behavior: Activities, thoughts and feelings students demonstrate during their learning are included in this conceptual construct in the Ethiopian Second National Learning Assessment. Notable variables in this category included students' sense of ownership in school property, time spent listening to the radio, time spent watching television, leisure reading (reading non-textbook materials), interest in English, interest in mathematics, interest in chemistry, interest in biology, Interest in physics, and the use of school library.

Government and non-government primary schools in Ethiopia: Primary schools in Ethiopia are divided into government and non-government schools in terms of ownership. Government primary schools are administered and controlled by the government. Non-Government schools are all schools controlled by institutions other than the government, and these may include religious institutions, NGOs, the private sector, communities, etc. In the Ethiopian Second National Learning Assessment government schools are those schools that are administered and controlled by the government of Ethiopia.

Levels/cycles of primary schooling in Ethiopia: The Ministry of Education (2004) classifies the levels or cycles of primary school in Ethiopia into two structures. These are the First Cycle Primary School (Grades 1-4) structure and the Second Cycle Primary School (Grades 5-8) structure. The Ethiopian Second National Learning Assessment used this definition as a reference for its operations. But, schools can also be First Cycle to comprise Grades 1-4, and Full Primary comprising Grades 1-8.

School structure: Chen (1996) includes three main variables in school structure. These are school size, class size and cycles of schooling. School structure in the Ethiopian Second National Learning Assessment was used to include the following variables: time to reach the main road from the school, time to reach the Woreda education office from the school, availability and condition of school pedagogical center, availability of football and volleyball fields, availability and conditions of school library and school pedagogical center, income generated from the sale of hay and vegetables, and school location.

Curriculum materials: These are materials that support the implementation of the curricula. Curriculum materials are those resources that serve as daily guides for students and teachers in directing activities related to instruction and learning. In the current study, curriculum materials include the syllabus, teacher's guide, student textbooks and reference books.

Teacher variables: Fuller (1986) classifies teacher variables into teacher quality and teacher behavior in the classroom. Teacher quality variables include schooling, social background, verbal proficiency, and motivation of teachers. Teacher behaviors in the classroom include the efficient use of instructional time, the level of performance standards and expectations set for students, the extent to which teachers evaluate students' performance, and teachers' ability to motivate students to learn. In the Ethiopian Second National Learning Assessment, teacher variables include both quality and behavior indicators. Quality variables include teacher qualifications, teachers' total experience, experience at the school, distance to school, teacher training on new syllabus, teacher training on new teaching methods, teacher training on new assessment techniques, teacher training on student discipline and teacher training on textbooks. From teacher behaviors, teacher perceptions or judgment of textbook difficulty and student learning attitudes were included.

School management: is to mean the responsibility of the director to plan, organize, lead and control schools to work well (Sergiovanni, 1995) as well as his own personal quality as a leader (Fuller, 1986). In the Ethiopian Second National Learning Assessment, this component included director's qualification, teaching experience, social obligations outside of directing, director's supervising of teachers, the distance the director has to walk home, director's meeting with teachers, and director's ability in generating funds from different sources.

School quality: The term "school quality" has no agreed upon definition. However, in relation to the Ethiopian Second National Learning Assessment, school quality refers to the outcomes of education as measured by student's level of academic performance or achievement.

Instruction: This refers to teachers' teaching practice and classroom organization (Chen, 1996, Fuller, 1996). Such variables as efficient use of instructional time, teachers' expectations of pupils' performances, time spent for preparing lessons, frequency of homework, marking students' homework, keeping order in the classroom, organizing feedback in a systematic way, use of correctives in helping children to learn what they failed to learn are studied in this variable. In the Ethiopian Second National Learning Assessment, instruction included teacher's instructional quality, the sum of homework assigned in subjects by teachers, student understanding of subjects, parental academic support, and the percentage of contents of curriculum taught so far.

Language of instruction: A medium in which instruction takes place in the classroom.

CHAPTER 2: A REVIEW OF RELATED LITERATURE

2.1 Introduction

The main purpose of education, especially of primary education, is to enhance economic and social development of a country by creating learning opportunities at individual, community, and national levels, and to expand literacy and give basis for further training and self-education. To attain such major aims, various countries have been designing and employing different strategies for expanding access and improving quality of schooling.

In developing nations, the actual reality of schooling is getting worse from time to time due to the decreasing educational expenditure, on one hand, and the rapid increase of enrolment rates on the other. This in turn contributes to the poor quality of schooling in general and to the low level of students' achievement in particular. Consequently, there is a growing awareness and shift of attention towards improving students' achievement and the quality of education. To this end, educational research has become the best tool to identify factors (variables) that can affect students' achievement and seek ways to design, implement and then measure improvements.

2.2 The Concept of National Learning Assessment

Educational systems are known for public examinations, but national learning assessments are relatively new (Kellaghan and Greany, 2004). The importance of monitoring learning achievement grew rapidly after the 1990 World Declaration of Education for All (EFA) in Jomtien. This declaration necessitated the introduction of a system or national assessment to determine if children were acquiring useful knowledge, reasoning ability, skills and values that schools promised to deliver.

The term assessment is used to refer to the process of gathering, interpreting, and applying outcomes data on programs or entire curricula to improve program effectiveness, particularly as measured by student learning outcomes. It is an ongoing process aimed at understanding and improving student learning. It involves making expectations explicit; setting appropriate criteria and high standards for learning; systematically gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards, and using the resulting information to document, explain, and improve performance (Angelo, 1999).

Learning outcomes are changes that occur within the student, and not what the instructor does. That is, learning outcomes are a level of knowledge, skills, abilities that a student has attained. They are essential and enduring knowledge, abilities (skills), and attitudes (values, dispositions) that constitute the integrated learning needed by a graduate of schools or programs.

National learning assessment may be described as a systematic process of collecting relevant, valid and timely information about the outcomes of schooling used for making decisions about the development and learning of students. According to Kellaghan and Greaney (2001), it is an exercise designed to describe the level of achievement, not of individual students, but of a whole education system, or a clearly defined part of it. That is, national learning assessment is meant to discover how well an educational system is progressing in general and students are acquiring the knowledge and skills delivered by the educational system. Greaney and Kellaghan (1996) indicate that all national assessments seek answers to one or more of the following questions:

1. Do particular groups in the population perform differently? Are there disparities between students' achievements of different regions, of boys and girls, of rural and urban locations, and of different language groups?
2. How well are students learning in the education system? (aims of curriculum)
3. Is there evidence of particular strengths and weaknesses in students' learning?

National learning assessment emphasizes the measuring of students' acquisition of knowledge, level of understanding, attitudes, values, skills, satisfactions, actions and intellectual growth.

2.3 Purposes and Functions of National Learning Assessment

National Learning Assessment seeks to determine how well students are learning, and it is an integral part of the quest for improved education. National assessments are systematic, regular measures of learning achievements in a country that are designed to assist policy making. Indeed, national learning assessment provides feedback not only to policy makers, but also to educators, parents, students and the public at large about the effectiveness of educational services and quality of students' learning.

Information obtained from national learning assessment may be used for a variety of purposes. According to Greaney and Kellaghan (1996), these may include the following:

- *Monitoring standards:* Information about students' learning and achievement in school subjects collected on a regular basis that help to monitor changes of achievement over time.
- *Informing policy makers:* Results of the analysis of the learning outcomes can have implications for curriculum design, teacher training, planning and allocation of resource.
- *Introducing realistic standards:* The results of national learning assessment can foster a sense of realism in the discussion about the appropriate achievement levels we should aim for.
- *Identifying correlates:* Information on relationships between student learning outcomes and system input and characteristic variables may help policy makers to identify factors over which they can exercise some control to direct the scarce resources and materials. Therefore; data, on some of those variables which can potentially be manipulated, have to be collected along with achievement data at the time of the national assessment.
- *Promoting accountability:* Governments spend a substantial part of their public resources on education. To retain the public support for education, the government and the people need information which substantiates that the money spent on education is producing skills that are desirable in the students. So, governments need access to relevant information on the operation of their education system.
- *Increasing public awareness:* Results of national learning assessment can be used to bring an aid of reality, a level of integrity to discussions about the education system and increase public support for quality.

In general, national learning assessment is used to manage expectations, direct the curricula, and create a culture of continuous improvement, culture of accountability and improve planning and adjust policy.

2.4 Methodological and Technical Considerations in National Learning Assessment

National learning assessment is a highly complex process that involves a number of interrelated dimensions, each guided by theory and practice. Its design and implementation process requires a coordinated effort and consensus of a wide range of stakeholders and decision makers.

According to Greaney and Kellaghan (1996), the design and implementation of a successful national learning assessment requires the involvement and consensus of major stakeholders. It includes those organizations and individuals who are responsible for administering the national assessment, those who will consider the results for policy making, those responsible for funding the exercise, and those who involve in policy making and reform activities.

All these and other concerned bodies have to have a room or chance for participating at the different levels of the assessment process through various mechanisms. For example, by establishing national steering committee, organizing a highly technical working group, selecting item-writing groups and data collectors, etc; each would have several functions right from the stage of designing the assessment conceptual framework to the levels of data analysis and report production.

Any national learning assessment program requires collecting and systematizing a host of empirical data that can be analyzed and interpreted as indicative of learning in specific curriculum areas at clearly identified levels of students' performances.

The scope of the data needed to conduct a national learning assessment can determine the nature and techniques of the sampling process. Most of the national learning assessment programs so far conducted around the globe are based on a representative sample of both students and items.

In general, the sampling design has three stages: 1) selection of primary sampling units (eg. regions); 2) selection of secondary sampling units (Schools), and 3) selection of tertiary sampling units (students). This type of sampling design is known as a multi (three) stage stratified sampling procedure, which is too complex to analyze data and interpret findings in relation with different variables.

The size of the sample on which data are collected depends on the purpose of the national assessment and the number and homogeneity of students, teachers, schools and regions that the national assessment plan addresses. For example, the United States NAEP's sample consists of approximately 0.4 percent of the total student population for each Grade (NCES, 2003).

The type of information to be collected for conducting a national learning assessment should cover the issues and subjects based on policy needs. Available literature indicates that most of the national assessment programs focus on knowledge, conceptual understanding, investigation and practical reasoning, attitudes, outcomes, and background variables of both school and non-school factors. For example, the National Assessment of Educational Progress conducted in USA assessed reading and mathematics every two years in Grades 4 and 8 (NAEP, 2003). In general, language, mathematics and science subjects are the most widely considered areas of curricula by various NLAs. Language, mathematics and science subjects are emphasized in most of the national assessment programs because:

- The language skills are essential tools not only because they serve as the necessary bases for further learning and career development but also because they enable the human spirit to be enriched, foster responsible citizenship, and preserve the collective memory of a nation,
- Mathematics is critical for all students in that it trains the mind to be analytic-providing the foundation for intelligent and precise thinking, and

- Science is an organized body of knowledge and a method of proceeding to an extension of this knowledge through hypothesis and experiment .

The instruments used in national assessments should undergo extensive scrutiny, review, and pre-testing before operational use. national assessment analysis methods combine results across different test books within an assessment year and produce results that are comparable across assessment years despite changes in the item pool. The results provide information about students' proficiency in subject area and content sub-domains in terms of average scores and percentages of students at or above the achievement levels for the subject in addition to providing information about trends.

Data analyses may be designed to compare group performances by location, gender and type of school or it may be required to provide information about relationships between student achievement and characteristics of students, schools, and teachers over time (Greaney and Kellaghan, 1996).

In the United States, for example, National Assessment of Educational Progress (NAEP) results were reported in terms of predetermined achievement levels because each assessment reflects current standards of performance. The NAEP reports on student performance with comprehensive information about what students at Grades 4, 8, and 12 know and can do in various subject areas. It also describes relationships between achievement and certain background variables.

In 1999, the Uganda National Examinations Board (UNEB) conducted a sample-based assessment on Grade six students to measure the mastery levels of reading and writing in English. The findings of this assessment indicated that 98% of the Grade 6 pupils in Uganda failed to achieve the advanced Grade, and that 35% of the pupils failed to achieve the minimum acceptable level of competency in English. And, pupils in urban schools have a distinct advantage over their peers in rural schools (Kellaghan and Greaney , 2001). Regarding gender disparity, at both Grades 4 and 8, male students scored higher on average than female students.

2.5 Experiences of Other Countries Regarding National Learning Assessment

Experiences in conducting national learning assessments vary among countries. The longest – running and best-known national learning assessments are in the United Kingdom, which existed since 1948; the United States which conducted its first national learning assessment in 1969; and France which introduced the system in 1979. From developing countries, the longest-running national learning assessment is that of Chile, and it dates back to 1978. Most economically less developed countries including Colombia, Vietnam, Thailand, and many African nations started national learning assessments in the 1990s.

There are two basic models for the implementation of national assessments. One is sample based (analytical view of achievement) derived from USA and the other is a census type (holistic performances) derived from the United Kingdom assessment (Greaney and Kellaghan, 1996).

In the United States, the National Assessment for Educational Progress (NAEP), which is mandated by the National Congress, has become a standard feature of the education system since 1969. The objective of the program is to measure students' achievements at specified ages and Grades (4, 8, and 12) on 11 instructional areas. Since 1969, assessments have been conducted periodically in reading, mathematics, science, writing, and other subjects. By making objective information of student performance available to policymakers at the national, state, and local

levels, NAEP is an important part of the nation's evaluation of the condition and progress of education.

England and Wales first applied a large scale survey or national assessment in 1948 at the age levels of 9, 11, and 15 years. In 1978, an improved assessment system was made on three main areas; language, mathematics and science at ages of 11, 13, and 15 years. It was given much weight by politicians in the 1980s and exhibited the various functions of assessment such as formative, diagnosis, summative, and evaluative (Greaney and Kellaghan, 1996).

National learning assessment in France has been introduced since 1979 using both sample and census models of USA and United Kingdom respectively. On the sample based, students are assessed about every five years at the end of Grades 7, 9 and 10 to provide information on achievements at the system level in relation to the curriculum. In the other method, the total population of students in Grades 3, 6, and 10 are provided with diagnostic assessment designed to provide information on individual schools and feedback is sent to schools, students, and parents with assisting teachers to adapt their pedagogical skills to the needs of their students.

The assessments conducted in six countries of Latin America-Chile, Argentina, Brazil, Costa Rica, Mexico, and Colombia- showed similar results in that students scored far below expectations, and students from urban and private schools scored better than their counterparts. Chile is the most experienced country in conducting national learning assessment among these countries. The first national assessment, School Performance Assessment Program (PER), was carried out from 1978 to 1984 at Grades 4 and 8 with the general goal of providing information on the extent to which students achieve learning standards or targets. Achievement tests on Spanish (reading, writing), mathematics, natural and social sciences were used for 90% of the population, and data on contextual variables including home, teacher and classroom, principal and school and instructional practices were collected (Himmel, 1984). After four years of interruption, national learning assessment was reintroduced in 1988 under the National Program for Quality Assessment of Basic Chilean Education (SIMCE). Findings showed that the performances of students were poor on curriculum objectives in general, but better in urban schools than in rural, in large schools than in small, and in private schools than in government schools. As a result of the findings, low scoring schools were given special fund, curriculum reform was attempted and percentile rank system was changed to percentage.

Colombia is another country in Latin America that conducted an assessment in 1991 on Grades 3 and 5. The purpose was to find out to what extent students attained the minimum standards set in mathematics and language. Findings showed negative correlation for Grade repetition, absenteeism, time spent getting to school and family size. Number of courses teachers took was not a significant predictor of achievement. The final result was released through mass media for discussion at national level, at local workshops, newsletters, brochures and friendly documents.

In Asia, learning assessment was made in a number of countries including Sri Lanka, Bangladesh, Nepal, Pakistan, Cambodia, Thailand and India. Notable among these assessments was the one conducted in Thailand. After two years of abolishing the public certification examination, Thailand introduced national assessment in 1983 at Grade 12. The main purpose of the assessment was to determine the national education standards schools reach and encourage schools to broaden their objectives and instructional practices. Students were assessed on mathematics, the sciences and career education in both cognitive and affective areas. The task was given to the Office of Educational Assessment and Testing Services in the Department of Curriculum and Instruction Development. The assessments continued in subsequent years. Every second year, samples of Grades 6 and 9 were assessed and expanded to include measures of school process. The result was provided to each school, region and province and for the public too. As Prawalpruk (1996) indicated, the findings of national learning assessment in Thailand had been

used for school and provincial planning, monitoring of achievement levels of students over time and increasing the interests of teachers in learning outcomes.

Greany and Kellaghan (1996) identified four major categories or approaches to the implementation of national learning assessments in Africa: Monitoring Learning Achievement (MLA), South Africa Consortium for Monitoring Educational Quality (SACMEQ), Francophone countries (PASEC), and others.

The Monitoring Learning Achievement (MLA) project was initiated in 1992 by a joint UNESCO/UNICEF support. It was an attempt to monitor the extent to which students achieved in literacy, numeracy and life skills for Grade 4, and the knowledge, ability and skills in mathematics and the sciences for Grade 8 students. In both Grades, data were collected through tests and background questionnaires for students on school characteristics and home issues. MLA was conducted twice: MLA I focused on Grade 4 and MLA II on Grade 8. About 47 African countries were involved and by 2003 reports were published on MLA I assessments of 18 Sub-Saharan countries, and MLA II of 2 countries. Separate MLAI reports were prepared in 11 countries (Botswana, Madagascar, Malawi, Mali, Mauritius, Morocco, Niger, Senegal, Tunisia, Uganda and Zambia). Results indicate that only four countries had met the learning target set in Jomtien (i.e., that 80 percent of learners should attain the defined learning competencies) for Grade 4 pupils in life skills, only two countries met the target in literacy, and one in numeracy. In all the countries, gender difference was not found to be insignificant. The ability of parents to assist their children with their schoolwork positively correlated with student achievement.

The other approach to the national learning assessment is that of SACMEQ. The Southern African Consortium for Monitoring Educational Quality (SACMEQ) is a collaborative effort of 15 Ministries of Education and the International Institute for Educational Planning (IIEP). The first SACMEQ assessment was conducted between 1995 and 1998, and only 8 Ministries (Kenya, Malawi, Namibia, Tanzania/Zanzibar, Zambia, Mauritius and Zimbabwe) collected information on baseline indicators for educational inputs, general conditions of schooling, equity assessments for human and material resource allocations, and literacy levels among Grade 6 students. The second SACMEQ study was conducted between 1999 and 2002, and 15 countries in the region participated. One of the major aims was also to promote capacity building by equipping educational planners in member countries with the technical ability to monitor and evaluate schooling and the equity of education.

Like in the MLA project, findings from SACMEQ indicated that education systems were failing to meet performance standards of ministries. For instance, in Namibia and Zambia, fewer than 30 percent of Grade 6 pupils met the specified minimum literacy standards. According to these findings, some problems such as lack of equipment and facilities (Zambia, Zimbabwe), lack of text books (Zimbabwe), unqualified teachers (Zambia and Zanzibar), lack of books and writing materials (Zimbabwe), high repeaters, un-repaired buildings and high inequity (Zanzibar), high pupil-teacher ratio and lack of seats (Zimbabwe), low frequency of tests/homework (Zambia, Zimbabwe), district variation (Mauritius), and students' absenteeism were observed as the major determinants of students' performance.

The third type of national learning assessment in Africa is PASEC (*Programme d'Analyse des Systemes Educatifs des Pays de la CONFEMEN*). PASEC was established as a network for sharing information on educational evaluation, instruments and results among 12 Francophone countries (Burkina Faso, Cameroon, The Republic of Congo, Cote d'Ivoire, Djibouti, Guinea, Niger, Central Africa Republic, Mali, Senegal and Togo). It encourages the involvement of senior decision makers and stakeholders to identify policy issues, base decisions on data and follow up decisions for actions. At first, the assessment began on Grades 2 and 5 for literacy (French) and mathematics. Starting from 1994, the study included all Grades from 2 to 6 and same tests were used in all countries. Other data on school and background factors were also collected from

schools. This network differs from the others in that the assessment is made twice in an academic year, at the beginning of November and at the end of May. As a result, this approach reflected a strong research orientation of the program and it attempted to identify causal relationships on which to base policy that seeks to improve the efficiency and effectiveness of education. Efforts have also been made to determine the impacts of in-school factors (teacher training, class size, textbooks availability) and out-of-school factors (parents education, home language, distance from school).

The fourth group includes some countries which attempted national assessments of their own: Burundi, Eritrea, Mali, Senegal, Uganda and Zambia. For example, in Namibia, National Learner Baseline Assessment measured students' achievements in English and mathematics at Grades 4 and 7. In Eritrea, students were assessed in six regions to determine if they had mastered basic skills in the official curriculum, basic skills in their mother tongue (Grade 1) and English and mathematics (Grade 4). The assessment identified particular areas of the curriculum causing problems. It found that boys outperformed girls, and identified implications for teacher education and teaching. The experiences of some counties can be found in Greaney and Kllaghan (1996).

2.6 Background and Community Factors that Influence Student Achievement

Various studies emphasize a host of factors, both external and internal to schools, to have influences on student achievement. Among the external factors, the influence of student home background, personal and community characteristics are widely acknowledged.

With reference to student home background, well known influences to student achievement relate to parental socio-economic status (SES), family configuration and parental support. Among the indices of SES are parental occupation, parental level of education, parental income and occupational prestige. Husen (1967) reported that in the first IEA mathematics study, the total mathematics score at 13-year-old level correlated 0.16 with father's education and 0.12 with mother's education over 12 countries. The correlations between father's occupational status and the mathematics scores were 0.25 at the same age level of the same populations. In the IEA six-subject studies, it was found that achievements in science, reading comprehension, literature and the cognitive side of civic education were linked to the socio-economic background of the home. In family configuration, family size was found to have a negative relationship with student achievement. Increased spacing between children's birth reduced the decrease in scholastic performance, although this did not hold true for developing countries. With regard to parental support, studies indicated that parental attitudes towards education, their interests in their children's education, and their beliefs in the values of schooling are related to students' scholastic performance.

When it comes to students' personal characteristics, it has been observed that the relationship between gender and achievement varies based on the subject and the level of students under investigation. Parelius and Parelius (1987) noted that girls' Grades in both elementary and high schools tend to be higher than that of boys. However, boys often scored higher on standardized tests. Fagerlind and Saha (1989) observed that in most developed countries, girls performed equally with boys at primary school level, but at secondary school, girls began to do more poorly. Subjects also make a difference in achievement of boys and girls. For instance, a comparison of the reading performance of boys and girls in many countries has frequently shown differences in favor of girls (Thorndike, 1973). However, girls fall behind boys in mathematics and science. In the second IEA science study in 17 countries, it was found that boys scored higher than girls at all levels, and the gap increased from the 10-year-olds to the 14-year-olds (Chen, 1996). TV

watching, as the other student characteristics, is inversely associated with student achievement (Comstock, 1994). However, leisure or voluntary reading as well as the average amount of time spent on homework of all countries have shown positive relations with student achievement.

Just as students may be influenced by their classmates, their teachers and the norms of their schools, they are influenced by the communities in which they live. Some of this influence can be transmitted through families, but some may happen through direct influence of communities. Variations among communities can take various forms and this has a great deal of influence on student achievement. Traditionally, communities are divided in geographical neighborhoods taking urban, rural or suburban forms. Several studies indicate that such divisions have impact on student achievement, attainment, aspirations, and school climate (Stockard and Mayberry, 1992). Just as the geographical space of schools influences learning, it also affects the resources that a school can offer its students. The resources available to schools depend to a large extent on the economic basis of its inhabitants. Parental and community involvement in schools, community participation in school control, and community values all have their influences on student achievement. In developing countries, demand for child's labor and opportunity costs of attending schools also exert a significant impact on academic achievement.

2.7 School Based Factors that Influence Student Achievement

The analysis of contextual or external factors provides only a partial view of the influences on student learning. To fully understand how higher achievement is facilitated, it is important to examine internal factors at school and classroom levels. Stockard and Mayberry (1992) discuss these factors under two generic divisions: school and classroom environment, and school resources. In the school climate/environment, they include academic expectations and excellence, school leadership, orderly environment, and school coherence, teacher and student morale, and effective teaching. School resources comprise school facilities and per-pupil expenditures, teacher qualifications, classroom size, and school size. Fuller (1986) analyzes these factors under the generic concept of school quality. This construct comprises material inputs, teacher quality, teaching practices and classroom organization, school management and structure. Chen (1996) discusses internal factors influencing student achievement as school background factors. In this category, he included school structure, instructional facilities, teachers' instructional time, and the curriculum.

With reference to school environment, Stockard and Mayberry (1992) refer to various materials to indicate the significance of four main dimensions. These are the *ecology* (the physical environment), *milieu* (the social characteristics of individuals and groups participating in organizations), *social system* (patterned relationships of persons and groups), and *culture* (the collectively accepted beliefs, values, and meanings of the group). School environments are commonly measured using indices containing a variety of items based upon the above factors. Various studies in the area demonstrate that school environment is linked to school achievement.

According to McDill et.al, (1967, McDill and Rigsby (1973), schools with teachers and students who see or expect higher achievement and academic excellence as a real and attainable goal actually do have higher achievement. Among the most important attitudinal factors related to increasing school achievement in this respect is staff commitment to improved academic performance, high or increasing expectations of teachers about students, high opinions of students' abilities and peer norms emphasizing academics.

Strong school leadership and management is another internal characteristic of schools which determines student achievement. Several investigations indicate that principals, who are involved in instruction, communicate high expectations, promote good feelings and collegiality between faculty and administrators and among faculty members. They also encourage teacher participation in the school's decision-making processes which is effective in promoting success. Effective

administrators promote cohesive relations within schools performing a balancing act. They promote higher achievement and develop ethos or culture that enhances morale, mutual trust and respect, and shared norms and values (Ellet and Walberg, 1979; Fullan, 1990).

Orderly environments and teacher and student morale are important ingredients for success in school. Edmonds (1979) indicates that student achievement is enhanced in schools that maintain a consistent set of rules and values that clearly map out school goals and policies while also promoting purposefulness and pleasure in learning. Teacher's morale in terms of job satisfaction and students' recognition of teachers' morale in their work exhibit high level of attendance and achievement (Brookover and Lezotte, 1979). Schools that can nurture high morale among students and staff maximize the chances of developing attitudes about individual abilities and learning environment that promotes higher level of achievement.

Specific material inputs enhance student learning. According to Fuller (1986), material inputs that consistently relate to student achievement in developing countries include instructional materials (texts, desks and reading materials), instructional media, and school building quality, library size and quality and nutrition and feeding programs. His report indicates that class size, school size and laboratories do not consistently relate to student achievement.

Teachers' characteristics and quality have great effects on students' achievement. As Fuller (1986) mentions, teacher quality elements that consistently impact student achievement in developing countries include total years of teacher's schooling, years of tertiary and teacher training, in-service teacher training, teacher's verbal proficiency, and teacher's social background. Among the elements of teacher quality that show no consistent relationship with student learning in developing countries are individual teacher's salary level, total years of experience and punctuality. Studies in developed countries show mixed results for the impact of teacher qualifications on student learning. According to Stockard and Mayberry (1992), studies which focus on the impact of teacher qualification on student achievement show only 50 % confirmation rate, while those studies that investigated the impact of teacher's attending prestigious schools show very little relation with student achievement. A little more than 50% confirmation rate was obtained from studies which examined the impact of teacher's experience. However, a significant positive relation was observed between teacher verbal proficiency and longevity on the one hand, and student achievement on the other. Again, teacher's salary has not shown a consistent or significant impact on learning.

Effective teaching practice makes a difference in student achievement. For developing countries, the most important influences come from the length of instructional time, frequency of homework given, teacher's expectation of pupil performance, and time spent by teachers on classroom preparation (see Fullan, 1986). In developed nations, studies suggest that the quantity and pacing of instruction (i.e. curriculum covered and time spent on instruction), the way in which teachers give information (i.e. well-organized, well structured presentations), the way in which teachers question students and wait for responses, and the way they handle seat work and homework all influence student achievement (see Puff, 1978; Klitgard and Hall, 1973; Rosenshine, 1983).

The length of instructional time is an important indicator/school factor that boosts achievement. Instructional time varies from the number of school days in the school year to the hours the subject is studied during a week. This instructional time is bounded by the variety of material resources and management practices. Teacher's knowledge of the subject is strongly and consistently related to student performance. Although there is no specific teaching practice that is universally effective, teachers without a limited repertoire of teaching skills appear to be more effective than those with a limited repertoire (Chen, 1996).

Active teaching - learning interaction in the classroom and the frequency of evaluating students produced better effects on student achievement (Brook, et al., 1979). Clear explanation of the materials by the teacher and more time spent on concrete learning also affected student learning positively (Heyneman and Loxily, 1983). A focus on students' perceptions rather than on teachers' is likely to be more productive; it attempts to improve and understand classroom learning. Students' perceptions vary with such factors as teacher personality, class size, Grade level, student gender, subject matter, the school level, environment, and the type of school.

2.8 Historical Overview of Learning Assessments in Ethiopia

2.8.1 ESR and ERGESE

In Ethiopia, very limited attempts have been made to review the education sector since the introduction of modern education in 1908. The Education Sector Review (ESR), the Evaluative Research of the General Education System in Ethiopia (ERGESE) in 1983 to 1986, and the Ethiopian National Baseline Assessment (ENBA) on Grades four and 8 students' achievement launched in 1999/2000 are the major attempts made to review the education sector in the history of the Ethiopian education system.

The Education Sector Review (ESR) did not investigate the quality of education system, rather it devoted its attention to strategies for a rapid expansion of primary education with the view of achieving universal literacy before the year 2000 (Tekeste Negash, 1990). The ERGESE project was initiated by the Ministry of Education based on the resolution passed by the government in 1983 to review the education sector. The purpose of the project was to investigate the quality of primary and secondary schooling in Ethiopia and to make recommendations for improvement (MOE, 1986). The findings of this study indicated that while educational opportunities had widened, there had not been a corresponding improvement in quality.

These two projects ESR and ERGESE, therefore, could not be considered as national learning assessment programs of the Ethiopian education system. This was because these two studies did not collect and analyze data on the actual learning of students systematically and thoroughly. Rather such attempts could be considered as survey studies of the overall status of general education system of the country at that particular time.

2.8.2 The Ethiopian National Baseline Assessment on Grades 4 and 8 Students (1999 – 2000)

The Ethiopian National Baseline Learning Assessment was launched in 1999/2000 (1992 E.C.) initiated by the Ministry of Education (MOE) with the need to evaluate and improve the results of the ongoing reform in the education system over certain periods of time. In the process, the National Organization for Examinations (NOE), and the Basic Education System Overhaul (BESO I) project played major roles.

The main objective of this National Baseline Learning Assessment was to determine the various levels of students' performances at both Grades four and 8 in four key academic subject areas. Grade 4 students were tested in English, basic reading, mathematics and environmental science subjects, all prepared in the different instructional languages; and Grade 8 students were assessed in English, mathematics, chemistry, and biology. Moreover, teachers and head teachers and the overall conditions of school compounds, in addition to students, were considered as major sources of the data collected for the study (NOE, 2000).

A three stage stratified random sampling design was used to select sample regions, schools and students at both Grade levels (4 and 8). Accordingly, 256 schools for Grade 4, and 136 schools

for Grade 8 studies were sampled. About 10,506 students for Grade 4, and 5099 samples for Grade 8 studies were tested across ten regions of the nation (NOE, 2000).

Information on the background characteristics of students and teachers were also collected and analyzed. The implications of the findings for participating regions were indicated. According to the findings of the study, all participating regions have room for improvement in all key subject areas since no one region scored above the acceptable minimum level of 50% achievement (NOE, 2000).

The results also indicated that schools with high achievement at Grade 4 level also tended to obtain high achievement at Grade 8. The results of the study were also discussed in a workshop and constructive recommendations were provided for the improvement of the quality of students' learning in the nation. The reports were disseminated to regions and other stakeholders.

CHAPTER THREE: FRAME OF ANALYSIS AND METHODOLOGY

3.1 Frame of Analysis

The main purpose of the Second National Learning Assessment was to find out the extent to which learning takes place in the Ethiopian primary education, and determine the main conditions that influence the learning outcomes of students. It was also to gather information on school improvement from the first national learning assessment conducted in 1999/2000.

The dependent variable, student learning, was measured by achievement tests. Another dependent variable, student's attitude towards socially relevant issues, was measured by questionnaires. The independent variables that refer to factors which affect the achievement of student learning in this study included school condition/environment, teachers behavior, school management, school structure and supply, instructional support, language of instruction, students' background, and community opinions. The following table shows their relations and descriptions.

Table 1. Description of Variables

Variables		Description
Dependent Variables	Students achievement	Total achievement mean score for Grades 4 and 8 Mean score of basic reading comprehension, English, mathematics and environmental science for Grade 4 Mean score of English, mathematics, biology, physics, and chemistry for Grade 8
	Students' attitude	Attitude of Grade 4 and 8 students towards socially relevant issues included health, environment, civics and ethics, and the school.
Independent variables	Students' home background Student personal characteristics	Family size, parents' education and occupation, language at home, distance from school, attendance, learning support. Students' gender, students' sense of ownership of school property, time spent listening to the radio, time spent watching television, leisure (reading non-textbook materials), interest in English, interest in mathematics, interest in chemistry, interest in biology, interest in physics and the use of school library
	School structure and curriculum materials	Location (urban-rural), school program, level, instructional language, class size, program, classroom condition, supplies, facilities and equipment, provision of instructional materials, period allotment, school construction, class size
	Instructional inputs	Textbooks- pupil ratio, availability of basic instructional materials (other than textbooks), availability and use of pedagogical center, lab., library
	Teacher variables	Teacher's qualifications, years of experience, knowledge of subject matter, distance from school, teaching load, attendance or absenteeism
	School management	School directors' qualifications, organization, evaluation of teachers, meetings conducted with staff and community
	Parent/community views	Attitude towards students' behavior, learning and schools, collaboration with the school to solve problems, parents' involvement in school affairs

3.2. Research Questions

- What is the status of student learning achievement in Grade 8 in key subject areas?
- To what extent do students' learning outcomes vary in key subject areas by region, location, sex and language?
- Does students' achievement differ significantly with respect to their sex, their age, location, region, or instructional language?
- How do schools and regions differ with respect to various school inputs and other background factors?
- Is there any change or progress of students' learning achievement from the baseline study to the second one by Grade and subject area?
- To what degree have students developed the desired attitudes?

3.3 Design

In order to obtain the required information for the proposed research questions, both quantitative and qualitative research approaches were used. In the quantitative approach, a cross-sectional data using achievement tests were collected to determine the extent to which learning takes place in primary schools. Moreover, a baseline study design which compared student achievement results of the National Baseline Learning Assessment with the Second National Learning Assessment was used in order to monitor school improvement. Since the tests were given in different years to two independent samples of the same Grade, threats to internal validity due to history or maturation effects were controlled. A qualitative study design was used to supplement the quantitative study. It mainly involved a collection of cross-sectional data on similar issues addressed by the quantitative study. Wherever necessary, a historical approach has been used to understand the change of events over time in the qualitative design.

The Second National Learning Assessment has been carried out in three stages. The first stage involved institutional arrangement for carrying out the study. In addition to mapping out the mission of the entire study, this task led to establishing the National Advisory Council, the Technical Working Group and the Secretariat of the Second National Learning Assessment as responsible key structures for its implementation. Terms of Reference for each of these structures were prepared. Accordingly, the National Advisory Council (NAC) was responsible for providing overall leadership to the study. The chairman of the NAC was the Vice Minister for General Education and the Manager of NOE was the secretary. The members of NAC included leaders of central institutions of the Ministry of Education (MOE) and the Heads of Regional Education Bureaus, AED/BESO II and USAID. The Technical Working Group (TWG) was established to provide leadership and direction on everyday basis to the development and implementation of The Ethiopia Second National Learning Assessment. The secretariat coordinated the required logistic and other support to the study.

The second stage involved planning, development and field testing of the Second National Learning Assessment activities, materials and instruments respectively. Planning the second national learning assessment activities included the identification of preparatory activities, making decisions about the design of the main study, fieldwork as well as dissemination. Development activities included reviewing the literature and the previous assessment documents, review of

curricular profiles, initial revision of instruments, pilot testing of instruments (in three languages), translation, printing and packaging of instruments.

The third stage involved field work, data analysis and interpretation. The field work, which began by selecting and training of data collectors, focused on the collection of both quantitative and qualitative data. This was followed by data organization, cleaning, analysis and reporting.

3.4 Sampling Procedures

In order to provide national and regional estimates of student achievement results and attitudes on selected curriculum based topics with group comparisons across gender, location of school (i.e., urban/rural), and language of instruction, all students of Grades 4 and 8 in the Ethiopian primary schools were taken as the target population. To be able to obtain data on independent variables using quantitative methods, teachers and head teachers were targeted. The target population for the qualitative study included the purposefully sampled schools focusing on students, teachers, head teachers and community representatives.

3.4.1 School Sampling

The sample size used in the Ethiopian National Baseline Learning Assessment provided the minimum number of schools to be sampled as a starting point. In that study, the total number of schools included was 272. By taking into consideration the expansion of primary schools since this assessment in 1999, an assumption to consider 300 sample schools was initially accepted. After using a simulation procedure to find out the acceptable minimum number of samples to make strong estimation of achievement results from the national sampling frame, and the representation of regions considered, the number of sample schools was determined at 407. The selection of samples was done for all regions except for Gambella.

To meet the goal of sound statistical estimates of performance for the nation, a multi-stage stratified random sampling technique was used. The number of sample schools in each region was determined based on the relative proportion of its school population. Prior to selection, the sampling frame comprising the number of schools by regions, levels and location was collected from EMIS (2002/3) statistical document. Following this, schools were stratified based on region. The decisions to use a stratified sampling procedure were due to the following reasons.

1. To accurately represent individual regions and the geographical locations (urban/rural)
2. To have a good representation of various linguistic groups
3. To ensure adequate representation of specific groups of the target population in the sample
4. To obtain reliable estimates for each stratum, if required

As language, in general, is tied to geographic region or zone, the stratification on zone was assumed. Emphasis was given to the proportion of schools per region (and zone to SNNPR only).

A minimum of 25 primary schools were randomly selected from each region. This sample size was determined from confidence intervals estimated using population statistics from baseline data. Using simulation procedures, a 90% confidence interval of +/- 5% from the mean was calculated for a minimum regional sample of 25 schools. A 90% confidence interval of +/- 8% of the mean was calculated for a minimum number of 15 schools in a region, the minimum number that would be tolerated for selecting the set of full primary schools where Grade 8 tests were conducted.

To make school based paired comparison or to investigate what changes have been made from the Ethiopian National Baseline Assessment study to the Second National Learning Assessment, it

was decided to consider 10 of the sample schools from each region. This sampling procedure was not aimed at making generalizations, but to determine school improvement using the schools under investigation as units of analysis.

When stratifying the minimum number of schools, regions with less than 25 schools were “topped up” in order to meet the minimum representation of regions by a sample of 25 schools. In order to ensure representation in the context of extreme diversity of nationalities in the SNNPR, the sample size for this region was “topped up” to 80 schools.

The randomization of sample schools for each region was conducted by assigning a random number to each of the schools in the region, and then by sorting the schools according to the assigned random number. The target number of schools was counted from the top of the sorted schools in the spreadsheet.

Based upon the above sampling procedure, a total of 407 sample schools from 12, 471 national totals was selected. Obviously, Oromia contributed the highest proportion of the sample schools with 38.15% followed by Amhara 24.14% and SNNPR 19.45%.

Table 2 Sample schools planned and visited by region

Region	Total Primary Schools*	Actual Proportion	Topped up Sampled Schools	Sample Schools by Grade			
				Data Planned for Collection		Actual Data Collected	
				Grade-4	Grade- 8	Grade- 4	Grade- 8
Tigray	967	7.75%	25	25	18	25	12
Afar	156	1.21%	25	25	14	25	11
Amhara	3,011	24.14%	50	50	30	47	26
Oromia	4,758	38.15%	77	77	53	76	52
Somali	301	2.41%	25	25	10	24	9
Ben-Gumuz	275	2.21%	25	25	14	25	12
SNPPR	2,426	19.45%	80	80	61	80	43
Gambela	149	1.19%	25	25	14	X	X
Harari	48	0.38%	25	25	16	24	11
Addis Ababa	313	2.50%	25	25	21	25	21
Dire Dawa	67	0.54%	25	25	16	25	16
Total	12,471	100%	407	407	267	376	213

*Source: EMIS 2002/3

The above table shows that it was planned to cover 407 primary schools from all regions. Of these schools it was planned to include 267 schools having Grade 8 and 407 or all primary schools having Grade 4. However, the actual number of schools from which data were collected in the field was 376 for Grade 4, and 213 for Grade 8 (excluding Gambella Region). Furthermore, the number of sample schools planned by location was 136 for urban and 271 for rural, but the data were actually collected from 126 and 256 respectively.

The selection of schools for the qualitative study was accomplished on the field. Prior to this, however, a decision was made to include up to 50 schools overall. It was managed to nationally cover 44 schools for this purpose with varying degree of coverage from one region to the other. In Tigray, Harari, Addis Ababa and Dire Dawa the number of schools included was 2 each. In Afar and Beneshangul Gumuz 4 schools each were included while in Oromia and Amhara the number was 6 each. In Somali, only 1 school was used for collecting qualitative data while 15 were used for qualitative data collection. The details are given in Table 2.

3.4.2. Sampling of School Directors, Teachers and Students

The sampling of schools was followed by another decision to select students, teachers and directors. It was decided to randomly select only one section from each Grade. Within each section the maximum number of students randomly selected was 40 and less in the cases where there were fewer students to meet the maximum number. The decision to include a maximum of 40 students was made by the study team assuming this to be an average number that can be managed during the test administration.

The school director and all teachers of the sampled students in the respective Grades (4 and 8) were sampled also selected to fill in the questionnaires. The following table gives a summary of sample teachers, students and school directors by region.

Table 3 Sample students, teachers and directors by region

Region	Teachers			Grade4 Students		Grade 8 Students	
	School directors	Grade4	Grade8	Collected	Cleaned	Collected	Cleaned
Tigray	25	74	60	953	951	480	479
Afar	25	42	52	658	648	385	384
Amhara	47	48	73	1721	1721	1028	1027
Oromia	76	102	222	3014	2967	1964	1957
Somali	24	77	42	694	687	310	307
Ben-Gumuz	25	42	27	776	776	448	446
SNNPR	80	21	215	3025	3004	1787	1736
Harari	24	76	96	727	723	412	412
Addis Ababa	25	28	105	987	983	825	823
Dire Dawa	25	47	94	791	791	488	488
Total	376	751	988	13346	13248	8127	8059

The above table indicates that the national sample of students who took part in the Ethiopian Second National Learning Assessment was 13, 346 in Grade 4, and 8,127 in Grade 8. Similarly, 751 Grade 4 teachers, 988 Grade 8 teachers and 375 school directors were included in the provision of the required information for the Second National Learning Assessment.

For the qualitative study, it was decided to include school directors, teachers, Grade 8 students, parents and community representatives in focus group discussions and/or interviews. For focus groups, it was decided to form different groups comprising 5-10 individuals at least in two school areas from each data collection route. The following table shows the number of respondents who participated in these discussions by region.

Table 4 Participants of focus group discussions by region

Region	Participants			Number of Schools
	Students	Teachers	Parents	
Tigray	22	15	6	2
Afar	15	22	14	4
Amhara	33	44	38	6
Oromia	70	59	53	6
Somali	5	9	3	1
Ben-Gumuz	26	34	22	4
SNNPR	111	109	76	15
Harari	16	10	16	2
Addis Ababa	13	15	10	2
Dire Dawa	10	9	8	2
Total	321	326	246	44

Table 4 above shows that the number of Grade 8 student participants in focus group discussions was 321 while the number of teachers and directors was 326 and 246 respectively. The largest number of schools and respondents was from the SNNPR due to the larger size included from this region.

3.5 Instruments of Data Collection

In this study, all the previous instruments developed during the National Baseline Learning Assessment were adopted with some modification and inclusion of other three new instruments (Physics test and attitude survey for Grade 8, and background questionnaire for Grade 4 students). In the achievement test, adequate number of items (60-80) was prepared and organized in two parallel forms for each subject to be piloted. The main rationale for pre-testing parallel tests was to replace items that require replacement from the first study. The various types of instruments used for data collection are described below.

Achievement tests: The achievement tests for both Grades contain 40 items each (except for reading comprehension which is 20) and cover different content areas of the respective subject. The tests include reading comprehension, English, mathematics, and environmental science for Grade 4 and English, mathematics, physics, biology and chemistry for Grade 8 students.

Attitude survey: This instrument was prepared for students of both grades and it contains two parts meant find out background information and attitude of students towards some socially relevant issues. The background information deals with students' personal characteristics, family size and education, provision of textbooks, learning support provided, learning and assignments at school, distance walked to school and interests in subject areas.

School checklist form: This instrument was used for recording the general conditions of the school level, location, size, number of classrooms, school facilities, equipment, services and the classroom conditions of grades 4 and 8.

Questionnaire for teachers: This instrument focused on general background information of Grade 4 and 8 teachers; sex, qualification, experiences, family education, their opinions towards the teaching profession, school management, curriculum materials and students, teachers' load and provision of instructional materials, and meetings made with parents and others.

Questionnaire for school directors: This questionnaire is similar to that of the teachers' and seeks data about background information of the directors, manpower in the school, and evaluation of teachers' performances, conducting meetings with the staff and parents, provision of curricular materials, and improvements made on the school.

School semester result: This is a form used to collect the first semester result of sample students from each sample school on the selected subject areas for comparing school results and results from the Second National Learning Assessment.

Group discussion guide: This instrument was used to conduct discussion with school teachers about the strength and weakness of the school on various issues: characteristics of students and teachers, availability of facilities and instructional materials, the school's program and period allocation, organization and administration of the school, and involvement of different groups in supporting the school and other environmental constraints that affect the teaching learning process.

Validity and Reliability of Instruments

Taking into account the decentralization of the curricula, one of the methods used for the validation of instruments involved a national workshop which brought together regional curriculum experts, specialists from ICDR and NOE to review the extent to which the instruments measure student learning in each region. Prior to this, all instruments mentioned above were critically reviewed by the TWG members and test developers, and this was followed by comments from an international consultant. In order to ensure the representativeness of the contents of the instruments, the workshop w8ed items that were prepared on the basis of the table of specification following the syllabi of primary education. In other words, the national workshop ensured the content validity and relevance of the test items prepared by subject experts or the item writers by relating the items to the curriculum objectives.

Another measure used to check the predictive validity of the Second National Learning Assessment was collection of teacher evaluation of students from rosters. A comparison between the composite achievement tests from the Second National Learning Assessment and school teachers' evaluation had shown strong correlation. Since samples were randomly selected and they were representatives of the Grades 4 and 8 Ethiopian student population, the internal and external validity of the assessment was ensured.

The Second National Learning Assessment was conducted in 14 nationality languages in Ethiopia. The instruments were first developed in the English language after which they were translated into other languages. In fact, the process of translation was made two times, first for pre-testing and second for the final instruments. Based on the agreement made with the Region Education Bureaus during the NAC meeting held at MOE, the pre-testing of instruments was made in Addis Ababa, Adama, Debre Birhan and Mekele in three major language areas (Afan Oromo, Amharic and Tigrigna). The translation of instruments was made by subject teachers and curriculum experts who have experience in dealing with the languages in the respective places. On translation, two persons were assigned for different tasks, one to translate direct from the original version to the respective language and the other to do the backward translation.

Pre-testing of instruments was made in sixteen schools of 4 regions (Amhara, Addis Ababa, Oromia and Tigray) to identify item clarity, difficulty and the problem areas of each item. The four regions were first identified by the study team at the centre. Next, the regions were contacted for selecting four schools (primary and secondary) to carry out the tests on Grades 5 and 9 students (for grades 4 and 8 instruments respectively). Questionnaires or instruments were pre-tested only in primary schools. In each school, the piloting was a two-day task by two persons (data collectors). After the data were collected, item analyses were carried out in order to make

additional improvements on items. Before decisions were made to modify, accept or reject items, the difficulty level, discrimination index and point bi-serial correlation were thoroughly investigated.

Finalized instruments, in particular, the achievement tests, background questionnaires and attitude surveys of both Grades were translated into additional local instructional languages: Harari, Somali, Welaita, Keficho, Kembata, Hadiya, Gofa, Gamo, Dawaro, Sidama, Gedeo, and Himitigna. At last, the translated instruments were sent for printing in booklet forms. Two subjects were arranged in one booklet and packaged for the sample schools and the field routes.

Prior to adopting instruments from the National Baseline Learning Assessment and developing new ones for the Second National Learning Assessment, however, a thorough item analysis was carried out for item difficulty and discrimination power. Based on the analysis, certain items were modified or totally replaced by new ones and more new sets of items were prepared for each subject area.

Similarly, the study team revised the instruments for background information which included the previous attitude survey instruments for Grades 4 and 8. The questionnaires for directors and teachers and the school checklist used in the National Baseline Learning Assessment were also improved in line with the identified variables. A new background questionnaire for Grade 4 and an attitude survey questionnaire for Grade 8 were also developed based on suggestions made by the international consultant.

3.7 Data Collection and Administration of Instruments

A systematic and planned approach was used for the field work. The collection of data was organized to take place in fourteen routes. Each route had two selected training centers in which the training of data collectors was carried out. One route leader or trainer was assigned from the center (NOE) to manage the activities of each route. Prior to data collection or the field work, a consultative workshop was held with regional educational representatives to discuss the program of data collection, the sample schools and training centers, the assignment of centre coordinators, and recruiting data collectors in each region. In line with this, data collectors were selected by regions from the respective Woreda education offices and from non-sampled schools. One data collector was assigned to each grade level (4 and 8) in each sample school. Based on the prepared guideline by the study team, a two day intensive training was given for data collectors by the route leader /trainer in each of the 27 centers. After the training, the data collectors were provided with the list of sample schools, instruments and working schedule at each school. The data collection was conducted at the same time in all sample schools from April 15-30/2004. Table 5 below summarizes participants of the field work by routes.

Table 5 Number of participants involved in field work by route.

Routes	Route leaders	Centre facilitators	Data collectors
Mekele and Axum	1	2	43
D/Tabor and Gonder	1	2	17
D/markos and G/Beles	1	2	44
Ataye and Woldia	1	2	31
Nekemte and Assossa	1	2	45
Wolkite and Ambo	1	2	54
Bonga and Bedele	1	2	36
Shashemene and Adama	1	2	51
Sodo and Arbaminch	1	2	70
Awassa and Negele	1	2	43
Asebeteferi and Diredawa	1	2	51
Harari and Jigiga	1	2	67
Addis Ababa	1	1	46
Awashand Dubti	1	2	40
Total	14	27	638

Before students sat for the examinations, they were given a short-training on how to write or fill in the answers. They were also sensitized on the goal of the Ethiopian Second National Learning Assessment and how significant their participations could be for the successful accomplishment of the task. In order to reduce boredom in the course of taking long examinations, a limited form of motivation was administered to students. At the end or return from the field, reports were made by various groups; the field workers to the route leaders, the centre coordinators to the respective region, and the route leaders to the centre or the study team. Data for the qualitative analysis were collected by center coordinators. There were center representatives from region and zone education bureaux who assisted in discussions, selecting participants and in translations.

3.8 Methods of Data Analysis

Two separate data files were created for Grades 4 and 8, and the data were organized into these data bases at school and student levels. Before encoding the collected data into the computer, the instruments were first organized by region, type of instruments, Grade level, subject area, school and respondent's code number. The data were first entered to access and then transformed to SPSS. Twenty five encoders from different departments of NOE were involved in entering the data into the computer. Parallel to this, other 20 people were assigned to check and re-check the encoded printouts of each instrument. The encoding and checking task took beyond the expected time due to micro-management problems. The encoding was followed by the process of data cleaning, analysis and interpretation. The common statistical procedures applied for data analysis included descriptive statistics, t-tests, ANOVA, homogeneity tests, correlation and regression analyses.

CHAPTER FOUR: FINDINGS OF THE STUDY

4.1 Findings on Achievement Tests

The following section presents the analysis of the five achievement tests given to 8h Grade students across the nation. The tests were *Biology, Chemistry, English, Mathematics and Physics*. In addition, the composite average score of the five tests was also analyzed. The raw scores of each subject were converted into percentages. Each test was analyzed primarily at national and regional levels and then by the languages of instruction, gender and the location of the schools. The analysis of each test was accompanied by up to 8 tables which show summary of the descriptive statistics, one-way analysis of variance and homogeneity subset groupings whenever appropriate. In addition, correlation analysis was carried out to see the relationships that existed between the school-based assessment and the tests administered during data collection. A multiple regression analysis following a correlation analysis was included to show the factors that influence learning in Grade 8.

4.1.1. Overall Achievement of the Students at National Level

The achievement tests in the five subjects mentioned above were administered to a total sample of 7,898 Grade 8 students at the national level. Table 6 shows the summary of the descriptive statistics for all the subjects and the composite mean score at national level. The overall performances in all subjects were low with no subject average reaching 50% correct.

Table 6 Summary of the descriptive statistics at national level

Subjects	N	Mean	SD
Biology	7982	41.34	13.42
Chemistry	7995	40.10	14.74
English	8026	41.07	14.68
Mathematics	8017	40.93	16.15
Physics	8024	35.32	12.14
Composite	7898	39.74	11.36

The mean percent score for physics (35.32) was notably lower than the national mean (39.74) and also than the mean of the other subjects. In biology and English, students mean percent scores were relatively higher than the scores in other subjects. Biology, traditionally, enjoys many supplementary materials, teacher classroom notes and even concerted teacher efforts as a school subject, whereas English in recent years is undergoing a change with respect to teaching the subject by programs such as ELIP. Very recently, ELIP has produced new materials containing ideas English teachers can use with their learners to promote the use of English in schools in addition to the training program it offers.

The fact that the overall achievement of schools stands below 50% means that the level of student performance is less than the expectations of the Ethiopian Education and Training Policy. According to Fuller (1986), it also means low school quality. Both Fagerlind and Saha (1989), and Fuller (1986) say that a nation's wealth is related to student average achievement levels. Referring to IEA studies of the 1970s, Fagerlind and Saha (1989) particularly underline that there is a direct relationship between student achievement results and the level of economic development. From this perspective, Ethiopia's desire for poverty reduction and economic development will be seriously influenced in the years to come unless the quality of schooling, as

reflected in student achievement results, is improved. Fuller (1986) also refers to several studies that show the significant influence of school quality on the earnings of individuals. The implication is that schooling affects both the nation and the individual, and necessary efforts need to be exerted to gain all the positive contributions of these institutions.

4.1.2 Overall Achievement of the Students by Gender at National Level

Table 7 shows that the mean differences between males and females in all subjects were statistically significant in favor of males at national level. The mean difference in mathematics (6.58) was the highest. The result indicates that there still exists a gender gap in all subjects across the nation in Grade 8.

Table 7 Independent samples t-test for equality of means by gender at national level

Subject	Gender	N	Mean	Std. Deviation	t	sig	Mean Difference
Biology	M	5314	43.17	13.67	18.274	.000***	5.48
	F	2668	37.69	12.09			
Chemistry	M	5320	42.08	15.39	18.568	.000***	5.93
	F	2675	36.15	12.42			
English	M	5346	42.64	15.38	14.587	.000***	4.69
	F	2680	37.94	12.60			
Mathematics	M	5340	43.12	16.95	18.938	.000***	6.58
	F	2677	36.54	13.40			
Physics	M	5344	36.83	12.63	15.988	.000***	4.52
	F	2680	32.30	10.45			
Composite	M	5262	41.56	12.02	22.682	.000***	5.43
	F	2636	36.13	8.88			

***Statistically significant at $p < .001$

The fact that girls performed less than boys is not as such surprising. Studies in many developing countries show that boys score more than girls. Duncan (1989) refers to unpublished IEA studies which show that girls performed less than boys in Science in three African countries namely, Ghana, Nigeria and Zimbabwe. She further refers to a Zambian study where examination results show that girls scored considerably lower than boys in all four subjects examined (English, social studies, mathematics and science). These results concur with previous findings by Anbesu and Junge (1988) in Ethiopia for primary science and mathematics. Causes and appropriate solutions for this have been related to numerous factors including socio-economic, cultural, institutional, and school situations (See Odaga and Heneveld, 1995).

4.1.3 Overall Achievement of the Students by Location at National Level

Table 8 below shows that the mean differences between urban and rural students in all subjects except English were statistically significant in favor of students from rural schools. The mean difference in biology (4.28) was the highest.

Table 8 Independent sample t-test for equality of means by location at national level

Subjects	Location	N	Mean	Std. Deviation	T	Sig.	Mean Difference
Biology	R	4023	43.46	13.14	14.432	.000***	4.28
	U	3959	39.18	13.35			
Chemistry	R	4026	41.41	14.91	8.077	.000***	2.65
	U	3969	38.76	14.44			
English	R	4051	40.91	14.12	-0.992	.321	-0.33
	U	3975	41.24	15.23			
Mathematics	R	4041	41.49	16.23	3.146	.002**	1.13
	U	3976	40.35	16.05			
Physics	R	4046	36.51	12.33	8.952	.000***	2.41
	U	3978	34.10	11.81			
Composite	R	3975	40.76	11.32	8.032	.000***	2.05
	U	3923	38.71	11.31			

***Statistically significant at $p < .001$, **statistically significant at $p < .01$

In English, urban students achieved more than rural students, although the difference was not statistically significant. This means urban students did as well as rural students in Grade 8 in English language tests. The variation of student performance in favor of rural schools was a positive trend for Ethiopia since it implies that rural students are no more disadvantaged. Fuller (1986) reports several studies from developing countries where rural school students performed less than their urban counter parts. On the other hand, the current finding sounds an alarm to the nation that primary school student performance in urban areas requires improvement not only in comparison to rural primary education, but also in relation to the national standards.

4.1.4. Relationship of National Assessment Results with School Based Results

Table 9 shows the relationships between the national assessment test mean scores and the school based test results taken from the rosters. There exist positive correlations between the mean scores in each case. Particularly the composite scores showed high correlation (.639) which makes further analysis using the mean composite score reasonably valid and acceptable.

Table 9 Correlations between national assessment achievement tests and the school based results

Subjects	Biology	Chemistry	English	Mathematics	Physics	Composite
Biology	.465**					
Chemistry		.418**				
English			.460**			
Mathematics				.434**		
Physics					.400**	
Composite						.639**

** Correlation is significant at the 0.01 level (2-tailed).

The implication of this finding is also that classroom evaluations in the Ethiopian primary schools are reliable instruments to measure student learning. Strengthening this fair aspect of the educational system further ensures the quality of education since classroom evaluations by teachers are the most immediate, ongoing and formative assessments taking place as learning occurs in the classroom. In other words, strengthening or improving classroom evaluation in Ethiopia means helping the teacher to correct the above common deficiencies in his/her usual practice of student evaluation.

4.2 Overall Achievement of the Students by Subject

4.2.1 Biology

The summary of the descriptive statistics for biology is presented in Table 10. A total of 7,982 students took the test. The mean percentage at the national level was 41.34% with a standard deviation of 13.41. This is below the expected minimum (50%) set by the Education and Training Policy for all subjects. Tigray, Oromia and Amhara scored well above the national mean, 49.07%, 48.43% and 48.32% respectively while Afar performed the least with a mean score of 31.96%.

Table 10 Summary of the national and regional descriptive statistics for biology

Regions	N	Mean	SD
Tigray	472	49.08	11.68
Afar	382	31.96	10.31
Amhara	1015	48.33	10.50
Oromia	1943	48.43	11.85
Somali	304	36.26	8.23
Ben-Gumz	446	35.15	11.67
SNNPR	1712	36.79	12.29
Harari	409	39.38	14.16
Addis Ababa	818	33.67	11.34
Dire Dawa	481	37.68	14.10
Nation	7982	41.34	13.42

One-way analysis of variance (Table 11) shows that there was a statistically significant difference in the biology mean scores across regions ($F = 259.5$, $p < .001$). Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous groupings.

Table 11 One way analysis of variance on biology by region

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	325553.919	9	36172.658	259.499	.000
Within Groups	1111251.650	7972	139.394		
Total	1436805.569	7981			

Table 12 shows that there were five sub groups. The difference among the members of each group was not statistically significant. That is to say, there was no statistically significant difference between Afar and Addis Ababa; Addis Ababa, Benshangul Gumuz and Somali; Benshangul Gumuz, Somali, SNNPR and Dire Dawa; SNNPR, Dire Dawa and Harari; and Amhara, Oromia and Tigray. But there was a statistically significant difference between the different groups. The three regions which performed relatively better, with statistically significant difference from the others were those regions whose media of instruction are also the working languages of the regional states (Tigrigna, Afan Oromo and Amharic). The language of instruction for Somali is also their working language, but they performed less just like those whose medium of instruction is English. This could probably be due to a relatively recent introduction of the language as a medium of instruction.

Table 12 Homogenous subset groupings for biology by region

Regions	N	Subset for alpha = .05			
		1	2	4	5
Afar	382	31.96			
Addis Ababa	818	33.67	33.67		
Ben-Gumuz	446		35.15		
Somali	304		36.26		
SNNPR	1712			36.79	
Dire Dawa	481			37.68	
Harari	409			39.38	
Amhara	1015				48.33
Oromia	1943				48.43
Tigray	472				49.08
Sig.		0.756	0.152	0.15	0.999

Table 13 shows the summary of the descriptive statistics for biology mean score. Students whose language of instruction is Tigrigna performed better (49.08) followed by those who have learned in Afan Oromo (48.43) and Amharic (48.32). Those whose language of instruction is English performed less (35.93). Among those whose language of instruction is also the working language of their particular region, students using Somali language performed less (36.26).

Table 13 Summary of the descriptive statistics for biology by languages of instruction

Language	N	Mean	SD
Tigrigna	472	49.08	11.68
English	4248	35.93	12.47
Amharic	1015	48.33	10.50
Afan Oromo	1943	48.43	11.85
Somali	304	36.26	8.23
Nation	7982	41.34	13.42

One-way analysis of variance (Table 14) shows that there was a statistically significant difference in the biology mean scores among students who learned in the five different instructional languages ($F = 542.94$, $p < .001$). Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous groupings.

Table 14 One-way analysis of variance for biology across languages

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	307465.752	4	76866.438	542.940	.000
Within Groups	1129339.817	7977	141.575		
Total	1436805.569	7981			

The homogenous subset grouping (Table 15) shows a similar result when the group was split into two. The difference between those who have learned in Tigrigna, Afan Oromo and Amharic was not statistically significant. Those who learned in English and Somali also did not show a

statistically significant difference within the group. The significance of this finding is that learning in the mother tongue enhances student achievement in biology, except for those students who learned in Somali.

Table 15 Homogenous subset groupings of biology by instructional languages

Language	N	Subset for alpha = .05	
		1	2
English	4248	35.93	
Somali	304	36.26	
Amharic	1015		48.33
Afan Oromo	1943		48.43
Tigrigna	472		49.08
Sig.		0.992	0.844

Table 16 below shows that the mean difference in biology between males and females at national level was statistically significant ($t = 17.56$, $p < .001$). It shows that there were statistically significant differences between the mean scores of biology for males and females. The differences favoured males in all regions except in Somali.

Table 16. Independent t-test for equality of means for biology by gender within regions

Region	Gender	N	Mean	T	Sig	Mean Difference
Tigray	M	271	51.66	5.75	.000***	6.06
	F	200	45.60			
Afar	M	238	34.41	6.28	.000***	6.51
	F	144	27.90			
Amhara	M	618	49.94	6.24	.000***	4.14
	F	397	45.81			
Oromia	M	1464	49.87	9.56	.000***	5.83
	F	479	44.04			
Somali	M	247	36.58	1.42	.158	1.71
	F	57	34.87			
Ben-Gumuz	M	329	36.06	2.81	.005**	3.50
	F	117	32.56			
SNNPR	M	1187	38.28	7.67	.000***	4.86
	F	525	33.42			
Harari	M	242	42.29	5.16	.000***	7.13
	F	167	35.16			
Addis Ababa	M	386	35.29	3.88	.000***	3.05
	F	432	32.23			
Dire Dawa	M	332	39.66	4.71	.000***	6.41
	F	149	33.26			
Nation	M	5314	43.17	17.56	.000***	5.49
	F	2667	37.69			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$),

The mean difference between rural and urban schools at national level ($t = 14.43$, $p < .001$) was statistically significant in favor of rural schools. Table 17 shows that the mean differences were statistically significant between urban and rural schools in Amhara, Benshangul Gumuz, Somali, Harari, and Dire Dawa. Though not statistically significant, urban students performed better than rural ones in Tigray, Afar and Oromia.

Table 17. Independent t-test for equality of means for biology by location within regions

Region	Location	N	Mean	T test	Sig.	Mean difference
Tigray	R	79	47.56	-1.265	.207	-1.82
	U	393	49.38			
Afar	R	80	31.03	-0.903	.367	-1.17
	U	302	32.20			
Amhara	R	671	49.08	3.228	.001**	2.24
	U	344	46.85			
Oromia	R	1627	48.22	-1.77	.077	-1.29
	U	316	49.51			
SOMALI	R	171	37.28	2.477	.014*	2.34
	U	133	34.94			
Ben-Gumuz	R	251	37.58	5.136	.000***	5.57
	U	195	32.01			
SNNPR	R	1479	37.02	1.938	.053	1.68
	U	233	35.34			
Harari	R	52	43.99	2.529	.012*	5.28
	U	357	38.71			
Dire Dawa	R	122	40.06	2.171	.030*	3.20
	U	359	36.87			
Nation	R	4023	43.46	14.43	.000***	4.28
	U	3959	39.18			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$), *Statistically significant ($p < .05$),

4.2.2. Chemistry

Table 18 shows a summary of the descriptive statistics for chemistry. A total of 7,995 students took the test. The mean score at the national level was 40.10% with a standard deviation of 14.74. Amhara, Oromia, Tigray and Harari scored well above the national mean, 44.59%, 43.59%, 42.96%, and 42.45% respectively. All the other regions had mean scores less than the national average, while Afar performed the least with a mean score of 33.84%.

Table 18. The national and regional summary of the descriptive statistics for chemistry

Regions	N	Mean	SD
Tigray	473	42.98	14.94
Afar	382	33.84	11.70
Amhara	1016	44.59	15.12
Oromia	1947	43.59	14.88
Somali	305	37.55	11.72
Benshangul Gumuz	446	34.52	12.68
SNNPR	1711	37.94	13.55
Harari	411	42.45	17.15
Addis Ababa	819	35.93	13.46
Dire Dawa	485	38.15	15.34
Nation	7995	40.10	14.74

One way analysis of variance (Table 19) shows that there was a statistically significant difference in the chemistry mean scores across the regions ($F = 57.33$, $p < .001$). Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous groupings.

Table 19. One way analysis of variance in chemistry by region

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	105360.613	9	11706.735	57.333	.000
Within Groups	1630440.229	7985	204.188		
Total	1735800.841	7994			

Table 20 shows that there were four sub groups. There was no statistically significant difference between the members of each group. Amhara, Tigray, Oromia and Harari were respectively in the foremost group. Afar was the least performing group, while the others were in between the two.

Table 20. Homogeneous subset groupings of chemistry across region

Region	N	Subset for alpha = .05			
		1	2	3	4
Afar	382	33.89			
Ben-Gumuz	446	34.52	34.52		
Addis Ababa	819	35.93	35.93	35.93	
Somali	305		37.55	37.55	
SNNPR	1711		37.94	37.94	
Dire Dawa	485			38.15	
Harari	411				42.45
Tigray	473				42.98
Oromia	1947				43.59
Amhara	1016				44.59
Sig.		.744	.072	.668	.720

Table 21 shows a summary of the descriptive statistics for the chemistry mean score. Students whose language of instruction is Amharic performed better (44.59) followed by those who have learned in Afan Oromo (43.59) and Tigrigna (42.98). Those whose language of instruction is English and Somali performed the least (37.28 and respectively). Again this finding showed a similar trend with biology in that those who learned in the working language of their regions performed better than those who learned the subject in English, except the Somali region students.

Table 21 Summary of the descriptive statistics for Grade 8 chemistry across languages of instruction

Language	N	Mean	Std. Deviation
Tigrigna	473	42.98	14.94
English	4254	37.28	14.07
Amharic	1016	44.59	15.12
Afan Oromo	1947	43.59	14.88
Somali	305	37.55	11.72
Nation	7995	40.10	14.74

One way analysis of variance (Table 22) shows that there was a statistically significant difference in chemistry scores across the five instructional languages ($F = 101.39$, $p < .001$). Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous subset groupings.

Table 22 One-way analysis of variance for chemistry by language

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	83850.929	4	20962.732	101.391	.000
Within Groups	1651949.912	7990	206.752		
Total	1735800.841	7994			

The homogenous subset grouping (Table 23) shows a similar result by splitting the group into two. This result is similar to the one discussed for biology in Table 15. Those who learned in Amharic, Afan Oromo and Tigrigna performed better than the others.

Table 23 Homogenous subset groupings of chemistry by language

Language	N	Subset for alpha = .05	
		1	2
English	4254	37.28	
Somali	305	37.55	
Tigrigna	473		42.98
Afan Oromo	1947		43.59
Amharic	1016		44.59
Sig.		0.998	0.353

The mean difference in chemistry between males and females was statistically significant ($T = 18.56$, $p < .001$) in favor of males. Table 24 shows that males performed better than females in chemistry in all the regions. The mean differences were statistically significant in all cases. The mean differences in Tigray (7.60), Amhara (8.21), Harari (8.96), and Dire Dawa (8.98) were notably higher.

Table 24 Independent t-test for equality of means for chemistry by gender within regions

Region	Gender	N	Mean	t	Sig.	MD
Tigray	M	271	46.24	5.64	.000***	7.60
	F	201	38.63			
Afar	M	238	35.46	3.546	.000***	4.32
	F	144	31.15			
Amhara	M	618	47.80	8.753	.000***	8.21
	F	398	39.60			
Oromia	M	1465	45.11	7.976	.000***	6.13
	F	482	38.98			
Somali	M	247	38.22	2.07	.039*	3.52
	F	58	34.70			
Ben-Gumuz	M	329	35.32	2.232	.026*	3.03
	F	117	32.29			
SNNPR	M	1188	39.20	5.897	.000***	4.15
	F	523	35.05			
Harari	M	242	46.14	5.388	.000***	8.96
	F	169	37.17			
Addis Ababa	M	387	38.15	4.523	.000***	4.21
	F	432	33.94			
Dire Dawa	M	335	40.93	6.184	.000***	8.98
	F	150	31.95			
Nation	M	5320	42.08	18.56	.000***	5.48
	F	2674	36.15			

***Statistically significant ($p < .001$), *Statistically significant ($p < .05$),

The mean differences for chemistry in urban and rural schools at national level ($t = 8.08$, $p < .001$) was statistically significant in favor of the rural schools. Table 25 shows that the mean differences between urban and rural schools were statistically significant in Somali, Benshangul Gumuz, Dire Dawa, and SNNPR. Rural schools performed better than the urban ones in all these cases. In all the other regions, the mean differences are not statistically significant.

Table 25 Independent t-test for equality of means for chemistry by location within regions

Region	Location	N	Mean	t- test	Sig.	MD
Tigray	R	79	44.91	1.258	.209	2.32
	U	394	42.59			
Afar	R	80	34.41	0.49	.624	0.72
	U	302	33.68			
Amhara	R	672	44.45	-0.4	.689	-0.40
	U	344	44.85			
Oromia	R	1631	43.60	0.034	.973	0.03
	U	316	43.57			
Somali	R	171	40.42	5.03	.000***	6.54
	U	134	33.88			
Ben-Gumuz	R	251	37.38	5.578	.000***	6.53
	U	195	30.85			
SNNPR	R	1478	38.23	2.247	.025*	2.14
	U	233	36.08			
Harari	R	52	46.49	1.822	.069	4.62
	U	359	41.87			
Dire Dawa	R	123	42.62	3.789	.000***	5.99
	U	362	36.64			
Nation	R	4026	41.41	8.08	.000***	2.65
	U	3969	38.76			

***Statistically significant ($p < .001$), *Statistically significant ($p < .05$),

4.2.3 Physics

Table 26 shows the summary of the descriptive statistics for physics. A total of 8024 students took the test. The mean score at the national level was 35.32% with a standard deviation of 12.14. Amhara scored the highest 41.79% while Benishangul Gumuz performed the least with a mean score of 28.42%. The fact that student achievement in physics is much less than other subjects is an alarming situation for the Ethiopian primary education.

Table 26 Summary of the descriptive statistics for the Grade 8 physics by region

	N	Mean	Std. Deviation
Tigray	473	39.48	12.57
Afar	384	30.65	9.57
Amhara	1026	41.79	10.98
Oromia	1944	39.33	12.06
Somali	305	34.53	10.19
Benshangul Gumuz	446	28.42	9.37
SNNPR	1727	31.33	10.83
Harari	410	35.07	12.47
Addis Ababa	822	31.13	11.22
Dire Dawa	487	33.47	12.01
Total	8024	35.32	12.14

One way analysis of variance (Table 27) shows that there was a statistically significant difference in the physics mean score across the regions. Further investigation using Sheffe Post Hoc Test was conducted followed by Leven Homogeneity Test.

Table 27 One-way analysis of variance on physics by region

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	155710.743	9	17301.194	135.161	.000
Within Groups	1025829.038	8014	128.005		
Total	1181539.781	8023			

Table 28 shows that there were five sub groups. There was no statistically significant difference within the groups. Each group statistically differed from the others. Amhara, Tigray, and Oromia not only performed the highest but also distinctively differed from the others. The mean difference between the highest scoring region (Amhara) and the least scoring region (Benishangul Gumuz) was over 13%.

Table 28 Homogenous subset groupings of physics by region

Regions	N	Subset for alpha = .05			
		1	2	4	5
Benshangul Gumuz	446	28.42			
Afar	384	30.65	30.65		
Addis Ababa	822	31.13	31.13		
SNNPR	1727		31.33		
Dire Dawa	487			33.47	
Somali	305			34.53	
Harari	410			35.07	
Oromia	1944				39.33
Tigray	473				39.48
Amhara	1026				41.79
Sig.		0.068	0.999	0.782	0.16

Table 29 shows a summary of the descriptive statistics for the mean percent chemistry score. Students whose language of instruction is Amharic performed better (41.79) followed by those who learned in Tigrigna (39.48) and Afan Oromo (39.33). Those whose language of instruction is English performed the least (31.53).

Table 29 Summary of the descriptive statistics for physics by language

Languages	N	Mean	Std. Deviation
Tigrigan	473	39.48	12.57
English	4276	31.53	11.09
Amharic	1026	41.79	10.98
Afan Oromo	1944	39.33	12.06
Somali	305	34.53	10.19
Total	8024	35.32	12.14

One way analysis of variance (Table 30) shows that there was statistically significant difference in physics scores across the five instructional languages.

Table 30 One-way analysis of variance for physics by language

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	143921.388	4	35980.347	278.066	.000
Within Groups	1037618.393	8019	129.395		
Total	1181539.781	8023			

The homogeneity subset grouping (Table 31) showed four groups. Those whose medium of instruction is Amharic were in the upper most group followed by those whose media of instruction are Tigrigna and Afan Oromo. Those who learned in English performed the least followed by those whose medium of instruction is Somali.

Table 31 Homogenous subset of physics by language

Language	N	Subset for alpha = .05			
		1	2	3	4
English	4276	31.53			
Somali	305		34.53		
Afan Oromo	1944			39.33	
Tigrigna	473			39.48	
Amharic	1026				41.79
Sig.		1.000	1.000	1.000	1.000

The mean difference between males and females at national level for physics was statistically significant ($t = 36.12$, $p < .001$) in favor of males. The same is true across regions (Table 32). The highest difference was in Tigray (7.66) and the least was in Benshangul Gumuz (2.09) and Afar (2.16).

Table 32 Independent t-test for the equality of means for physics by gender across the regions

Region	Gender	N	Mean	t- test	Sig. (2 tailed)	Mean Difference
Tigray	M	273	42.720	6.839	.000***	7.66
	F	199	35.063			
Afar	M	238	31.471	2.152	.032*	2.16
	F	146	29.315			
Amhar	M	626	43.822	7.632	.000***	5.22
	F	400	38.600			
Oromia	M	1465	40.435	7.151	.000***	4.48
	F	479	35.955			
Somali	M	247	35.223	2.46	.014*	3.63
	F	58	31.595			
Ben-Gumuz	M	329	28.967	2.076	.038*	2.09
	F	117	26.880			
SNNPR	M	1200	32.340	5.875	.000***	3.29
	F	527	29.047			
Harai	M	241	37.925	5.743	.000***	6.92
	F	169	31.006			
Addis Ababa	M	389	33.310	5.366	.000***	4.14
	F	433	29.174			
Dire Dawa	M	336	35.231	4.938	.000***	5.68
	F	151	29.553			
Nation	M	5344	41.56	22.68	.000***	5.43
	F	2679	36.12			

***Statistically significant ($p < .001$), *Statistically significant ($p < .05$),

The mean difference between students in urban and rural schools for physics was statistically significant ($t = 8.95$, $p < .001$) in favor of rural schools. In Tigray, Afar, Oromia, Benshangul Gumuz, SNNPR and Dire Dawa the mean differences were statistically significant (Table 33). In those five regions except Oromia and Afar, students from rural schools performed better than those from the urban ones. The mean difference in Tigray (5.6) was the highest.

Table 33. Independent t-test for the equality of means for physics by location within regions

Region ID	Location	N	Mean	t-t test	Sig.	Mean Difference
Tigray	R	79	44.15	3.66	.000***	5.60
	U	394	38.55			
Afar	R	80	27.47	-3.387	.001**	-4.02
	U	304	31.49			
Amhara	R	676	41.34	-1.815	.070	-1.31
	U	350	42.65			
Oromia	R	1629	39.07	-2.162	.031*	-1.60
	U	315	40.67			
Somali	R	170	34.31	-0.43	.667	-0.51
	U	135	34.81			
Ben-Gumuz	R	251	30.46	5.375	.000***	4.66
	U	195	25.79			
SNNPR	R	1488	31.54	1.958	.050*	1.48
	U	239	30.06			
Harari	R	52	36.49	0.877	.381	1.62
	U	358	34.87			
Dire Dawa	R	124	36.13	2.876	.004**	3.58
	U	363	32.56			
Nation	R	4046	36.51	8.952	.000***	2.41
	U	3978	34.10			

***Statistically significant ($p < .001$), *Statistically significant ($p < .05$),

4.2.4 English

Table 34 shows a summary of the descriptive statistics for English. A total of 8026 students took the test. The mean score at the national level was 41.07% with a standard deviation of 14.68. Harari scored well above the national mean (46.82%) while Benshangul performed the least with a mean score of 36.96%.

Table 34 The National and regional summary of the descriptive statistics for English

Regions	N	Mean	SD
Tigray	474	39.06	15.58
Afar	384	39.64	12.36
Amhara	1023	39.07	13.70
Oromia	1948	41.61	15.19
Somali	304	42.40	14.92
Benshangul Gumuz	446	36.96	12.69
SNNPR	1730	41.04	13.72
Harari	410	46.82	16.27
Addis Ababa	820	42.30	15.73
Dire Dawa	487	42.36	14.93
Nation	8026	41.07	14.68

One way analysis of variance shows that there was a statistically significant difference in the English mean score across the regions (Table 35). Multiple comparisons using Scheffe Post Hoc Test was conducted to identify homogenous subset groups.

Table 35 One way analysis of variance on English by region

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31013.184	9	3445.909	16.266	.000
Within Groups	1698195.871	8016	211.851		
Total	1729209.056	8025			

Table 36 shows that there were three sub-groups which had statistically significant differences among each other. Harari distinctively differs from all the other regions; and the mean difference with the least scoring region, Benshangul Gumuz, was about 10%.

Table 36 Homogenous subset groupings of English by region

Regions	N	Subset for alpha = .05		
		1	2	3
Benishangul	446	36.96		
Tigray	474	39.06	39.06	
Amhara	1023	39.07	39.07	
Afar	384	39.64	39.64	
SNNPR	1730		41.04	
Oromia	1948		41.61	
Addis Ababa	820		42.30	
Dire Dawa	487		42.36	
Somali	304		42.40	
Harari	410			46.82
	Sig.	.401	.101	1.000

Table 37 shows a summary of the descriptive statistics for the mean percent English score across languages of instruction in the other subjects. Students whose language of instruction is Somali have scored relatively higher in English (42.40) followed by those whose language of instruction is Afan Oromo (41.61) and those who use English for all subjects (41.43). Those students whose media of instruction are Amharic (39.07) and Tigrigna (39.06) performed less.

Table 37 Summary of the descriptive statistics for Grade 8 English across languages of instruction in the other subjects

Languages	N	Mean	SD
Tigrigna	474	39.06	15.58
English	4277	41.43	14.49
Amharic	1023	39.07	13.70
Afan Oromo	1948	41.61	15.19
Somali	304	42.40	14.92
Nation	8026	41.07	14.68

One-way analysis of variance (Table 38) shows that there was a significant difference in English score across the five instructional languages ($F = 8.93$, $p < .001$). Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous subset groupings.

Table 38 One-way analysis of variance for English across languages of instruction in the other subjects

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7664.645	4	1916.161	8.928	.000
Within Groups	1721544.411	8021	214.630		
Total	1729209.056	8025			

The homogeneity subset grouping (Table 39) shows two distinct groups. Those whose media of instruction for the other subjects are Tigrigna and Amharic performed less than those who have learned in Somali and Afan Oromo. Those whose medium of instruction is English floated between the two distinct groups, but were very closet the latter group than the former.

Table 39 Homogenous subset groups of English by language

Languages	N	Subset for alpha = .05	
		1	2
Tigrigna	474	39.06	
Amharic	1023	39.07	
English	4277	41.43	41.43
Afan Oromo	1948		41.61
Somali	304		42.40
	Sig.	0.055	0.822

There was statistically significant differences between males and females in English mean scores across all regions in favor of males (Table 40). At the national level also the mean difference was statistically significant ($t = 13.66$, $p < .001$) in the same direction.

Table 40 Independent t-test for equality of means for English by gender

Regions	Gender	N	Mean	SD	t	Sig	MD
Tigray	M	273	41.59	17.40	4.202	0.000***	5.99
	F	200	35.60	11.92			
Afar	M	238	40.64	12.47	2.03	0.043*	2.63
	F	146	38.01	12.04			
Amhara	M	625	41.47	14.81	7.176	0.000***	6.15
	F	398	35.31	10.73			
Oromia	M	1467	42.53	15.57	4.729	0.000***	3.75
	F	481	38.78	13.60			
Somali	M	247	43.42	15.41	2.502	0.013*	5.44
	F	57	37.98	11.73			
Ben-Gumuz	M	329	38.00	13.49	2.925	0.004**	3.96
	F	117	34.04	9.58			
SNNPR	M	1202	42.63	14.22	7.387	0.000***	5.21
	F	528	37.41	11.74			
Harari	M	241	49.71	17.50	4.395	0.000***	7.02
	F	169	42.69	13.32			
Addis Ababa	M	388	44.71	17.16	4.191	0.000***	4.57
	F	432	40.14	14.00			
Dire Dawa	M	336	44.08	15.52	3.853	0.000***	5.56
	F	151	38.53	12.77			
Nation	M	5346	42.64	15.38	13.66	.000***	4.69
	F	2679	37.95	12.61			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$), *Statistically significant ($p < .05$),

The mean difference between urban and rural schools in English was not statistically significant ($t = .992$, $p = .321$) at national level. However, there are statistically significant differences in mean scores between urban and rural students (Table 41) in Tigray, Oromia and Benshangul Gumuz in favor of rural schools. In Afar, urban schools performed significantly better than the rural ones. The mean difference in Tigray (13.32) is the highest. In Amhara, Somali, SNNPR, Harari and Dire Dawa, there was no significant difference in student performance by location.

Table 41 Independent t-test for equality of means for English by location within regions

Region	Location	N	Mean	t	Sig	MD
Tigray	R	80	50.13	7.352	.000***	13.32
	U	394	36.81			
Afar	R	80	36.38	-2.679	.008**	-4.13
	U	304	40.50			
Amhara	R	675	38.81	-0.866	.387	-0.78
	U	348	39.59			
Oromia	R	1632	42.06	2.979	.003**	2.78
	U	316	39.28			
Somali	R	169	41.98	-0.547	.585	-0.94
	U	135	42.93			
Ben-Gumuz	R	251	39.64	5.204	.000***	6.13
	U	195	33.51			
SNNPR	R	1491	41.20	1.207	.228	1.15
	U	239	40.04			
Harari	R	52	49.95	1.49	.137	3.59
	U	358	46.36			
Dire Dawa	R	124	43.93	1.357	.175	2.11
	U	363	41.83			
Nation	R	4051	40.91	-0.992	.321	-0.97
	U	3975	41.24			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$),

4.2.5 Mathematics

Table 42 shows a summary of the descriptive statistics for mathematics. A total of 8,017 students took the test. The mean score at the national level was 40.93% with a standard deviation of 16.15%. Tigray scored the highest (44.40%) while Benshangul performed the least with a mean score of 33.32%.

Table 42 Summary of the descriptive statistics for the Grade 8 mathematics by region

Regions	N	Mean	Std. Deviation
Tigray	477	44.40	16.54
Afar	384	36.62	13.55
Amhara	1019	41.39	14.30
Oromia	1946	42.84	16.86
Somali	305	42.63	14.52
Benshangul Gumuz	443	33.32	13.21
SNNP	1729	39.73	16.15
Harari	409	43.37	18.15
Addis Ababa	819	40.53	16.31
Dire Dawa	486	40.98	16.63
Nation	8017	40.93	16.15

One way analysis of variance (Table 43) shows that there is a statistically significant difference in the mathematics mean score across the regions. Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous subset groupings.

Table 43 One way analysis of variance on mathematics by region

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51735.177	9	5748.353	22.561	.000
Within Groups	2040083.243	8007	254.787		
Total	2091818.420	8016			

Table 44 shows that there were four sub groups. There was no statistically significant difference within the sub groups. On the other hand, each group was statistically significantly different from the others. Benshangul and Afar performed the least. Tigray had the highest mean score.

Table 44 Homogenous subset groupings of mathematics by region

Region	N	Subset for alpha = .05		
		1	2	4
Ben-Gumuz	443	33.32		
Afar	384	36.62	36.62	
SNNPR	1729		39.73	
Addis Ababa	819		40.53	40.53
Dire Dawa	486			40.98
Amhara	1019			41.39
Somali	305			42.63
Oromia	1946			42.84
Harari	409			43.37
Tigray	477			44.40
	Sig.	0.223	0.054	0.061

Table 45 shows a summary of the descriptive statistics for the mean percent mathematics score. Students whose language of instruction is Tigrigna performed better (44.40) followed by those who learned in Afan Oromo (42.84) and Somali (42.63). Those whose language of instruction is English performed the least (39.43).

Table 45 Summary of the descriptive statistics for the Grade 8 mathematics by language

Languages	N	Mean	Std. Deviation
Tigrigna	477	44.40	16.54
English	4270	39.43	16.14
Amharic	1019	41.39	14.30
Afan Oromo	1946	42.84	16.86
Somali	305	42.63	14.52
Nation	8017	40.93	16.15

One way analysis of variance (Table 46) shows that there was a statistically significant difference in mathematics score across the five instructional languages.

Table 46 One-way analysis of variance for Grade 8 mathematics by language

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	23498.113	4	5874.528	22.756	.000
Within Groups	2068320.307	8012	258.153		
Total	2091818.420	8016			

The homogeneity subset grouping (Table 47) showed three groups. Those whose medium of instruction is English performed the least while those who learned in Tigrigna performed the highest and the others came in between.

Table 47 Homogenous subset groupings of the Grade 8 mathematics by language

Language	N	Subset for alpha = .05		
		1	2	3
English	4270	39.43		
Amharic	1019	41.39	41.39	
Somali	305		42.63	42.63
Afan Oromo	1946		42.84	42.84
Tigrigna	477			44.40
	Sig.	.265	.584	.370

The mean difference between males and females at national level was statistically significant ($t = 18.95$, $p < .001$) in favor of males. Table 48 shows that males performed better than females in mathematics in all regions. The mean score differences between the groups were statistically significant for all the regions except for Somali. The mean differences in Harari (10.00), Tigray (8.85) and Dire Dawa (8.78) are notably higher than the others.

Table 48 Independent t-test for equality of means for mathematics by gender within regions

Region	Gender	N	Mean	t	Sig. (2 tailed)	Mean Difference
Tigray	M	275	48.13	5.964	.000***	8.85
	F	201	39.28			
Afar	M	238	38.89	4.278	.000***	5.96
	F	146	32.93			
Addis Ababa	M	622	44.41	8.752	.000***	7.76
	F	397	36.66			
Oromia	M	1466	44.62	8.292	.000***	7.23
	F	480	37.39			
Somali	M	247	42.36	-0.677	.499	-1.43
	F	58	43.79			
Ben-Gumuz	M	326	34.39	2.85	.005**	4.02
	F	117	30.36			
SNNPR	M	1202	41.59	7.327	.000***	6.09
	F	527	35.50			
Harari	M	242	47.46	5.684	.000***	10.00
	F	167	37.46			
Addis Ababa	M	387	43.83	5.575	.000***	6.25
	F	432	37.58			
Dire Dawa	M	335	43.71	5.545	.000***	8.78
	F	151	34.93			
Nation	M	5340	43.12	18.95	.000***	6.58
	F	2676	36.53			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$),

The mean difference in mathematics between students from rural and urban schools was statistically significant ($t = 3.15$, $p = .002$) in favor of rural schools. At regional level, the mean differences between urban and rural schools for mathematics were also statistically significant in Tigray, Somali, Benshangul Gumuz, Harari, and Dire Dawa in the same direction (Table 49). The mean difference in Somali (10.67) and Harari (9.46) are notably higher than in the others.

Table 49 Independent t-test for the equality of means for mathematics by location within regions

Regions	Location	N	Mean	t	Sig. (2 tailed)	Mean difference
Tigray	R	80	49.38	2.971	0.003**	5.97
	U	397	43.40			
Afar	R	80	34.41	-1.647	0.100	-2.80
	U	304	37.20			
Amhara	R	673	41.32	-0.237	0.813	-0.22
	U	346	41.54			
Oromia	R	1635	42.85	0.091	0.928	0.09
	U	311	42.76			
Somali	R	170	47.35	6.835	0.000***	10.67
	U	135	36.69			
Ben-Gumuz	R	249	35.83	4.635	0.000***	5.73
	U	194	30.10			
SNNPR	R	1489	39.88	0.919	0.358	1.03
	U	240	38.84			
Harari	R	52	51.63	3.562	0.000***	9.46
	U	357	42.17			
Dire Dawa	R	124	43.61	2.044	0.042*	3.53
	U	362	40.08			
Nation	R	4041	41.49	3.146	.002**	1.13
	U	3976	40.35			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$), *Statistically significant ($p < .05$),

4.2.6 Composite Mean Scores

Table 50 shows a summary of the descriptive statistics for the mean composite score, which is the average of all the five Grade 8 tests. A total of 7898 students took all the five tests. The mean score at the national level was 39.74% with a standard deviation of 11.36. Tigray, Oromia and Amhara scored the highest with 43.21%, 43.01% and 43.00% respectively; while Benshangul and Afar scored the least, 33.65% and 34.56% respectively.

Table 50 Summary of the descriptive statistics of mean composite score by region

Regions	N	Mean	SD
Tigray	465	43.01	11.60
Afar	382	34.56	8.35
Amhara	1003	43.00	10.41
Oromia	1912	43.22	11.65
Somali	300	38.63	9.04
Ben-Gumuz	443	33.65	9.59
SNNPR	1698	37.37	10.19
Harari	405	41.46	13.27
Addis Ababa	811	36.65	11.11
Dire Dawa	479	38.58	11.69
Nation	7898	39.74	11.36

One way analysis of variance (Table 51) shows that there was a statistically significant difference in the mean composite scores across the regions. Multiple comparisons using Scheffe Post Hoc Test were conducted to identify homogenous subset groups.

Table 51 One way analysis of variance on mean composite score by region

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	84935.126	9	9437.236	79.672	.000
Within Groups	934347.695	7888	118.452		
Total	1019282.821	7897			

Table 52 shows that there were four homogenous subset groups. Oromia, Tigray, Amhara and Harari made up the highest performing subset group distinctively differing from the others. Benshangul Gumuz and Afar performed the least.

Table 52 Homogenous subset groupings of mean composite score by region

Regions	N	Subset for alpha = .05			
		1	2	3	4
Benishangul	443	33.65			
Afar	382	34.56	34.56		
Addis Ababa	811		36.65	36.65	
SNNPS	1698			37.37	
Dire Dawa	479			38.58	
Somali	300			38.63	
Harari	405				41.46
Amhara	1003				43.00
Tigray	465				43.06
Oromia	1912				43.22
Sig.		.993	.340	.430	.626

The mean difference in the composite score between students from rural and urban schools was statistically significant ($t = 22.68$, $p < .001$) in favor of males. Table 53 also shows that the mean difference for males and females was statistically significant for all regions except Somali. In all the regions, males performed better than females. The mean difference was highest in Harari (7.95) followed by Tigray (7.16) and Dire Dawa (7.05). This is an indication that there exists a gender gap across regions as well as at national level.

Table 53 Independent t-test for equality of means for mean composite score by gender across the regions

Region	Gender	N	Mean	t	Sig. (2 tailed)	Mean difference
Tigray	M	267	46.05	6.886	.000***	7.16
	F	197	38.90			
Afar	M	238	36.17	5.028	.000***	4.30
	F	144	31.88			
Amhara	M	609	45.47	9.768	.000***	6.28
	F	394	39.19			
Oromia	M	1446	44.54	8.953	.000***	5.44
	F	466	39.10			
Somali	M	244	39.09	1.831	.068	2.44
	F	56	36.64			
Ben-Gumuz	M	326	34.52	3.216	.001**	3.29
	F	117	31.23			
SNNPR	M	1179	38.81	8.999	.000***	4.72
	F	519	34.09			
Harari	M	240	44.70	6.195	.000***	7.95
	F	165	36.75			
Addis Ababa	M	383	38.99	5.802	.000***	4.44
	F	428	34.55			
Dire Dawa	M	330	40.77	6.361	.000***	7.05
	F	149	33.72			
Nation	M	5262	41.56	22.684	.000***	5.43
	F	2635	36.12			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$),

The mean difference in composite score between the students from rural and urban schools at national level was statistically significant ($t = 8.03$, $p < .001$) in favor of rural ones. Table 54 shows that the mean differences were statistically significant between urban and rural schools in all the regions except for Amhara, Oromia and SNNPR. In Tigray, Somali, Benshangul Gumuz, Harari and Dire Dawa, rural schools performed better than urban schools. In Afar, urban schools performed better than the rural ones. The mean difference in Benshangul Gumuz (5.91) was the highest followed by Tigray (5.34).

Table 54 Independent t-test for the equality of means for mean composite score by location within regions

Region	Location	N	Mean	t	Sig. (2 tailed)	Mean difference
Tigray	R	78	47.46	3.766	.000***	5.34
	U	387	42.11			
Afar	R	80	32.74	-2.201	.028*	-2.30
	U	302	35.04			
Amhara	R	665	43.03	0.137	.891	0.10
	U	338	42.94			
Oromia	R	1603	43.21	-0.042	.966	-0.03
	U	309	43.24			
Somali	R	167	40.21	3.446	.001**	3.56
	U	133	36.65			
Ben-Gumuz	R	249	36.23	6.746	.000***	5.91
	U	194	30.33			
SNNPR	R	1465	37.56	1.906	.057	1.37
	U	233	36.19			
Harari	R	52	45.71	2.49	.013*	4.88
	U	353	40.84			
Dire Dawa	R	121	41.34	3.032	.003**	3.70
	U	358	37.64			
Nation	R	3975	40.76	8.03	.000***	2.05
	U	3923	38.71			

***Statistically significant ($p < .001$), **Statistically significant ($p < .01$), *Statistically significant ($p < .05$),

4.2 Grade 8 Students' Background Information and Their Academic Achievement

This part compares the composite mean score of the achievement tests of the sample students who were grouped on the basis of the responses they gave to the background questions and reports on whether there existed differences in achievement between the groups or not. A One-Way Analysis of Variance (ANOVA) was carried out to determine the significance of the difference between the groups that answered the items. The ANOVA test showed that except for the two questions, i.e. those which ask the students with whom they live and whether or not they use their school library (item 2 and item 32 respectively), there was a significant difference in achievement mean score between, at least, some of the groups. The questionnaire for collecting background information from the students comprised 39 items. The information solicited from the students focused on their family background, their interests, their attitude towards their teachers, the extent to which they used various school facilities, their reading habits, time they spent listening or watching radio and television programs as well as the number of meals they got per day. Among the 39 questions included in the questionnaire, 21 were used here for showing the differences.

Table 55 Is the language you speak at home and at school the same?

Responses	N	%	Mean	Std. Deviation
No	3884	50.0%	39.0387	10.9218
Yes	3878	50.0%	40.5057	11.7563
Total	7762	100.0%	39.7716	11.3694

Table 55 shows that the students whose home and school language is the same have scored greater mean (40.5%) than those who said their home language is not the same as their language of instruction (39.04%). The ANOVA table for this item shows that there is a significant difference between the mean scores of the two groups ($F=18.398$, $P < .001$). This finding is interesting for it is consistent with other international trends. An international comparison of mathematics and science in China, Korea and Hungary by Chen (1996) shows that students who had their mother tongues as the instructional media had significantly higher achievements than those who did not have their mother tongues as instructional languages except in Hungary.

Table 56 Do you help your family by engaging in household activities?

Responses	N	%	Mean	Std. Deviation
No, I do not render help	151	1.9%	40.9536	14.6350
Yes, always on Saturdays and Sundays	1239	15.9%	39.5250	10.7519
Yes, sometimes by absenting myself from school	345	4.4%	40.3290	10.9207
Yes, sometimes after school	1899	24.4%	41.0937	11.9549
Yes, always after school	4143	53.3%	39.0899	11.0759
Total	7777	100.0%	39.7397	11.3475

It can be seen from *table 56* that the greatest majority of the respondents help their families with household activities in one way or another. Students who help their families sometimes after school scored the highest mean of 41.09%, and those who do not help scored a mean of 40.95% followed by those who support their families by remaining at home on some of the school days (40.33%). Those who devote their weekends to help their families and those who engage in supporting their families always after school scored the lowest two consecutive mean scores, i.e. 39.52% and 39.09% respectively. The variation of the mean between the groups was significant with $F=10.987$ and $P < .001$). Students who always help their families in household chores scored the lowest mean score of all groups of students possibly because the

activities consume too much of their time and reduce the time for studying their lesson. The most important experience from these findings for the Ethiopian families is that giving enough time to their children to study what they learned during the day enhances academic achievement.

Table 57 How often do you read books other than your textbook to recreate yourself? (Behavior)

Responses	N	%	Mean	Std. Deviation
I do not read at all	1247	16.0%	38.5477	10.8080
I sometimes read	670	8.6%	41.1157	12.0105
I always read	5861	75.4%	39.8485	11.3670
Total	7778	100.0%	39.7491	11.3527

Table 57 shows that the largest part of the respondents (75.4%) have said that they always read non-textbook materials and they obtained a group mean score of 39.85%. 8.6% of them said that they sometimes read and they got the highest group mean of 41.12%. Those who said they do not read made 16.0% of the respondents and the group mean score was 38.54%. The ANOVA table for this item showed that there was a significant difference in mean between some of the groups ($F= 12.096$ and $P < .001$). The finding showed that leisure reading is important for students if it is done sometimes. The fact that students who never read for leisure scored lower mean score than those who always read; and that those who always read scored lower than those who read sometimes shows that this activity should neither be overdone nor be totally neglected.

Table 58 How frequently a week do you listen to the radio at home? (Behavior)

Responses	N	%	Mean	Std. Deviation
I never listen	1636	21.7%	41.2256	11.4446
1 or 2 days	1927	25.5%	38.9175	10.9122
3 or 4 days	1510	20.0%	40.2772	11.5310
5 or 6 days	697	9.2%	40.0065	10.9969
Through out the week	1784	23.6%	38.2573	11.2128
Total	7554	100.0%	39.6337	11.2840

Table 58 shows that students who do not listen to radio programs scored the highest group mean of 41.23% and those who listen from 3 to 4 days scored the second best group mean (40.28%). Those who listen to radio the programs from 5 to 6 days scored a group mean of 40.01%. The group mean obtained by students who listen to radio programs 1 or 2 days a week (38.92%) was slightly better than that scored by students who listen to radio programs throughout the week (38.26%). The ANOVA table for this question showed that there was a statistically significant difference in mean between some of the groups ($F= 18.300$, $P < .001$). It has to be noted that this question had been specified to mean radio listening other than educational radio broadcasting. Fuller (1986) shows a strong positive relation between educational radio and student achievement. Obviously, the time spent listening to radio for leisure takes away the time required for curricular activities. This can be one explanation why frequent radio listeners earned less academic results in Ethiopia.

Table 59 How frequently within a week do you watch television?

Responses	N	%	Mean	Std. Deviation
I never watch	3946	56.7%	40.5578	11.3027
1 or 2 days	1391	20.0%	38.8911	10.7612
3 or 4 days	551	7.9%	37.8993	10.7256
5 or 6 days	265	3.8%	37.6094	11.3579
Through out the week	801	11.5%	37.0687	11.0001
Total	6954	100.0%	39.4995	11.1930

From table 59, it can be seen that students who said that they never watch television programs scored better group mean (40.56%) than the rest of the sample students. The table also shows that as the time the students watch television program increases, their achievement mean score decreases. There is a statistically significant difference of mean scores between some of the groups ($F= 24.317$, $P< .001$). This finding is consistent with findings from other countries. For instance, Newman (1981) reports a negative relationship between the amount of time that students spend viewing television and their achievement on standardized tests for the basic skills in the United States: reading, writing and mathematics. He further notes that this relationship holds true for all ages, all social strata and subjects other than basic skills. Chen (1996) reports similar findings for Hungary and Korea. He indicates that TV viewing had significant linear relationship with student achievements in mathematics and science for Korea and Hungary. In China, it had no significant relationship since most Chinese students watch TV for less than one hour per day.

Table 60 How many meals do you get per day?

Responses	N	%	Mean	Std. Deviation
One	495	6.4%	39.7475	10.1754
Two	2853	36.7%	41.1530	11.7246
Three times or more	4431	57.0%	38.8046	11.1288
Total	7779	100.0%	39.7259	11.3469

Table 60 shows the relationship between the number of meals eaten per day and performance. Students who get meals twice a day obtained the highest group mean score of 41.15%, compared to the mean scores of the other two groups. Students who said that they get only one meal per day scored better group mean (39.75%) than those who said that they get meals 3 times or more per day (38.80%). There is a statistically significant difference between some of the groups regarding the mean score ($F= 37.522$, $P< .001$). The fact that students who get two meals per day scored better result than other groups is consistent with the finding that those students from rural areas performed better than those from urban areas in most of the regions (Table 54). As primary schools are usually not found at a short distances most rural parts of the country, many of the rural students have to travel long distances to reach school. Therefore, they may be forced to skip one of the meals, their breakfast or lunch, every school day.

Table 61 .How long does it take you to reach your school from home?

Responses	N	%	Mean	Std. Deviation
Up to 15 minutes	2855	36.5%	38.9531	10.9567
30 minutes	2135	27.3%	38.6466	10.9944
Up to one hour	1174	15.0%	41.3595	11.9107
1 to 1:30 hours	699	8.9%	41.4506	11.8858
More than 1:30 hours	958	12.2%	41.3429	11.7224
Total	7821	100.0%	39.7466	11.3591

Table 61 gives the variance observed in the achievement of the sample students in relation to the distance they walk to school. As can be seen from the table, students who travel longer hours to reach school scored relatively greater mean scores than those who travel for shorter time. There was statistically significant difference between the mean of some of the groups ($F= 23.332$ and $P< .001$). One explanation for this finding may be the variation of self-motivation among rural and urban students. Rural students have to walk long distance to reach schools because complete primary schools are not available in their surroundings. The long distance rural students walk everyday to reach their schools is an indication of their determination to improve their lives. Accordingly, they concentrate on their studies and achieve better.

Table 62 Do you participate in producing teaching aids in your school pedagogical center?

Responses	N	%	Mean	Std. Deviation
There is no school pedagogical center	2025	26.1%	37.9864	10.6580
I don't participate	2409	31.1%	39.6966	11.6229
I participate	3319	42.8%	40.8005	11.3967
Total	7753	100.0%	39.7225	11.3358

Table 62 shows that students who participate in the production of teaching aids in their schools obtained better group mean scores (40.80%) than those who said that they had no participation in this activity or those who said that there was no pedagogical centres in their schools. There is statistically significant difference in the mean score of some of these groups ($F= 34.145$ and $P< .001$). It is long recognized that participating in activities enhances student learning. The Ethiopian Education and Training Policy also recognizes this fact and there is a paradigm shift towards active learning. Since the current finding confirms the importance of participatory learning, the reform process is required to go swiftly to enhance student learning.

Table 63 What is the extent of your interest in learning English?

Responses	N	%	Mean	Std. Deviation
Low	445	5.6%	37.2921	12.1956
Medium	2343	29.7%	37.6376	12.4833
High	5097	64.6%	42.9871	15.4277
Total	7885	100.0%	41.0761	14.6696

Table 63 shows that students who say they are highly interested in learning English scored greater group mean score than students who are moderately or less interested in learning the subject. The group mean difference between the highly interested group and the others is big. The fact that $F = 126.305$ and $P< .001$ in the ANOVA proves the existence of statistically significant difference between the mean score of some of the groups.

Table 64 How much English homework are you given per week?

Responses	N	%	Mean	Std. Deviation
One	364	4.6%	39.1071	13.6386
Two	928	11.8%	39.2322	14.0401
Three	2091	26.7%	40.0251	14.0797
Four or Five	4458	56.9%	42.1030	15.1053
Total	7841	100.0%	41.0700	14.6955

From Table 64 we see that 56.9% of respondents to the item said they are given homework four or five times a week and these students scored the highest group mean (42.07%) compared to the other groups. It can also be observed from the table that the group mean of the students decreases consistently as the frequency of homework decreases. ANOVA carried out on this item showed a statistically significant difference in the mean scores of the groups ($F=17.984$ and $P<.001$).

Table 65 . To what extent do you understand the lesson given by your English teacher?

Responses	N	%	Mean	Std. Deviation
A little	1830	23.2%	38.1393	13.4013
Moderately	3579	45.4%	40.0077	13.6689
Highly	2476	31.4%	44.7870	16.1888
Total	7885	100.0%	41.0748	14.6825

Just like the above two tables, Table 65 is concerned with the achievement of the students in English. This table presents the variation in the English mean score between students grouped in accordance with their level of understanding of the lesson given by their teacher. It can be seen from the table that students who said that they highly understand the lessons given by their teachers scored higher mean score (44.79%) than the rest. The mean scores also decrease as the understanding level of the students decreases. ANOVA showed F value which has a strong statistical significance ($F=129.235$ and $P<.001$).

Table 66 What is the extent of your interest in learning mathematics?

Responses	N	%	Mean	Std. Deviation
Low	454	5.8%	35.4956	12.4354
Medium	2357	29.9%	36.8594	12.9391
High	5082	64.4%	43.3038	17.2971
Total	7893	100.0%	40.9303	16.1789

Table 66 shows that students who are highly interested in learning mathematics have scored higher group mean (43.30%) than those who are moderately or less interested in learning the subject. The group mean difference between the highly interested group and the others was big. There is statistically significant difference between the mean scores of the groups ($F = 161.206$, $P<.001$).

Table 67 How much mathematics homework are you given per week?

Responses	N	%	Mean	Std. Deviation
One	392	5.0%	37.6148	14.8604
Two	1233	15.6%	39.4404	15.6197
Three	2457	31.2%	40.4518	15.6675
Four or Five	3798	48.2%	42.0596	16.7020
Total	7880	100.0%	40.9273	16.1752

From Table 67 we see that 48.2% of the respondents are given homework four or five times per week and these students scored the highest group mean (42.06%) compared to the other groups. It can also be observed from the table that the group mean decreases consistently as the frequency of homework decreases. The difference in the mean scores of the groups is statistically significant ($F= 15.955$ and $P< .001$).

Table 68 To what extent do you understand the lesson given by your mathematics teacher?

Responses	N	%	Mean	Std. Deviation
A little	1476	18.7%	35.9621	13.4340
Moderately	3967	50.4%	39.1814	14.3399
Highly	2433	30.9%	46.7776	18.6705
Total	7876	100.0%	40.9246	16.1786

Table 68 presents the variation in mathematics mean score between the samples grouped in accordance with their level of understanding of the lesson given by their teacher. It can be seen from the table that students who say they highly understand the lessons achieved greater mean score (46.78%) than the rest of the groups. The mean scores also decrease with the understanding level of the groups. There is statistically significant mean differences ($F=268.801$, $P<.001$).

Table 69 What is the extent of your interest in learning chemistry?

Responses	N	%	Mean	Std. Deviation
Low	457	5.8%	35.4158	12.7526
Medium	2853	36.1%	37.4904	13.1486
High	4599	58.1%	42.2146	15.4459
Total	7909	100.0%	40.1176	14.7231

The responses of the groups to the above question (summarized in Table 69) show that majority of the students (58.1%) has high interest in chemistry and this group scored a group mean of 42.21% which is higher than that of the other groups. Here also the group mean scores decrease or increase following the level of interest of the group. There exist statistically significant mean difference between all the groups ($F= 118.812$, $P< .001$).

Table 70 To what extent do you understand the lesson given by your chemistry teacher?

Responses	N	%	Mean	Std. Deviation
A little	1612	21.7%	35.9073	12.8754
Moderately	3221	43.4%	38.9894	13.6517
Highly	2593	34.9%	43.5615	16.1383
Total	7426	100.0%	39.9168	14.7042

Table 70 presents the variation in chemistry mean score between students grouped in accordance with their declared level of understanding of the lesson. The table shows that students who said they highly understand the lessons scored a better mean score (43.56%) than the rest. The mean scores also decreased with the understanding level of each group. There is statistically significant mean score difference between some of the groups ($F=151.927$, $P< .001$).

Table 71 What is the extent of your interest in learning biology?

Responses	N	%	Mean	Std. Deviation
No	248	3.1%	35.4738	11.2076
Medium	1789	22.7%	38.5187	12.7473
High	5853	74.2%	42.4902	13.4811
Total	7890	100.0%	41.3691	13.3956

Table 71 shows that 74.2% of the respondents to this item have high interest in biology and they achieved a group mean score of 42.49%, which is higher than the mean score of the other two groups. It is also seen from the table that the group mean of those who are moderately interested in subject (38.52%) was better than that of those who have low interest (35.47%). There is a statistically significant mean difference between the groups ($F= 86.865, P< .001$).

Table 72 To what extent do you understand the lesson given by your biology teacher?

Responses	N	%	Mean	Std. Deviation
A little	784	10.3%	34.8661	11.7586
Moderately	2632	34.7%	39.6011	13.0240
Highly	4179	55.0%	44.0548	13.5106
Total	7595	100.0%	41.5629	13.5215

Table 72 presents the variation in biology mean score between students grouped in accordance their level of understanding of the lesson. It can be seen from the table that students who said they highly understand the lessons scored a higher mean score (44.05%) than the rest of the respondents. The mean scores also decrease with the decrease in the understanding level of the groups. There is statistically significant differences ($F=205.308, P< .001$) in mean scores between the groups.

Table 73 What is the extent of your interest in learning physics?

Responses	N	%	Mean	Std. Deviation
No	538	6.8%	31.7565	9.9372
Medium	2698	34.0%	33.9446	11.1222
High	4688	59.2%	36.5678	12.7488
Total	7924	100.0%	35.3480	12.1399

The responses of the groups to the above question show that a large number of the students (59.2%) have high interest in physics and this group scored a better group mean (36.57%) than the other groups. Here also the group mean scores decrease or increase following the level of interest of the group. There exists a statistically significant mean difference between the groups ($F= 66.313, P< .001$).

Table 74 To what extent do you understand the lesson given by your physics teacher?

Responses	N	%	Mean	Std. Deviation
A little	1572	19.9%	32.2281	10.5642
Moderately	3704	46.9%	34.7901	11.6461
Highly	2623	33.2%	38.0595	13.1142
Total	7899	100.0%	35.3659	12.1412

Table 74 shows the difference in the mean score of students grouped in accordance with their level of understanding of the lesson. From the groups, those who said that they understand the lessons highly scored a better mean (38.06%) than those who said they have moderate understanding (34.79%). Those who said they understand a little scored the lowest mean (32.23%). Results from ANOVA showed statistically significant mean differences ($F= 125.023, P< .001$) between the groups.

Current findings in relation to student interest, understanding of a subject and the extent to which homework is given in each subject indicate a positive relationship with student achievement. This finding is consistent with other studies. According to Duncan (1989), student attitudes in choosing subjects, likes and dislikes, and opinions of a subject's future usefulness are important in explaining the patterns of their participation in subjects and achievement. Given the fact that the national level student achievement scores in all these subjects were less than what is anticipated by the Education and Training Policy of Ethiopia, the task expected of schools to make learning interesting and subjects comprehensible and also give homework, exercises or projects to improve active learning is of paramount importance.

4.3 Grade 8 Students General Attitudes

The following table summarizes students' views as related to health care, environment protection, civics and ethics, cultural conditions, and education. For analyzing mean differences, "agree" was assigned a score of 3, "neutral" 2, and disagree" 1. Negatively stated questions have been shaded. It can be seen in the tables below that overall attitudes tend to be in the favorable direction. This suggests that Ethiopia's social development curriculum is making a difference in shaping students' attitudes towards health, environmental protection, civics and ethics, cultural issues and education values.

4.4.1. Grade 8 Students' General Attitude at Nation Level

Table 75 National results of Grade 8 students' attitude

	Percent Responding*		
	Agree	Neutral	Disagree
I. Health Care Questions			
Knowing the modes of transmission of HIV/AIDS helps to eradicate the stigma and discrimination against victims.	75.61	9.91	14.48
It would be good if my parents give birth over and over again so that I have many brothers and sisters.	17.49	7.50	75.01
Eating, drinking, playing and shaking hands with AIDS patients exposes to the Virus.	14.58	8.00	77.41
Defecating and urinating everywhere contributes to environmental pollution.	69.25	4.34	26.41
It is possible to prevent the spread of contagious diseases through societal participation and endeavor.	84.15	5.63	10.22
Abstaining from pre-marriage sex is a major means of preventing the spread of HIV/AIDS.	82.34	3.87	13.79
Discussing the modes of transmission of HIV/AIDS with parents is necessary	88.50	3.93	7.58
Proper diet means eating meat frequently.	25.68	9.65	64.67
In our country controlling population growth is necessary.	81.37	5.32	13.31

II. Environmental Protection

Protecting and taking care of historical and cultural heritages is necessary.	94.05	1.76	4.19
Beautifying and protecting school and environment is our obligation.	93.48	2.11	4.41
Deforested areas should be covered by trees.	86.00	3.71	10.28
Failure to protect natural environment would expose areas to drought.	83.55	4.71	11.75
Planting flowers is a waste of time.	7.10	2.89	90.10

III. Civics and Ethics

In order for my rights to be respected, I have to respect the rights of others.	87.60	3.97	8.43
Equally respecting the rights of nations, nationalities and peoples is the basis for our country's unity and development.	77.10	5.00	17.90
All officials, either government appointed or public elected should observe the rule of law in performing their duties.	79.97	4.51	15.51
All patriotic citizens have the responsibility to fight corruption.	89.59	2.60	7.81
My parents would rather be poor than become wealthy illegally.	89.81	3.37	6.82
Guilty students should be given punishment commensurate with their guilt.	84.32	3.99	11.69
Knowledge of true history enables us not to repeat past mistakes in the future.	75.45	7.94	16.61
To struggle to extricate our country from poverty is the duty of every citizen.	95.80	1.19	3.00
Citizens are obliged to pay taxes.	94.37	1.91	3.71
Blaming others for our own mistakes is not a proper conduct.	89.81	3.12	7.06
It is inappropriate to take for oneself anything found lying in the school compound or our locality.	81.42	4.78	13.80
Women and men have equal rights to decide on their country's affairs.	68.78	6.92	24.31
Students who copy from their friends should be despised by other students.	62.88	7.62	29.50
We have to implement a decision passed by the majority even if we disagree with the idea.	67.81	8.04	24.15
We should not force our parents to clothe us like our friends without considering their economic ability.	81.17	3.39	15.44
A wealthy person is not considered as squanderer even if he spends wantonly	25.32	7.28	67.41
Before undertaking any type of task, we should gather information about it so that we have adequate knowledge about it.	92.00	2.23	5.77
As we expect praise for our good deeds, we should accept criticism for the bad ones.	77.55	4.45	18.00
A student who spends all his/her out of school time playing and enjoying would not do well in his/her studies.	76.64	4.28	19.08

Cultural Conditions

Male students should not fight against cultural norms that harm females.	32.47	5.54	61.99
Abduction and rape are crimes perpetrated by uncivilized men.	82.58	4.14	13.28
We should not oppose early marriage as far as it is approved by parents.	25.17	4.28	70.55
Female circumcision, extraction of milk teeth, etc. are harmful traditional practices.	86.96	2.50	10.55
The coming of tourists to our country is beneficial to us.	85.51	4.57	9.91

V. Education

Conscious participation in school clubs is very important to a student.	89.01	3.47	7.52
It is appropriate for students to evaluate teachers.	90.83	2.34	6.84
Education enables one to lead a better life.	95.15	1.44	3.41
I enjoy the time I spend in school.	79.67	3.98	5
Because I am a student, I am more knowledgeable than my peers who do not attend school.	81.73	4.62	6
			18.9
Time spent for learning is not considered as wasted time.	77.67	3.40	3

*Total number of students responding to each question varied ranging from 7892 to 7945

In fact, the development of favorable attitudes (sometimes called life skills) is very much in focus in other sectors like the mass media, religious institutions, government, development, ministries, non-governmental organizations and so on. This means the school is not left on its own in creating positive attitudes towards socially relevant issues. The more integrated efforts are made, the better seem the outcomes, according to the above findings.

4.4.2 Grade 8 Students' General Attitude by Region

The following tables show the within region distribution of responses for individual attitude survey questions. Though the attitude of students towards socially relevant issues was generally in a favorable direction at national level, some marked unfavorable attitudes are observed among students of some regions.

Table 76 Knowing the modes of transmission of HIV/AIDS helps people to eradicate the stigma and discrimination against victims.

	Agree	Neutral	Disagree
Tigray	65.68	6.78	27.54
Afar	83.42	6.15	10.43
Amhara	81.42	5.34	13.24
Oromia	64.45	18.87	16.68
Somali	64.09	10.07	25.84
Ben-Gumuz	72.65	12.33	15.02
SNNPR	77.86	7.16	14.98
Harari	82.00	9.25	8.75
Addis Ababa	92.80	3.47	3.72
Dire Dawa	79.54	8.35	12.11
NATION	75.61	9.91	14.48

As shown in table 76, there was a considerable number of students in Tigray (34.32%), Somali (35.91%) and Oromia (35.55%) regional states that disagree to the given. Apart from the students of these regions, the majority of those in the other regions showed agreement to the statement. The relatively smaller percentage of agreement secured from the three regions might be because the students had not received adequate awareness as to why HIV/AIDS patients are stigmatized and discriminated against.

Table 77 It would be good if my parents give birth over and over again so that I have many brothers and sisters.

	Agree	Neutral	Disagree
Tigray	23.11	3.78	73.11
Afar	20.95	8.22	70.82
Amhara	9.58	4.34	86.08
Oromia	20.07	13.74	66.18
Somali	87.29	5.02	7.69
Ben-Gumuz	23.54	9.42	67.04
SNNPR	12.36	4.53	83.11
Harari	10.45	7.71	81.84
Addis Ababa	4.44	4.32	91.23
Dire Dawa	12.45	7.68	79.88
NATION	17.49	7.50	75.01

Table 77 summarizes the within region difference regarding the attitude of students towards family planning. The greatest majority of students (87.29%) in Somali Regional State have shown that they do not have a proper understanding of the family planning concept. Close to a quarter of the students in Benishangul-Gumuz (23.54%), Tigray (23.11%), Afar (20.95%) and Oromia (20.07%) do not agree with the family planning concept.

Table 78 Eating, drinking, playing and shaking hands with AIDS patients exposes one to the virus.

	Agree	Neutral	Disagree
Tigray	13.03	7.77	79.20
Afar	14.13	6.93	78.93
Amhara	10.50	5.74	83.76
Oromia	18.11	10.53	71.36
Somali	22.74	6.35	70.90
Ben-Gumuz	16.29	12.22	71.49
SNNPR	14.70	8.97	76.33
Harari	13.43	6.72	79.85
Addis Ababa	7.19	2.23	90.58
Dire Dawa	17.15	8.16	74.69
NATION	14.58	8.00	77.41

Table 78 shows that the big majority of the respondents understands that social contact with AIDS patients does not cause transmission of HIV virus. Less than a quarter of the respondents in Somali (22.74%), Oromia (18.11%) and Benishangul-Gumuz (16.29%) however agreed to the idea that social contact could cause transmission of the virus.

Table 79 Defecating and urinating everywhere contributes to environmental pollution.

	Agree	Neutral	Disagree
Tigray	61.34	4.41	34.24
Afar	71.09	3.71	25.20
Amhara	84.24	2.27	13.50
Oromia	59.80	6.33	33.87
Somali	83.61	2.34	14.05
Ben-Gumuz	67.49	6.55	25.96
SNNPR	61.57	5.46	32.98
Harari	71.97	3.28	24.75
Addis Ababa	87.13	0.99	11.88
Dire Dawa	69.29	2.90	27.80
NATION	69.25	4.34	26.41

Table 79 shows differences in attitude between the students about the variable's contribution to environmental pollution. More students from Addis Ababa (87.13%), Amhara (84.24%), and Somali (83.61%) regional states have shown agreement with the item than students in other regions.

Table 80 It is possible to prevent the spread of diseases through societal participation and endeavor.

	Agree	Neutral	Disagree
Tigray	82.81	2.73	14.47
Afar	88.36	5.56	6.08
Amhara	89.50	4.36	6.14
Oromia	81.51	7.28	11.21
Somali	78.72	11.15	10.14
Ben-Gumuz	81.72	7.67	10.61
SNNPR	80.41	5.37	14.22
Harari	86.57	5.97	7.46
Addis Ababa	91.23	2.72	6.05
Dire Dawa	86.40	4.81	8.79
NATION	84.15	5.63	10.22

It can be seen from Table 80 that the greatest part of the students in all regions have agreed that societal participation and endeavor is necessary for controlling the spread of contagious diseases.

Table 81 Abstaining from sex before marriage is a major means of preventing the spread of HIV/AIDS

	Agree	Neutral	Disagree
Tigray	89.05	1.68	9.26
Afar	90.91	1.87	7.22
Amhara	89.33	2.37	8.30
Oromia	77.72	7.22	15.06
Somali	83.33	1.67	15.00
Ben-Gumuz	80.45	4.49	15.06
SNNPSR	71.76	4.09	24.16
Harari	90.02	2.74	7.23
Addis Ababa	92.09	1.48	6.43
Dire Dawa	88.38	2.28	9.34
NATION	82.34	3.87	13.79

The results of Table 81 show that there is no great difference between the students of all the regions in their attitude towards the importance of abstinence from sex before marriage in

preventing the spread the AIDS pandemic. Agreement of lowest percentage was registered in Tigray (71.76%) followed by Oromia (77.72%). More than 90% of the respondents in Addis Ababa (92.09), Afar (90.91%), and Harari (90.02) regional states agreed to the statement. In the rest of the regional states and Dire Dawa Administrative Council agreement lay between 80% and 90%.

Table 82 Discussing the modes of transmission of HIV/AIDS with parents is necessary.

	Agree	Neutral	Disagree
Tigray	90.74	1.89	7.37
Afar	93.37	2.92	3.71
Amhara	93.71	1.96	4.32
Oromia	83.28	7.17	9.55
Somali	67.79	10.40	21.81
Ben-Gumuz	86.71	4.95	8.33
SNNPR	88.35	2.29	9.35
Harari	91.81	2.98	5.21
Addis Ababa	95.32	2.09	2.59
Dire Dawa	93.15	2.49	4.36
NATION	88.50	3.93	7.58

Summary of Table 82 shows that the majority of the sample students in all the regions agree with the idea of holding discussion on the modes of transmission of HIV/AIDS with their parents. The percentage of respondents in Somali Regional State who agreed to this idea was a bit smaller (67.79%) than that of respondents in other regions.

Table 83 Eating meat regularly is a proper dietary habit.

	Agree	Neutral	Disagree
Tigray	13.45	4.41	82.14
Afar	22.22	7.14	70.63
Amhara	14.85	7.47	77.68
Oromia	38.20	14.92	46.88
Somali	47.49	7.36	45.15
Ben-Gumuz	36.67	9.34	53.99
SNNPR	25.78	6.56	67.65
Harari	15.42	11.69	72.89
Addis Ababa	11.41	11.29	77.30
Dire Dawa	21.83	8.52	69.65
NATION	25.68	9.65	64.67

Table 83 shows a summary of the attitude of the respondents towards the habit of eating meat. The percentage of respondents who agree to the idea was highest in the Somali Region (47.49%), followed by Oromia (38.20%) and Benishangul-Gumuz (36.67%). Majority (82.14%) of the respondents from Tigray disagreed to the statement. Those who disagreed with the statement did so possibly because of the traditional high regard that is given to meat and dairy products in the various societies.

Table 84 It is necessary to control population growth in our country.

	Agree	Neutral	Disagree
Tigray	78.41	2.31	19.29
Afar	82.80	5.03	12.17
Amhara	88.40	2.95	8.65
Oromia	71.92	9.51	18.56
Somali	69.86	8.22	21.92
Ben-Gumuz	83.90	4.54	11.56
SNNPR	82.20	4.12	13.67
Harari	89.50	2.50	8.00
Addis Ababa	90.23	3.46	6.30
Dire Dawa	86.28	5.41	8.32
NATION	81.37	5.32	13.31

From Table 84, it can be seen that high percent of the respondents in each region agree to the necessity of controlling population growth in our country. With regard to this, there was no big difference of opinion among the students in the various regions.

Table 85 Protecting and taking care of historical and cultural heritages is necessary.

	Agree	Neutral	Disagree
Tigray	97.48	0.84	1.68
Afar	96.28	1.33	2.39
Amhara	97.74	0.69	1.57
Oromia	90.52	3.35	6.13
Somali	96.31	0.67	3.02
Ben-Gumuz	90.52	3.16	6.32
SNNPR	91.18	2.12	6.70
Harari	96.77	0.50	2.74
Addis Ababa	98.52	0.49	0.99
Dire Dawa	97.51	0.21	2.29
NATION	94.05	1.76	4.19

Table 85 summarizes the responses of the students in all the regions about the necessity of protecting and taking care of historical and cultural heritages. The table shows the big majority of respondents in all regions showed agreement to the issue. The percentage for each region was close to the national percentage.

Table 86 Beautifying and protecting our school and our environment is our obligation.

	Agree	Neutral	Disagree
Tigray	97.90	0.21	1.89
Afar	94.97	1.32	3.70
Amhara	95.48	1.77	2.75
Oromia	91.52	3.15	5.32
Somali	96.99	1.00	2.01
Ben-Gumuz	88.94	4.74	6.32
SNNPR	90.12	2.53	7.35
Harari	94.03	1.74	4.23
Addis Ababa	98.77	0.37	0.86
Dire Dawa	96.07	1.24	2.69
NATION	93.48	2.11	4.41

Table 86 shows that the bulk of the respondents in all regions believes that it is their obligation to beautify and take care of their surroundings. A very high percent of respondents in each region agreed to the idea. The percentage of those who agreed in each region was nearly or equal to the national one.

Table 87 Deforested areas should be covered by trees.

	Agree	Neutral	Disagree
Tigray	85.68	1.89	12.42
Afar	93.90	1.33	4.77
Amhara	92.83	1.28	5.89
Oromia	77.78	7.46	14.76
Somali	94.31	1.34	4.35
Ben-Gumuz	86.74	3.37	9.89
SNNPR	86.54	2.37	11.08
Harari	82.04	4.99	12.97
Addis Ababa	87.83	4.10	8.07
Dire Dawa	91.19	2.31	6.50
NATION	86.00	3.71	10.28

Table 87 summarizes responses of the students in all the regions about the necessity of covering deforested areas with trees. The table shows that a high percent of respondents in all regions agreed to the opinion. Regional percentages are in some cases close to the national percentage.

Table 88 Failure to protect natural environment would expose a country to drought.

	Agree	Neutral	Disagree
Tigray	80.50	3.14	16.35
Afar	89.04	4.01	6.95
Amhara	86.38	4.74	8.88
Oromia	78.21	6.31	15.48
Somali	84.90	5.70	9.40
Ben-Gumuz	75.78	7.85	16.37
SNNPR	82.34	3.88	13.77
Harari	86.00	5.25	8.75
Addis Ababa	91.96	2.85	5.20
Dire Dawa	92.26	2.30	5.44
NATION	83.55	4.71	11.75

Table 88 indicates that a significant majority of the respondents believe that neglect to protect our natural environment could be a cause of drought. According to this table, a high percent of respondents in all the regions agreed to this idea.

Table 89 Planting flowers is a waste of time.

	Agree	Neutral	Disagree
Tigray	13.21	1.68	85.12
Afar	2.93	2.13	94.93
Amhara	5.51	1.87	92.62
Oromia	9.14	5.58	85.28
Somali	9.03	4.01	86.96
Ben-Gumuz	7.78	4.58	87.64
SNNPR	8.65	2.18	89.18
Harari	4.71	2.23	93.05
Addis Ababa	2.47	0.49	97.04
Dire Dawa	1.66	0.83	97.51
NATION	7.08	2.89	90.03

Table 89 shows that a large portion of the respondents disagreed to the assumption that planting flowers is a waste of time. The percentage of such respondents in each region was somehow close to the national percentage.

Table 90 In order for my rights to be respected, I have to respect the rights of others.

	Agree	Neutral	Disagree
Tigray	80.08	3.77	16.14
Afar	87.17	3.48	9.36
Amhara	90.45	2.85	6.69
Oromia	83.39	7.14	9.47
Somali	83.16	1.68	15.15
Ben-Gumuz	86.10	5.38	8.52
SNNPR	88.76	2.49	8.76
Harari	90.50	3.50	6.00
Addis Ababa	94.31	2.48	3.22
Dire Dawa	92.80	2.33	4.87
NATION	87.60	3.97	8.43

Table 90 shows that the majority of respondents in all regions agreed that demanding respect for ones own right goes hand in hand with respecting the rights of others.

Table 91 Respecting the rights of nations, nationalities and peoples equally is the basis for our country's unity and development.

	Agree	Neutral	Disagree
Tigray	73.17	2.73	24.11
Afar	80.53	3.20	16.27
Amhara	75.25	5.37	19.38
Oromia	79.03	6.61	14.36
Somali	70.89	4.79	24.32
Ben-Gumuz	69.46	8.14	22.40
SNNPR	76.63	3.85	19.53
Harari	72.66	4.81	22.53
Addis Ababa	84.22	3.60	12.17
Dire Dawa	79.12	4.59	16.28
NATION	77.13	4.96	17.91

Table 91 shows that the majority of the respondents have agreed to the idea that giving equal respect to the rights of the nations, nationalities and peoples of our country is a cornerstone of our unity and development. On the other hand, the percentage of students who disagreed to this was not small in some regions. The percentage of sample students who disagreed was substantial in Somali (24.32%), Tigray (24.11%), Harari (22.53%), and Benishangul-Gumuz (22.40%) regions.

Table 92 All officials, both government appointed and public elected, should observe the rule of law in performing their duties.

	Agree	Neutral	Disagree
Tigray	84.66	1.26	14.08
Afar	77.09	5.66	17.25
Amhara	84.86	3.05	12.09
Oromia	83.70	4.71	11.59
Somali	58.92	8.08	33.00
Ben-Gumuz	78.20	4.72	17.08
SNNPR	82.68	2.90	14.42
Harari	72.07	6.48	21.45
Addis Ababa	74.13	6.93	18.94
Dire Dawa	73.68	6.74	19.58
NATION	79.97	4.51	15.51

Table 92 shows the attitude of the sample students towards observing the rule of law. A large portion of respondents agreed that both government and public officials should observe the rule of the law of the country when they perform their day to day activity. The proportion of respondents in the Somali Regional State who agreed to this principle was much smaller compared to that of respondents in other regions.

Table 93 All patriotic citizens have the responsibility to fight corruption.

	Agree	Neutral	Disagree
Tigray	89.73	1.05	9.22
Afar	89.65	1.91	8.45
Amhara	91.49	2.18	6.33
Oromia	85.24	4.66	10.10
Somali	78.64	3.39	17.97
Ben-Gumuz	85.88	3.64	10.48
SNNPR	90.92	1.61	7.47
Harari	92.82	2.56	4.62
Addis Ababa	96.03	1.61	2.36
Dire Dawa	94.75	1.05	4.20
NATION	89.59	2.60	7.81

Table 93 indicates that there was agreement among majority of the respondents in all the regions that fighting corruption is the responsibility of all patriotic citizens.

Table 94 My parents would rather be poor than become wealthy illegally.

	Agree	Neutral	Disagree
Tigray	88.42	1.89	9.68
Afar	90.98	2.12	6.90
Amhara	96.37	1.47	2.16
Oromia	84.36	5.90	9.74
Somali	91.97	2.34	5.69
Ben-Gumuz	88.96	3.60	7.43
SNNPR	88.14	3.68	8.18
Harari	90.27	3.24	6.48
Addis Ababa	94.43	1.61	3.96
Dire Dawa	95.42	2.08	2.50
NATION	89.81	3.37	6.82

Table 94 indicates that a high percent of respondents in each region would prefer their parents be poor rather than become rich by using illegal means.

Table 95 Guilty students should be given punishment commensurate with their guilt

	Agree	Neutral	Disagree
Tigray	88.35	2.12	9.53
Afar	89.89	5.05	5.05
Amhara	91.13	2.17	6.70
Oromia	75.48	7.41	17.11
Somali	78.26	3.68	18.06
Ben-Gumuz	84.68	3.15	12.16
SNNPR	82.96	3.13	13.92
Harari	86.25	3.75	10.00
Addis Ababa	93.09	2.10	4.81
Dire Dawa	88.98	2.49	8.52
NATION	84.32	3.99	11.69

Table 95 shows that a great majority of students in Addis Ababa (93.09%) and Amhara regional state (91.13%) agreed to the principle that punishment should be comparable with the guilt committed. Respondents in the rest of the regional states also agreed to the principle strongly.

Table 96 Knowledge of true history enables us not to repeat past mistakes in the future

	Agree	Neutral	Disagree
Tigray	77.61	4.05	18.34
Afar	81.87	5.07	13.07
Amhara	80.87	8.68	10.45
Oromia	63.41	13.18	23.40
Somali	62.24	8.84	28.91
Ben-Gumuz	74.94	10.74	14.32
SNNPR	75.40	5.77	18.83
Harari	80.05	7.23	12.72
Addis Ababa	91.86	2.84	5.30
Dire Dawa	82.29	5.21	12.50
NATION	75.45	7.94	16.61

Table 96 presents responses of the sample students to the statement made about the importance of knowing true history. 91.86% of the sample students in Addis Ababa agreed that knowledge of true history helps not to make the same mistakes again. The percentage of respondents who agreed to this idea in Somali and Oromia regional states was not very large. In the other regions however, it was nearly 75% and above.

Table 97 To struggle to extricate our country from poverty is the duty of every citizen.

	Agree	Neutral	Disagree
Tigray	97.48	0.63	1.89
Afar	97.35	0.79	1.85
Amhara	98.33	0.20	1.47
Oromia	93.51	2.37	4.12
Somali	90.33	2.33	7.33
Ben-Gumuz	93.51	1.79	4.70
SNNPR	95.13	1.35	3.52
Harari	97.01	0.25	2.74
Addis Ababa	98.64	0.25	1.11
Dire Dawa	98.96	0.00	1.04
NATION	95.80	1.19	3.00

A look at Table 97 shows that there was almost unanimous agreement among all respondents in all regions that fighting poverty is the responsibility of every Ethiopian citizen.

Table 98 Every citizen should pay taxes.

	Agree	Neutral	Disagree
Tigray	94.96	1.26	3.78
Afar	97.07	1.60	1.33
Amhara	97.24	0.79	1.97
Oromia	89.30	4.03	6.67
Somali	94.00	1.67	4.33
Ben-Gumuz	93.03	3.37	3.60
SNNPR	95.06	1.06	3.88
Harari	96.01	1.00	2.99
Addis Ababa	97.78	0.99	1.23
Dire Dawa	97.93	0.83	1.24
NATION	94.37	1.91	3.71

Table 98 shows that nearly a unanimous agreement existed among the students in various regions that paying tax is an obligation of every citizen of the country.

Table 99 Blaming others for our own mistakes is not a proper conduct.

	Agree	Neutral	Disagree
Tigray	89.94	0.84	9.22
Afar	91.51	2.65	5.84
Amhara	94.49	1.77	3.74
Oromia	85.17	6.15	8.68
Somali	97.32	0.67	2.01
Ben-Gumuz	83.15	5.84	11.01
SNNPR	87.90	2.00	10.11
Harari	92.23	3.76	4.01
Addis Ababa	96.18	1.48	2.34
Dire Dawa	92.71	1.67	5.63
NATION	89.81	3.12	7.06

As can be seen from Table 99, a very large portion of students in all regions agreed that it is not correct to blame others for something they did. A much smaller proportion, however, expressed disagreement.

Table 100 It is inappropriate to take anything found lying in the school compound or our locality for oneself.

	Agree	Neutral	Disagree
Tigray	74.95	1.68	23.37
Afar	89.66	0.80	9.55
Amhara	84.96	2.95	12.09
Oromia	68.65	12.02	19.33
Somali	95.00	1.67	3.33
Ben-Gumuz	76.47	6.33	17.19
SNNPR	79.31	2.90	17.79
Harari	93.50	2.00	4.50
Addis Ababa	95.55	1.24	3.21
Dire Dawa	94.80	1.25	3.95
NATION	81.42	4.78	13.80

Table 100 shows that there was no unanimous agreement on the necessity of returning a lost and found property to its owner. Of the total respondents in each region, 95.55% in Addis Ababa, 95.00% in the Somali Regional State, 94.80% in Dire Dawa, 93.50% in the Harari Regional State agreed with the suggestion. While a relatively smaller percentage of agreement was registered among the respondents from Oromia Regional State (68.65%).

Table 101 Women and men have equal rights to decide on their country's affairs.

	Agree	Neutral	Disagree
Tigray	56.51	4.83	38.66
Afar	77.93	4.52	17.55
Amhara	66.11	7.59	26.31
Oromia	55.70	11.24	33.06
Somali	88.33	4.00	7.67
Ben-Gumuz	63.06	7.88	29.05
SNNPR	71.75	3.43	24.82
Harari	80.80	8.48	10.72
Addis Ababa	84.83	5.18	9.99
Dire Dawa	77.59	6.85	15.56
NATION	68.78	6.92	24.31

Regarding the equality of men and women, the attitude of the respondents summarized in Table 101 indicates that there were still substantial number of sample students who disagree to the principle particularly in Oromia (44.30%), Tigray (43.49%) and Benishangul-Gumuz (36.93%). A higher percentage of the respondents in Somali Regional State (88.33%), Addis Ababa (84.83%) and Harari region (80.80%) agreed to this principle.

Table 102 Students who copy from their friends during exams should be despised by other students.

	Agree	Neutral	Disagree
Tigray	71.70	4.40	23.90
Afar	61.13	6.17	32.71
Amhara	75.34	3.83	20.83
Oromia	58.95	12.53	28.52
Somali	59.40	4.36	36.24
Ben-Gumuz	53.60	7.43	38.96
SNNPR	60.52	4.95	34.53
Harari	62.59	12.22	25.19
Addis Ababa	63.49	7.30	29.21
Dire Dawa	63.20	8.52	28.27
NATION	62.88	7.62	29.50

Table 102 shows that the percentage of respondents who agreed to the idea that cheating during exam is something that should be discredited was very small in some regions. For instance, only 53.60% in Benishangul-Gumuz, 58.95% in Oromia and 59.40% in Somali regional states agreed to the idea. The highest percentage of respondents who agreed to this statement was recorded in the Amhara Regional State (75.34%) followed by Tigray Region (71.70%). The maximum percentage for this statement is much smaller than that recorded from some other items in this attitude survey.

Table 103 We have to implement a decision passed by the majority even if we disagree with the idea.

	Agree	Neutral	Disagree
Tigray	67.51	3.77	28.72
Afar	66.22	8.51	25.27
Amhara	64.04	5.81	30.15
Oromia	66.25	14.83	18.91
Somali	69.02	7.07	23.91
Ben-Gumuz	75.34	5.83	18.83
SNNPR	74.26	3.20	22.54
Harari	68.66	9.70	21.64
Addis Ababa	55.13	8.53	36.34
Dire Dawa	73.90	6.68	19.42
NATION	67.81	8.04	24.15

There was not much of agreement between the respondents of all regions on the question of implementing majority decision even if one disagrees with it. It can be seen from Table 103 that only 55.13% of respondents in Addis Ababa agreed to this idea. The highest percentage of agreement was registered in Benishangul-Gumuz (75.34%), followed by Tigray (74.26%) and then Dire Dawa (73.90%). The other regions hover around the 60 to 69 percent range.

Table 104 We should not force our parents to clothe us like our friends without considering their economic ability.

	Agree	Neutral	Disagree
Tigray	79.54	2.32	18.14
Afar	81.91	2.93	15.16
Amhara	85.53	1.28	13.19
Oromia	77.92	5.75	16.33
Somali	71.86	9.15	18.98
Ben-Gumuz	73.32	6.50	20.18
SNNPR	80.98	2.01	17.00
Harari	84.00	3.00	13.00
Addis Ababa	89.84	0.74	9.42
Dire Dawa	82.85	2.93	14.23
NATION	81.17	3.39	15.44

Table 104 shows that large percent of students in all the regions agreed to the idea that they should not demand something that their parents cannot afford. There was no big difference between the students from the different regions.

Table 105 A wealthy person is not considered as squanderer even if that person is a wanton spender.

	Agree	Neutral	Disagree
Tigray	16.21	4.84	78.95
Afar	31.28	6.15	62.57
Amhara	14.88	3.74	81.38
Oromia	29.73	12.33	57.95
Somali	53.87	8.08	38.05
Ben-Gumuz	20.91	7.05	72.05
SNNPR	29.78	5.13	65.09
Harari	19.45	8.98	71.57
Addis Ababa	16.05	6.42	77.53
Dire Dawa	25.16	5.03	69.81
NATION	25.32	7.28	67.41

Table 105 shows the attitude of the sample students regarding proper usage of personal wealth. 53.87% of the sample students from the Somali Regional State agreed that a wealthy person should not be blamed of wantonness. In addition, more than a quarter of the sample students of Afar (31.28%), Oromia (29.73%), Tigray (29.78%), and Dire Dawa (25.16%) agreed with this negative statement.

Table 106 Before undertaking any type of task, we should gather information so that we have adequate knowledge about it.

	Agree	Neutral	Disagree
Tigray	95.38	0.42	4.20
Afar	93.09	2.13	4.79
Amhara	96.47	0.78	2.75
Oromia	89.17	3.78	7.05
Somali	83.45	5.74	10.81
Ben-Gumuz	88.34	4.48	7.17
SNNPR	90.64	1.71	7.66
Harari	93.05	1.99	4.96
Addis Ababa	96.54	0.74	2.72
Dire Dawa	94.59	1.25	4.16
NATION	92.00	2.23	5.77

Table 106 shows that very large proportions of students in all the regions agreed to the necessity of gathering information for any type of task before starting it. The percentage of students who disagreed to this idea or who remained neutral was small in the regions.

Table 107 As we expect appreciation for our good deeds, we should accept criticism for the bad ones.

	Agree	Neutral	Disagree
Tigray	83.19	1.26	15.55
Afar	82.98	1.33	15.69
Amhara	84.68	2.55	12.77
Oromia	61.55	10.13	28.32
Somali	71.48	4.36	24.16
Ben-Gumuz	72.75	6.08	21.17
SNNPR	80.69	2.59	16.72
Harari	90.80	2.74	6.47
Addis Ababa	87.76	1.61	10.63
Dire Dawa	85.86	2.49	11.64
NATION	77.55	4.45	18.00

As can be seen from Table 107, a large percent of sample students in all the regions agreed that it is necessary to accept criticism for bad deeds. The smallest percentage of agreement was recorded in Oromia (61.55%).

Table 108 A student who spends all his/her out-of-school time playing and enjoying would not do well in his/her studies.

	Agree	Neutral	Disagree
Tigray	78.78	2.52	18.70
Afar	78.51	2.39	19.10
Amhara	82.50	3.64	13.86
Oromia	65.86	8.33	25.81
Somali	87.58	1.68	10.74
Ben-Gumuz	71.75	4.48	23.77
SNNPR	80.18	2.30	17.52
Harari	81.16	4.27	14.57
Addis Ababa	82.26	2.48	15.26
Dire Dawa	76.14	3.94	19.92
NATION	76.64	4.28	19.08

As can be seen from Table 108, large percent of sample students in all the regions agreed that spending all out-of-school time for leisure negatively affects educational performance. The smallest percentage of samples that agreed to this idea was from of Oromia (65.86%)

Table 109 Male students should not fight against cultural norms that harm females.

	Agree	Neutral	Disagree
Tigray	33.05	4.21	62.74
Afar	33.96	5.88	60.16
Amhara	28.85	4.42	66.73
Oromia	35.57	9.55	54.88
Somali	54.39	12.84	32.77
Ben-Gumuz	38.15	7.45	54.40
SNNPR	33.61	2.90	63.49
Harari	23.94	2.99	73.07
Addis Ababa	19.68	3.22	77.10
Dire Dawa	31.79	1.89	66.32
NATION	32.47	5.54	61.99

Table 109 shows that 54.39% of the respondents in the Somali Region agreed that males should not struggle with the harmful cultural practices against females. This was the highest as compared to other regions. The portion of respondents in other regions who disagreed to the idea was substantial, except probably in Addis Ababa.

Table 110 Abduction and rape are crimes perpetrated by uncivilized men.

	Agree	Neutral	Disagree
Tigray	83.40	3.15	13.45
Afar	87.70	3.74	8.56
Amhara	90.47	3.05	6.48
Oromia	75.96	6.63	17.41
Somali	76.69	4.05	19.26
Ben-Gumuz	78.60	6.76	14.64
SNNPR	83.12	2.13	14.75
Harari	82.96	4.51	12.53
Addis Ababa	86.17	3.46	10.37
Dire Dawa	86.64	3.34	10.02
NATION	82.58	4.14	13.28

Most of the sample students in all the regions agreed that abduction and rape are crimes Committed by males who are not civilized.

Table 111 We should not oppose early marriage as far as it is approved by our parents.

	Agree	Neutral	Disagree
Tigray	23.90	3.77	72.33
Afar	21.07	3.47	75.47
Amhara	13.46	2.65	83.89
Oromia	32.61	8.79	58.61
Somali	55.07	3.38	41.55
Ben-Gumuz	26.19	5.64	68.17
SNNPR	29.25	2.55	68.21
Harari	13.25	3.50	83.25
Addis Ababa	13.08	1.37	85.55
Dire Dawa	21.17	1.68	77.15
NATION	25.17	4.28	70.55

Table 111 summarizes the attitude of the respondents towards early marriage. The majority of sample students in all the regions disagree with early marriage whatsoever. The majority of respondents (55.07%) in Somali Region, however, support early marriage as far as their parents supported it. It could further be seen that a substantial percent of respondents in Oromia (32.61%), SNNPR (29.25%) and Benishangul-Gumuz (26.19%) agree with the stand portrayed by the respondents from the Somali Region.

Table 112 Female circumcision, milk teeth extraction and so on are harmful traditional practices.

	Agree	Neutral	Disagree
Tigray	88.45	0.84	10.71
Afar	92.53	1.87	5.60
Amhara	94.79	0.88	4.33
Oromia	79.76	5.12	15.11
Somali	72.48	5.03	22.48
Ben-Gumuz	85.17	3.82	11.01
SNNPR	85.90	1.65	12.45
Harari	91.27	1.75	6.98
Addis Ababa	96.29	0.37	3.34
Dire Dawa	88.52	1.88	9.60
NATION	86.96	2.50	10.55

Table 112 shows that a high proportion of respondents from many of the regions agreed that the mentioned actions are harmful. A relatively smaller percent of respondents from Somali (72.48%) and Oromia (79.76%) regional states agreed to the statement. .

Table 113 The coming of tourists to our country is beneficial to us.

	Agree	Neutral	Disagree
Tigray	82.14	1.89	15.97
Afar	89.33	2.67	8.00
Amhara	82.32	5.89	11.79
Oromia	85.25	6.31	8.44
Somali	74.66	4.39	20.95
Ben-Gumuz	78.15	6.98	14.86
SNNPR	86.10	3.09	10.81
Harari	92.54	3.48	3.98
Addis Ababa	90.61	4.70	4.70
Dire Dawa	90.66	2.70	6.64
NATION	85.51	4.57	9.91

Table 113 indicates that a big majority of respondents from all the regions agreed that the coming of tourists is beneficial to our country. Respondents from Somali and Benshangul-Gumuz regional states stand relatively the lowest in this regard.

Table 114 Conscious participation in school clubs is important to a student.

	Agree	Neutral	Disagree
Tigray	92.03	0.84	7.13
Afar	86.10	6.42	7.49
Amhara	93.14	2.25	4.61
Oromia	89.69	3.46	6.86
Somali	87.21	3.03	9.76
Ben-Gumuz	76.63	6.52	16.85
SNNPR	87.21	2.59	10.19
Harari	87.10	6.95	5.96
Addis Ababa	92.72	4.07	3.21
Dire Dawa	91.06	3.12	5.82
NATION	89.01	3.47	7.52

A significant majority of the sample students agreed that it is important to consciously participate in school clubs.

Table 115 It is appropriate for students to evaluate their teachers.

	Agree	Neutral	Disagree
Tigray	93.91	0.42	5.67
Afar	91.71	2.14	6.15
Amhara	93.71	1.96	4.32
Oromia	86.21	4.61	9.18
Somali	90.88	1.35	7.77
Ben-Gumuz	89.64	2.93	7.43
SNNPR	89.22	1.72	9.06
Harari	95.29	0.99	3.72
Addis Ababa	95.04	1.24	3.72
Dire Dawa	95.41	1.25	3.34
NATION	90.83	2.34	6.84

Table 115 shows that a very large part of the sample students in all the regions agreed that it is appropriate for students to evaluate their teachers. No major differences were observed among the regions regarding this item.

Table 116 Learning enables one to live a better life.

	Agree	Neutral	Disagree
Tigray	92.66	1.89	5.45
Afar	96.80	1.87	1.33
Amhara	98.33	0.69	0.98
Oromia	93.51	1.78	4.71
Somali	93.20	2.72	4.08
Ben-Gumuz	92.74	1.81	5.44
SNNPR	94.50	1.36	4.14
Harari	97.00	1.00	2.00
Addis Ababa	97.40	1.11	1.48
Dire Dawa	96.43	1.05	2.52
NATION	95.15	1.44	3.41

According to table 116, an overwhelming majority of respondents from all the regions have confidence in education for improving their life.

Table 117 I enjoy the time I spend in school.

	Agree	Neutral	Disagree
Tigray	83.65	1.68	14.68
Afar	86.40	3.47	10.13
Amhara	71.79	4.04	24.16
Oromia	69.04	7.48	23.48
Somali	81.08	1.35	17.57
Ben-Gumuz	71.33	5.19	23.48
SNNPR	83.30	2.49	14.21
Harari	91.98	2.01	6.02
Addis Ababa	92.96	2.84	4.20
Dire Dawa	90.85	1.87	7.28
NATION	79.67	3.98	16.35

Most of the students included in the study said they enjoyed the time they spend in school.

Table 118 Because I am a student, I am more knowledgeable than my peers who do not attend school.

	Agree	Neutral	Disagree
Tigray	72.78	5.06	22.15
Afar	85.68	4.51	9.81
Amhara	90.26	1.77	7.97
Oromia	78.59	5.65	15.76
Somali	88.22	1.68	10.10
Ben-Gumuz	73.65	8.33	18.02
SNNPR	80.44	3.18	16.38
Harari	87.59	3.72	8.68
Addis Ababa	81.83	8.28	9.89
Dire Dawa	84.82	4.16	11.02
NATION	81.73	4.62	13.66

Table 118 shows the percentage of sample students who agreed, disagreed or remained neutral to the assumption that students in school are more knowledgeable than other children who are out of school. As can be seen from the table a high percentage of the respondents said they were better than their peers who did not go to school.

Table 119 Time spent on learning is not considered as wasted time.

	Agree	Neutral	Disagree
Tigray	67.86	3.78	28.36
Afar	85.37	1.60	13.03
Amhara	85.35	1.97	12.68
Oromia	69.63	6.01	24.36
Somali	91.78	1.03	7.19
Ben-Gumuz	68.40	5.64	25.96
SNNPR	75.41	2.07	22.52
Harari	84.37	3.23	12.41
Addis Ababa	87.04	1.85	11.11
Dire Dawa	83.58	3.95	12.47
NATION	77.67	3.40	18.93

Table 119 shows that 91.78% of the sample students from the Somali Regional State agreed that time spent on learning is not wasted. 28.36% of respondents from Tigray, 25.96% from Benishangul-Gumuz and 24.36% from Oromia disagreed with this assumption. In the rest of the regions, the proportion of those who agreed was much more than those who disagreed.

4.4. Factors that Influence Grade 8 Pupils' Academic Achievement

4.5.1 Correlations with Grade 8 Composite Score

Table 120 shows correlations of factors that affect achievement at different levels. The variables were organized into six blocks: School Structure and Supplies, Teacher Behaviour, School Management, Student Behaviour, Instruction / Support and Language of Instruction. Only those factors which showed statistically significant relationships ($p < .05$) with the composite score are shown in the table

Table 120 Spearman correlation of factors with Grade 8 composite score

Group of Variables	Correlation with G8 Composite Score	Sig.
Block 1: School Structure and Curriculum Materials		
Time to reach the main road from the school	0.159	.02*
Time to reach the woreda education office from the school	0.236	.001**
Money generated from the sale of hay and vegetables	0.254	<.001***
Location of the school (urban/rural location)	0.165	.02*
Availability and condition of school pedagogical center	0.169	.02*
Availability and condition of football field	0.162	.02*
Availability and condition of volleyball field	0.160	.02*
Availability and condition of school library and reading center	0.215	.004**
Total syllabus in the school	0.149	.032*
Total Teacher's Guide in the school	0.158	.022*
Total Student Textbook in the school	0.122	.08
Reference Books	0.169	.014*
Supply of non-text material inputs	0.269	<.001***
Mathematics Syllabus	0.151	.03*
Physics Syllabus	0.186	.007**
Biology Syllabus	0.190	.006**
Chemistry Teacher's Guide	0.190	.006**
Physics Teacher's Guide	0.149	.03*
Biology Teacher's Guide	0.215	.002**

*Significant at $p < .05$, significant at $p < .01$ and *** significant at $p < .001$

Block 2: Teacher Variables		
Teacher qualifications	-0.269	<.001***
Total experience in years	0.157	.023*
Experience at the School	0.158	.023*
Distance to school	-0.187	.007**
Periods taught per week	0.431	<.001***
Teacher training on new syllabus	0.194	.005**
Teacher training on new teaching methods	0.328	<.001***
Teacher training on new assessment techniques	0.278	<.001***
Teacher training on student discipline	0.270	<.001***
Teacher training on textbooks	0.155	.044*
Teacher's perception of textbook difficulty	0.140	.044*
Teacher's perception of student's learning attitudes	0.295	<.001***
Block 3: School Management		
Director supervises teachers	0.217	.002**
Director's qualifications	-0.142	.041*
Director's teaching experience	-0.167	.016*
Effect of social obligations outside directing	0.298	.001**
Director's distance to home	-0.231	.001**
Total Funds	0.164	.018*
Director has teachers' meetings	0.166	.017*
Are the dangers of HIV/AIDS explained using drama?	0.174	.012*
Total HIV/AIDS activities in the school	0.164	.018*
Block 4: Student Home Background and Behavior		
Students' sense of ownership in school property	0.160	.021*
Agreement between home and instructional language	0.410	<.001***
Student chore time	-0.246	<.001***
Distance to school	-0.211	.002**
Number of family members in school	-0.267	<.001***
Availability of television at home	-0.274	<.001***
Availability of radio at home	0.194	.005**
Daily meals	-0.341	<.001***
Time spent listening to the radio	-0.232	.001**
Leisure reading (reading non-textbook materials)	-0.260	<.001***
Interest in English	0.126	.07
Interest in mathematics	0.258	<.001***
Interest in chemistry	0.202	.003**
Interest in biology	0.214	.002**
Interest in physics	0.349	<.001***
Use of school library	0.343	<.001***

*Significant at $p < .05$, **Significant at $p < .01$ and ***Significant at $p < .001$

Block 5: Instruction		
Director's perception of English teacher's instructional quality	0.163	.019*
Director's perception of mathematics teacher's instructional quality	0.140	.045*
Director's perception of chemistry teacher's instructional quality	0.104	.14
Director's perception of biology teacher's instructional quality	0.169	.015*
Director's perception of physics teacher's instructional quality	0.134	.06
Director's perception of all teachers' instructional quality	0.135	.05
Sum of homework assigned in all subjects	0.188	.01
Student's understanding of mathematics	0.212	.002**
Student's understanding of English	0.274	<.001***
Student's understanding of chemistry	0.294	<.001***
Sum of understanding of subjects	0.254	<.001***
Percentage of contents of curriculum taught so far in the year	-0.237	.001**
Block 6: Language of Instruction		
English-non English	-0.248	<.001***

*Significant at $p < .05$, **Significant at $p < .01$ and ***Significant at $p < .001$

The above table indicates that student achievement in Grade 8 had an association of relations with six blocks of variables. These are school structure and curriculum materials, teacher variables, school management, student home background and behavior, woreda education office instructional support and language of instruction.

Conditions constituting school structure and curriculum materials positively correlated with student achievement. Among these conditions, the time required to reach the woreda education office from the school had one of the highest significant positive correlations with student achievement. That is, the shorter the time it took to reach a *WEO* from school, the higher was the achievement. One reason for such association has to do with the access schools may get to the support, information and other technical benefits from *woreda education offices* due to proximity. Among the structural issues, the availability and conditions of libraries and reading rooms also significantly correlated with student achievement. From structural variables, the highest significant positive relations pointed to the association of student achievement and the availability of money from the sale of hay and vegetables (internal income generation). That is schools that generated their own internal incomes tended to have better achieving students. Among the curricular materials, the availability and supply of different non-text material inputs showed the strongest association with student achievement. It is also interesting to see the significant positive relationship between student achievement and curriculum materials including the availability of different syllabi and teacher's guides.

Many teacher variables significantly associated with student achievement. Some of the highest significant positive relations included those of teacher training on new methodologies of teaching, assessment techniques and student discipline. Equally significant positive associations were also detected between student achievement and teacher perception or judgment of student learning attitudes. The negative correlations included those associations observed between student achievement and teacher qualifications (certifications) as well as those between distance of teachers to school and student achievement. Fuller (1986) reports positive correlation between teacher training and student achievement. His summary of reports from Botswana, India, Chile, Thailand, Iran and Egypt was based on the hypothesis that the teacher's years of post-secondary instruction and teacher training skills lead to higher student achievement. In all these countries, findings showed a positive correlation between teacher training and student achievement. But, Stockard and Mayberry (1992) found out that the relationships between teacher qualification and

student achievement were mixed. In some cases, they showed positive relations while in others, they showed negative relations. In the Ethiopian case, the negative association does not mean that teacher certification is not important. But, there are other intervening variables that relate with student achievement. Such variables can be, for instance, instructional practices and what the teacher does in the classroom. Another can be the relevance of certification in the face of the changing curricula and teaching methods. The fact that distance of teachers from schools negatively correlated means that the longer the teachers travel to school the less is the achievement of students. This shows how significant it is to have teachers reside near the schools. It reduces the time and efforts required to reach schools by teachers.

From the school management, very significant positive relations were found between the effect of social obligations outside directing and school achievement. There are also significant relations between the director's supervision of teachers and his calling of meetings on the one hand, and student achievement on the other. Negative relations his/her appeared between director's distance to home, director's teaching experience and director's qualification on the one hand, and student achievement was the other. The positive association between the social obligations of the director and school achievement was interesting, because it is against the popular belief that limits their responsibilities to focusing on school activities. In fact, organizational learning seems to take place when directors are involved in other social obligations. One explanation between the negative association of director's qualification and student achievement may be due to lack of qualifications in professional educational administration at the primary level.

Among student home background, the agreement between home and instructional language had a positive relation with student achievement. However, student chore time, distance to school, numbers of family members in school, and availability of television at home had negative correlations with student achievement. Among student behavior variables, use of school library, student interest in subjects and student sense of ownership in school property positively correlated with achievement. Leisure reading and time spent listening to the radio negatively associated with student achievement.

In instruction and student understanding, the sum of homework assigned in all subjects, and teacher's instructional quality had all positive correlations with achievement. It is interesting to see, however, the negative correlation between the percentages of contents of curriculum covered in the year and student achievement. In other words, covering contents in large volume does not go with higher achievement in Ethiopia. With the language of instruction, learning in English as medium of instruction had negative correlation with student achievement.

4.5.2. Results of Multiple Regression Analyses

This section deals with the exploration of the overall influence of the factors that showed strong and significant correlation with the composite score by using multiple regression analysis at the school level. The variables were organized into six blocks. Initially each block was analyzed separately using the standardized method (ENTER) of multiple regression analysis. The main purpose of this was to examine how much each block and each variable in each block influences or explains the variability of student achievement. This means not all variables examined in the correlation analysis strongly and significantly determine student overall achievements. Table 121 summarizes the result.

Table 121 School level multiple regression results on the composite score

Predictor Models and Variables	Std. coefficient	Sig.	R	R-sq	F	d.f.
Block 1. School Structure and Curriculum Materials			0.453	0.205	8.32***	5,161
Budget supplemented by selling hay and vegetables	0.168	0.025*				
School's different materials	0.241	0.001***				
Location of the school	0.129	0.09				
Time it takes to reach the woreda office from the school	0.184	0.012*				
School condition factor 3	0.141	0.051				
Block 2. Teacher Variables			0.570	0.325	16.37***	6,204
Teacher qualifications	-0.125	0.04				
Total teacher experience	0.159	0.008				
Distance from school for teacher	-0.149	0.013				
Periods taught per week	0.266	<.001				
Teacher trained on new teaching techniques	0.18	0.004				
Teacher's perception of student learning attitudes	0.226	<.001				
Block 3. School Management			0.366	0.111	5.73***	3,111
Effect of director's social obligations on job	0.293	0.001				
Director calls teacher's meetings	0.137	0.126				
Total number of funding sources	0.13	0.147				
Block 4. Student Home Background and Behavior			0.404	0.386	22.42***	6,198
Alignment of language between home and school	0.307	<.001				
Reading non-textbook materials	-0.198	0.001				
Student's sense of ownership of school property	0.142	0.011				
Distance to home	-0.479	<.001				
Average interest in subjects	0.542	<.001				
Block 5. Instruction/Support			0.368	0.136	7.30***	4,186
Director's perception of all teachers' instructional quality	0.124	0.071				
Sum of student understanding of subjects	0.241	0.001				
Amount of help at home	-0.136	0.049				
Percentage of curriculum taught so far	-0.173	0.014				
Block 6. Language of Instruction			0.611	0.373	125.51***	1,211
Is the language of instruction English or a local language	0.611	<.001				

***Significant at $p < .001$

The variables under school structure and curriculum materials explained 20.5% of the variation in learners' achievement. Of these variables, the most significant were budget supplements by various means, availability of different non-textual material inputs in the school, and the distance of the school from a *wereda education office*. It can be seen that schools that supplemented their allocated budget by different means of their own performed better than those which did not.

This fact should be seen in conjunction with the fact that schools that are better equipped with educational materials are better performers than the others. It is possible to imply that schools which create additional income use it for buying educational materials that are needed for the teaching and learning process. Therefore, it is important to enable schools to produce their own income so that they could be able to supplement the budget that is allocated for them from government sources.

It is also seen that as the distance of the school from the *wereda* increased the performance of the school decreased. This might be because remote schools are not regularly visited or supervised by *wereda* education professionals. As a result, problems in those remote schools may not be resolved in time and also new methods of teaching are not introduced in time. Therefore, it is imperative that Regional Education Bureaus create a mechanism to make *wereda* education offices give attention to rural schools so that the officials try to solve problems of rural schools and introduce changes in time.

Teacher characteristics taken alone explained 32.5% of the variation in achievement of schools. Among the various variables that make up this block, teachers' experience was found to be more important in enhancing student achievement than mere qualification of teachers. It was also observed that training teachers in new teaching techniques contributes to learner achievement highly. These three facts taken together indicate that teachers' qualification alone is not the determining factor but experience of teachers and acquainting them with modern methods of teaching make all the difference in learners' achievement. Therefore, it seems necessary for concerned bodies to find ways of retraining qualified and experienced teachers at their post as much as possible, as well as to acquaint these teachers with modern methods of teaching through short or in-service trainings.

It was further observed that longer distance travelled by the teacher to reach school is associated with lower student achievement. This means concerned bodies should look for ways to decrease the distance teachers' travel to reach school. On the other hand, teachers' load of teaching per week has been observed to positively influence students' achievement. Traditionally this factor is perceived to decrease the teachers' time for lesson preparation, and hence student achievement. But, in this case, the finding shows the opposite trend. Thus, further investigation is required to see if and how this finding functions.

School management as a block contributed 11.1% to the explanation of the variation in achievement. It is important to note that schools which have directors who hold regular meetings with teachers performed better than other schools. This might be because these directors take timely remedial action and help the smooth functioning of the teaching and learning process. Therefore, directors should be encouraged to hold discussions with teachers as regularly as possible.

Student background variables as independent group explained 36.6% of the total variation in learners' achievement. In this block, alignment of home and school language positively contributed to achievement, meaning, learning in one's vernacular was associated with better performance. Distance travelled by students to reach school was negatively associated with achievement showing that achievement decreased as distance of home from school increased (may be because students become tired when they reach school and they would be unable to

follow the lesson properly or/and reach home very tired to study or do their homework and assignments).

Therefore, responsible bodies should continue their endeavour to provide primary education in the vernacular of the child. Means of reducing the distance students' travel to reach school should also be sought.

Table 122 shows the model summary which resulted from the Hierarchical Multiple Regression Analysis. In the first column, the numbers in bracket show the number of variables each model contained. The maximum total variance explained (shown under the column R Square) by a single model was 55.5 % (Model 6) which contained all the variables listed in Table 120 lumped together.

Table 122 School level multiple regression results on the composite score model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1 (5)	.453	.205	.161	.04	.205	4.653	5	90	.001
2 (11)	.621	.386	.306	.03	.181	4.125	6	84	.001
3 (14)	.635	.403	.299	.03	.016	.741	3	81	.531
4 (20)	.725	.526	.400	.03	.124	3.262	6	75	.007
5 (23)	.734	.539	.383	.03	.013	.499	4	71	.737
6 (25)	.745	.555	.396	.03	.016	2.531	1	70	.116

Table 123 on the next page shows the contribution of each block to the final model when entered in different orders. It can be seen from the table that all the blocks significantly contributed to the explanation of the variation in achievement of learners when they were entered first. Their contribution, however, dwindled and becomes insignificant when each of them was entered last; except for block six, which still had a significant contribution. This fact shows that language of instruction determines the difference in achievement between the learners.

Table 123 School level multiple regression results on the composite score contribution of each block to R-square in the final model

Predictor models and Variables	R-square contribution if entered first	R-square contribution if entered last
Block 1. School Structure and Supplies	.205***	.018(n.s.)
Budget supplemented by selling hay and vegetables		
School's different materials		
Location of the school		
Time it takes to reach the woreda office from the school		
School condition factor 3		
Block 2. Teacher Variables	.325***	.030(n.s.)
Teacher qualifications		
Total teacher experience in years		
Distance from school for teacher		
Periods taught per week		
Teacher trained on new teaching techniques		
Percentage of curriculum taught so far		
Teacher's perception of student learning attitudes		
Block 3. School Management	.134***	.005(n.s.)
Effect of director's social obligations on job		
Director calls teachers' meetings		
Total number of funding sources		
Block 4. Student Background	.404***	.041(n.s.)
Alignment of language between home and school		
Read non-textbook materials		
Time spent watching television		
Student's sense of ownership in school property		
Distance to home		
Average interest in subjects		
Block 5. Instruction/Support	.136**	.004(n.s.)
Director's perception of all teachers' instructional quality		
Sum of student understanding of subjects		
Amount of help at home		
Block 6. Language of Instruction	.373***	.006**
Is the language of instruction English or a local language?		

4.5 Comparative Analysis between Time1 and Time2 Assessments

4.5.1 Comparison between the Two NLAs

General Comparison

As repeatedly mentioned in different sections of this study, the major purpose of the 8h Grade Ethiopian Second National Learning Assessment (ESNLA) was to determine levels of students' achievements across some selected variables such as regions, sex and school location, and to make comparative analysis on the findings of Time1 and Time2 NLAs. In this part of the study, an attempt will be made to discuss the major findings obtained by the Study. The following tables show the mean achievements of both Time1 and Time2 assessment measures followed by short analysis.

Table 124 EBNLA national mean Score

	Biology	Chemistry	English	Mathematics	Physics	Composite
Mean	47.16	40.27	38.74	38.23	—	41.10
SD	17.25	15.88	15.31	15.83	—	13.06
min	.5	.8	.05	.05	—	.14
max	.95	.97	.99	1.00	—	.94

Table 125 ESNLA national mean score

	Biology	Chemistry	English	Mathematics	Composite ¹	Physics	Composite ²
Mean	41.34	40.10	41.07	40.93	40.84	35.32	39.74
SD	13.42	14.74	14.67	16.15	11.95	12.14	11.36
min	5.00	7.50	7.50	5.00	14.38	5.00	14.50
max	90.00	100.0	97.5	100.00	95.63	87.5	92.50
N	7982	7995	8026	8017	7911	8024	7898

Table 124 and Table 125 contain summary reports of national mean scores on the Ethiopian Baseline National Learning Assessment (EBNLA) and the ESNLA of the country respectively. Note that physics test was not included in the Baseline Assessment but it was included in the ESNLA; therefore, two composite scores are given for the ESNLA, i.e., composite¹ which is calculated reducing the physics test result and composite² calculated including the physics test result. Calculation of two composite scores was found necessary in order to see the difference between the mean score of the two times in situations where the mean score for physics (which was not included as a separate subject in the EBNLA) was included and excluded for computing the composite score.

Obviously these two tables show that sample pupils performed better on the two biology tests than on the remaining three subjects both times. But the performance of the students in biology in the EBNLA was much better than performances in all other subjects of the same period or performances in the ESNLA. The performance of the students in English and mathematics in the ESNLA was better than the performance of the students in the Baseline in both subjects.

Finally, it is quite imperative to note that in both Time1 and Time2 national assessments, the obtained average mean scores on Grade 8 English, mathematics and the three pure science subjects were far behind the 50% minimum achievement level to promote pupils from one level to the next higher level as required by the Education and Training Policy (ETP) of our country. The

implication is that ETP should claim much emphasis to be given to the instruction of these subjects at all levels of the education system.

Table 126 Learning progress: comparison between the two national learning assessments

Subject	Biology		Chemistry		English		Mathematics		Composite Mean	
	Time-1	Time-2	Time-1	Time-2	Time-1	Time-2	Time-1	Time-2	Time-1	Time-2
Means PCT	47.16	41.34	40.27	40.10	38.74	41.07	38.23	40.93	41.10	40.84
Progress (T2-T1)	-5.82		-0.17		2.33		2.70		0.26	

Table 126 compares levels of pupils' achievement obtained in four academic subjects on the two NLAs conducted in 1992 E.C. and 1996 E.C. respectively. The overall composite mean scores of Time1 (41.10) and Time2 (40.84) are almost similar, although there is a decrease of 0.26 points in the 2nd NLA, which is negligible. This implies that student achievement did not progress as desired.

When we consider specific results gained in individual subjects, the current status of student performance is better in some of the subjects and worse in others than before. For instance, between the two biology tests, there is a considerable drop in gain (-5.82%) from baseline. And there is no significant change obtained in the results of the two chemistry tests from Time1 to Time 2. Nevertheless, a 2.33% and 2.70% gain was recorded for the Second NLA in English and mathematics respectively.

4.5.2 Longitudinal Comparisons of Achievement on 50 matched schools

The sampling strategy called for a carry over of 10 schools that had participated in the Baseline Assessment. This strategy would provide for a comparison of baseline and current performance levels for the nation overall and, with substantially less power for detecting statistical significance, within regions. A logical alternative for evaluating change in performance from baseline would be to conduct statistical tests that are designed to detect mean differences from independent samples. In the latter case, the baseline sample and the second NLA sample would be considered independent samples of schools taken at different years. This alternative to the paired comparisons analysis was, however, problematic due to the difference in the sampling strategies that were applied for the baseline and the 2nd NLA. The schools selected for the baseline analysis were heavily biased toward urban or semi-urban communities unlike the second NLA where a stratified random sampling approach was taken. Therefore, it was decided to include in the current sample a set of schools that had participated in the Baseline and to conduct a repeated measures analysis to investigate change from baseline.

Though the paired comparisons analysis in theory is a more powerful test, it can often yield very meaningful results in the subject (i.e., the school in this situation) and serve as its own control. However, the limited number of matched schools in combination with the large variances in difference scores from the Baseline to the second NLA reduced the power for detecting statistically significant differences. In addition, since five statistical tests were conducted, statistical significance was tested at the 0.01 alpha level in order to compensate for the inflation of Type I error that can be expected when conducting multiple test statistics on the same sample population.

The statistical results presented below should be considered only in conjunction with careful review and analysis of the descriptive results. It is often the case that when there are limited numbers of schools sampled (e.g., less than the 10 matched schools originally planned for the

paired comparisons analysis) the sample population tends to be very skewed and precludes the valid conduct of parametric statistical tests (e.g., the dependent t-test). However, analysis of the normality of the data indicated that the samples, even within regions, were relatively normal. Using the standard error of skewness as a diagnostic statistical tool, it was determined that there was no marked deviation in spread that would justify using analysis alternatives to the paired t-test. This is confirmed in the relatively similar mean and median measures of central tendency given in the tables below.

The compiled descriptive statistics for the difference scores are given below for the nation overall and for each region. The difference score was calculated for each school by subtracting average school (percent correct) score obtained at Baseline from the average school (percent correct) score obtained at the second NLA. These difference scores were then summarized for the Nation and for each region, as shown below. To support the interpretation of results, schools were grouped into high and low groups and these groupings were then crossed with responses on the six school reform variables from the Director's Questionnaires.

Progress in Biology

Table 127 Biology: average change in percent correct scores from EBNLA to ESNLA

REGION	Number of Matched Schools	Mean	Std Deviation	Median	Minimum	Maximum	Test of Mean Differences from Baseline to Second NLA (Paired t-test)	
							T Statistic	P Value
NATION	50	-6.63	8.94	-7.53	-25.69	11.26	-5.24	0.000*
TIGRAY	9	-6.89	4.50	-5.99	-16.47	-2.36	-4.59	0.002*
AFAR	4	-4.86	8.18	-5.99	-13.63	6.15	-1.19	0.320
AMHARA	4	15.89	1.27	-15.80	-17.35	-14.62	-24.96	0.000*
OROMIA	3	-2.77	9.44	-7.79	-8.65	8.12	-0.51	0.662
BEN-GUMUZ	5	-8.70	10.95	-5.29	-23.00	3.58	-1.78	0.150
SNNPR	5	-5.80	5.63	-8.13	-11.73	0.76	-2.31	0.082
HARARI	6	-7.13	9.75	-8.81	-19.57	5.81	-1.79	0.133
ADDIS ABABA	7	-9.56	9.66	-10.48	-25.69	1.75	-2.62	0.040
DIRE DAWA	7	0.56	12.14	5.84	-22.95	11.26	0.12	0.907

*Significant negative change from baseline (p<0.01)

The results above (Table 127) show that for the 50 matched schools with Grade 8 classes in the nation, there was considerable variability in change from Baseline. The worst performing school regressed in performance in biology by more than 25 percentage points. The highest showed a gain of approximately 12 percentage points. The national decline in performance since Baseline was statistically significant (p<0.01). Two regions, Tigray and Amhara, also showed a significant negative change in biology performance. With only 9 and 4 matched schools sampled in Tigray and Amhara, these results should not be considered representative of the region overall, yet the alarming regression in performance in both regions should be taken note of and investigated further.

Progress In Grade 8 Chemistry

Table 128 Chemistry: average change in percent correct scores from EBNLA to ESNLA

REGION	Number of Matched Schools	Mean	Standard Deviation	Median	Minimum	Maximum	Test of Mean Differences from Baseline to Second NLA (Paired t-test)	
							T Statistic	P Value
NATION	49	-2.26	8.53	-0.90	-25.79	16.31	-1.85	0.070
TIGRAY	9	-2.55	7.36	-1.69	-18.29	4.77	-1.04	0.329
AFAR	4	-0.47	7.64	-1.00	-7.89	7.99	-0.12	0.909
AMHARA	4	-5.89	3.12	-5.74	-9.07	-3.00	-3.78	0.032
OROMIA	3	2.91	11.96	-0.90	-6.69	16.31	0.42	0.715
BEN-GUMUZ	5	-7.04	10.79	-3.58	-19.37	5.11	-1.46	0.218
SNNPR	5	2.17	3.11	3.27	-2.84	4.93	1.56	0.193
HARARI	6	-2.90	7.69	-1.11	-15.64	4.93	-0.93	0.398
ADDIS ABABA	7	-2.59	8.70	1.90	-16.80	4.69	-0.79	0.460
DIRE DAWA	6	-1.85	13.77	-0.10	-25.79	15.48	-0.33	0.756

Results above (Table 128) show that for the 49 matched schools with Grade 8 classes in the nation, there was considerable variability in change from baseline. The worst performing school regressed in performance in biology by more than 25 percentage points. The highest showed a gain of approximately 16 percentage points. Though overall there was a decline in performance in chemistry across the nation, the change was not statistically significant neither for the nation nor for any one region.

Progress in Grade 8 English

Table 129 English: average change in percent correct scores from EBNLA to ESNLA

REGION	Number of Matched Schools	Mean	Standard Deviation	Median	Minimum	Maximum	Test of Mean Differences from Baseline to Second NLA (Paired t-test)	
							T Statistic	P Value
NATION	50	2.04	6.57	1.74	-12.25	20.50	2.19	0.033
TIGRAY	9	2.63	6.42	4.98	-5.31	12.78	1.23	0.254
AFAR	4	5.07	4.21	5.04	1.01	9.18	2.41	0.095
AMHARA	4	0.59	5.26	0.55	-5.31	6.57	0.22	0.837
OROMIA	3	5.66	6.31	2.31	1.74	12.94	1.55	0.260
BEN-GUMUZ	5	-3.67	5.02	-1.74	-12.25	0.66	-1.64	0.177
SNNPR	5	2.50	4.95	1.52	-2.56	10.25	1.13	0.322
HARARI	6	2.31	6.48	1.73	-6.92	12.63	0.87	0.423
ADDIS ABABA	7	-2.09	6.95	-5.08	-8.18	9.37	-0.80	0.457
DIRE DAWA	7	6.46	7.79	5.49	-4.78	20.50	2.19	0.071

Changes in performance in Grade 8 English since Baseline tended to be in the positive direction with average gains in performance ranging from 2 to 6 percentage points. Though there were some matched schools that showed drops in performance, there were gains in some schools of more than 20%. The results still failed to reach statistical significance at the 0.01 alpha level.

Progress in Grade 8 Mathematics

Table 130 Mathematics: average change in percent correct scores from EBNLA to ESNLA

EGION	Number of Matched Schools	Mean	Standard Deviation	Median	Minimum	Maximum	Test of Mean Differences from Baseline to Second NLA (Paired t-test)	
							T Statistic	P Value
NATION	49	2.93	8.43	3.42	-13.93	25.38	2.44	0.019
TIGRAY	9	0.39	7.46	1.20	-13.93	8.37	0.16	0.878
AFAR	4	6.94	11.04	6.65	-5.88	20.36	1.26	0.297
AMHARA	4	-4.01	5.75	-3.25	-11.02	1.49	-1.39	0.258
OROMIA	3	12.33	11.33	6.54	5.07	25.38	1.89	0.200
BEN-GUMUZ	5	-4.49	5.11	-3.00	-13.13	0.33	-1.97	0.121
SNNPR	5	4.72	5.26	3.96	-2.43	12.08	2.01	0.115
HARARI	6	9.61	8.77	9.44	-3.82	20.47	2.68	0.044
ADDIS ABABA	7	0.94	4.99	2.72	-5.18	7.58	0.50	0.637
DIRE DAWA	6	4.33	7.93	4.35	-7.75	16.98	1.34	0.238

Changes in performance in the Grade 8 mathematics, like in English, also tended to be in the positive direction. Though there were some matched schools that showed drops in performance, there were gains in some schools of more than 25%. None of the results reached statistical significance at the 0.01 alpha level.

4.5.3 Compiled Performance across Four Grade 8 Tests

Table 131 Average difference in percent correct scores across Grade 8 achievement tests

REGION	Number of Matched Schools	Mean	Standard Deviation	Median	Minimum	Maximum	Test of Mean Differences from Baseline to Second NLA (Paired t-test)	
							T Statistic	P Value
NATION	50	-0.91	6.84	-0.32	-15.32	16.05	-0.94	0.353
TIGRAY	9	-1.60	5.50	0.10	-13.50	3.35	-0.87	0.408
AFAR	4	1.67	6.66	1.71	-6.37	9.66	0.50	0.650
AMHARA	4	-6.30	2.99	-6.26	-9.86	-2.81	-4.21	0.024
OROMIA	3	4.53	9.68	-0.55	-1.55	15.69	0.81	0.503
BEN-GUMUZ	5	-5.98	7.11	-3.09	-14.27	1.87	-1.88	0.133
SNNPR	5	0.90	1.74	0.74	-1.26	3.24	1.15	0.313
HARARI	6	0.47	6.23	-1.33	-5.17	7.92	0.19	0.860
ADDIS ABABA	7	-3.33	6.11	-4.39	-10.58	4.90	-1.44	0.200
DIRE DAWA	7	2.83	9.51	4.40	-15.32	16.05	0.79	0.461

The above table presents the descriptive statistics for the average difference score from Baseline to the second NLA for Grade 8 matched schools. The mean and median composite difference scores tended to cluster around zero, suggesting that overall there was little change from the baseline to the second NLA.

4.6 Major Findings of the Qualitative Study

4.6.1 Overview

The qualitative study was set to complement the quantitative study in determining the extent to which learning takes place in primary schools, using interviews and focus group discussions. It also explored the main explanatory conditions of student learning using basically similar questions as in the quantitative study.

The qualitative study was carried out in all regions where quantitative data had been collected. The source of information included school directors, teachers, Grade 8 students and parents. Each of these respondents was asked relatively similar questions so that the acquired information could be cross-checked using the triangulation of sources of data. Large numbers of languages were used for interviews and focus group discussions. Findings from Grade 8 students' qualitative study were included in this report because their views were considered valid as they could provide cumulative information acquired in the entire primary education system. The analysis of the collected data had been carried out at national and regional levels. Student learning was gauged by asking respondents what students learn in schools and if the learning was relevant to their needs. Explanatory conditions were conceptualized around such categories as school supplies, teacher behaviors, curricular and system level issues, school administration, parental behavior and student personal characteristics. In the following section, the national and regional level of analyses and interpretation of data are presented.

4.6.2 Characteristics of Student Learning

Teachers believe that primary school children gain basic knowledge, skills and attitudes. However, in many regions teachers expressed dissatisfaction with the extent to which students learn. As it can be seen from the summary given in Table 132, teachers used such metaphors as "schooling is better than remaining at home" and "they learn how to read and write" to show the minimal learning taking place in schools. Repeatedly, teachers expressed "the lack of student interest or vision" in learning to show how little is going on in academic achievement. In few cases, it has been expressed that students gain useful knowledge, particularly in environmental understanding and personal hygiene.

In agreement with teachers, parents perceive that students' learning did not make a significant change. They underline that their children come from school without sufficient and appropriate knowledge. There is still an agreement with teachers in many cases that "students lack interest and motivation to learn". Some even do not acknowledge that learning takes place while others say that "students lack normal development". Marginal or minimal knowledge acquired is also expressed as "those who go to school are better than those who remain at home". In some circumstances, there are feelings showing that the "time spent on learning and learning gains do not commensurate". In a very particular case, parents acknowledged that students learn useful knowledge and they "developed communication skills". The emphasis on the development of communication skills is interesting, because this particular case is in one of those regions where the medium of instruction is the mother tongue. Parents expressed concerns about "pooling factors" (video, chewing chat, etc) that contribute to low level learning in schools.

In most cases, students believe that they have satisfaction with their learning. They emphasized that they get sufficient knowledge and skills in environmental issues, hygiene, civics and social

skills. Few students expressed that there is “lack of interest on the part of few students in learning” due to involvement in undesirable environment. A comparison of the results of qualitative study with quantitative study indicated that the findings are complementary to each other. A composite scores analysis of test results for different subjects and regions at the national level was 48.8% for Grade 4 and 39.74 % for Grade 8. What these findings say is that learning indeed takes place in the Ethiopian Grades 4 and 8 Primary Education, but it is not satisfactory. This is so because the composite scores of students are less than the expected minimum average for the nation by the Ethiopian Education and Training policy. In the table below, one of the consistent positive evaluations was expressed in Harari. If one looks into the Harari quantitative achievement results, it becomes vivid that the average achievement score is the third from the highest ones. This implies that the findings are consistent with each other although the methods used for data collection and analyses are different.

Referring to interests and satisfaction in learning, parents and teachers reflected the prevalence of lack of interest in learning among students, although the quantitative findings and the qualitative interviews of students refute this observation. Perhaps, parental and teachers’ misjudgment seems to occur in this particular case. Table 132 on the next page summarizes the findings of this part of the study.

Table 132 Student learning as viewed by teachers, students and parents by region.

Regions	Respondent views on what students learn and its relevance		
	Teachers	Students	Parents
Oromia	Basic valuable skills and attitudes. Some students have no interest to learn. Schooling is better than non-schooling	Basic knowledge about environment Have interest to learn Schooling is better than non-schooling	Basic knowledge about environment Learning is unsatisfactory and weak. Schooling is better than non-schooling
Amhara	Lack of satisfaction and confidence in students to learn Only the ability to read and do some writing	Acquire important knowledge.	Failure and no adequate learning Better than those who remain at home
Tigray	Students do not show the required competence. Lack of vision	Lack of motivation to learn	Lack of motivation to learn Differentiate between good and bad, Better than those who remain at home.
SNNPR	No satisfaction with student learning	Satisfied with their learning Basic knowledge about the environment, and hygiene Understanding of rights and responsibilities, social skills	Do not know that their children learn
Addis Ababa	Low interest to learn Good moral make-up, but spoiled by environment	Low interest to learn	Sufficient learning does not take place Student lack normal development
Dire Dawa	Interest to learn is high Insufficient/inadequate knowledge is gained by students	Interest to learn is high	Children acquire inadequate/insufficient knowledge
Somali	Student understanding of their environment is better. Keep personal hygiene	Learned reading and writing	Better than those who remain at home
Afar	Basic learning takes place, but not satisfactory. Low or no interest to learn. Students have no clear visions.	Low interest to learn	Low interest to learn
Harari	Grasped useful knowledge	Grasped useful knowledge Believe in their changed social attitudes	Grasped useful knowledge Developed communication skills
Ben-Gumuz	Basic knowledge, skills and attitudes Students do not have interest to learn No satisfaction with what they learn	Basic knowledge, skills and attitudes	Basic knowledge, skills and attitudes Students do not have interest to learn No satisfaction with what they learn Time spent and learning gains do not commensurate.

4.6.3. Conditions Affecting Student Learning

The analyses of explanatory conditions as expressed by respondents were conceptualized into issues at school and outside school levels. School level issues consistently revolved around such factors as school facilities and supplies, teacher behaviors, availability and competence. Issues related to the curriculum, system characteristics, parents and students were considered as outside school factors that influence student performance. The analysis of these discussions are presented in the following sections both using narrations and tables.

1. Material Supplies and School Facilities

Table 133 below summarizes that teachers, students and parents have the opinion that lack of school supplies and facilities impede student learning. In almost all regions, shortage of textbooks, lack of reading rooms, large class size, lack of laboratories, and insufficient utilization of the available support systems (e.g. tutorials, counseling, competitions) were some of the main issues raised in the discussions.

In addition to shortages of supplies and facilities, the main concern of teachers was the poor utilization of the available support school systems including tutorials and student counseling. Reasons for this were related to student involvement in business and other activities for self sufficiency. This in turn led to the shortage of time to participate in extra-school activities required for effective learning.

Table 133 further shows that students and parents in all regions shared almost all of the concerns of the teachers. If one goes back to the quantitative study, it is obvious that the supply of curriculum materials has a great influence in student achievement. The regression analysis indicated that the availability and conditions of school structure and material supplies explain about 20.5% and 7% in Grade 8 and Grade 4 respectively of the variation in student achievement. The correlation analysis also showed that some material supplies like the availability of the syllabi and teacher's guides have significant positive relations with student achievement. These findings lead to the fact that the more schools are supplied with the necessary facilities and materials the better will be student achievement.

The concern with the shortage of textbooks is a nationwide phenomenon. Given the dependence of the school system on textbooks the issue has to be taken seriously. What the quantitative study tells in this respect is even more alarming. In Grade 4, though not statistically significant, the correlation analysis indicates that the pupil-text book ratio negatively correlated with student achievement. This requires further investigation on the availability, use and quality of the textbooks.

Table 133 School supplies and school facilities

Regions	Respondents' views on the influence of school supplies on student learning		
	Teachers	Students	Parents
Oromia	Shortage of text books Lack of library and reading room Lack of laboratories Large number of students in the classroom	Shortage of text books Lack of library and reading room Lack of laboratories	Large number of students in the classroom
Amhara	Inadequate utilization by students of available services (e.g. tutorials) Shortage of textbooks, blackboards Lack of laboratories Shortage of classrooms.	Large number of students in the classroom. Wastage of school tutorial services due to lack of time.	Inadequate utilization by students of available services (e.g. tutorials) Shortage of textbooks, blackboards Lack of laboratories Shortage of classrooms
Tigray	Lack of textbooks Shortage of laboratories and libraries	Lack of textbooks Shortage of laboratories and libraries	Lack of textbooks Shortage of laboratories and libraries
SNNPR	Minimal use by students of materials and tutorials provided by teachers, Lack of textbooks, laboratories and reading rooms, SPCs Shortage of classrooms	Lack of textbooks Shortage of seating places in the classroom	Lack of adequate services like adequate classrooms, text books
Addis Ababa	Shortage of laboratories and libraries	Shortage of laboratories and libraries	Shortage of classrooms Shortage of laboratories and libraries
Dire Dawa	Shortage of textbooks Lack of library, reading room, laboratory	Shortage of textbooks Lack of library, reading room, laboratory	Shortage of textbooks Lack of library, reading room, laboratory
Somali	Shortage of basic learning materials from parents Inadequate use of tutorial services for students are engaged in business Shortage of libraries and laboratories	Shortage of basic learning materials from parents Inadequate use of tutorial services for students are engaged in business	Shortage of basic learning materials from parents Inadequate use of tutorial services for students are engaged in business Shortage of libraries and laboratories
Afar	Shortage of textbooks and lack of teaching materials	Shortage of laboratories and libraries	Shortage of laboratories and libraries
Harari	Lack of reading rooms Malfunctioning of available facilities Lack of laboratories Instructional services were not properly used for students spend time doing business	Lack of reading rooms and malfunctioning of those that are available Lack of laboratories	Available school services are not properly used by students
Ben- Gumuz	Shortage of textbooks Unsatisfactory use of tutorial and counselling services	Lack of textbooks for arts and music education	Lack of teaching materials including textbooks

2. Teacher Behavior, Availability and Competence

Teachers, parents and students showed the influence of the teacher in learning achievement in many ways. Teachers in almost all regions feel that teachers lack the required qualification and competence to deal with the changed curriculum that they are supposed to teach. Except in Amhara, Somali and Harari regions where this issue was not directly reflected, teachers in all the other regions pointed out that there is a gap between their current professional capability and the demands of the curriculum. Late assignment of teachers in some regions has been identified to cause a problem for student learning.

Table 134 Teacher behavior, availability and competence

Regions	Respondents' views on the influence of teacher behaviour, availability and competence on student learning		
	Teachers	Students	Parents
Oromia	Shortage of qualified teachers Lack of teachers' competence to teach subjects Teachers give tutorial services, but student use is inadequate	Teachers lack adequate preparation to teach in the classroom	Failure to cover yearly portions
Amhara	Teacher support exists, but used inadequately by students Loose relationship between teachers and parents	Teachers do not cover all portions in the syllabi	Lack of qualified teachers Loose relationships between the schools and community Insufficient imparting of knowledge
Tigray	Shortage of qualified teachers Late assignment of teachers in schools	Teachers do not care to help Teachers do not give feedback for their learning	Shortage of qualified teachers Late assignment of teachers in schools
SNNPR	Teacher support is available, but not used adequately. Lack of qualified teachers Assignment of incompetent teachers	Failure to cover the syllabi Inadequate use of teacher support	Instruction is impeded by students participation in business
Addis Ababa	Teachers do not cover large number of subjects and portions Teachers lack competence to teach most subjects	Teachers are unable to cover subjects and portions	Teachers do not cover large number of subjects and portions Teachers lack competence to teach most subjects
Dire Dawa	Shortage of qualified teachers	Shortage of qualified teachers, particularly in English	Insufficient imparting of knowledge in schools
Somali	Inadequate use of teachers support like tutorial	—	—
Afar	Lack of qualified teachers Teachers' dissatisfaction in their work	Teachers are absent frequently	Teachers are absent frequently
Harari	Insufficient use of tutorials and make up classes	Participation in business does not allow to use teacher efforts	Self –help activities by students limits teachers' efforts
Ben-Gumuz	Tutorial services Counselling and competition among students Shortage of qualified teachers	Inadequate use of tutorial services Teachers' lack of competence or qualification	Inadequate teaching practices

Teachers also commonly showed that they are not capable of covering all the portions of the curriculum meant for the year. They attribute this to large volume of contents prescribed in the curricula. In some cases, job dissatisfaction of teachers has been reported to influence learning. On the positive side, teachers in many regions indicated that they organize student support services including tutorials, counseling and competitions, although it has been insignificantly utilized.

Students agree with teachers on many points. They recognize the lack of qualification and competence on the part of teachers. Students are aware of the fact that the contents of the curricula are too much to cover. At the same time, students acknowledge teachers' lack of preparation, absenteeism and lack of willingness among few to provide feedback in their learning as impediments to achievement. Students also acknowledge the efforts of teachers in the provision of support services such as tutorials, counseling and competitions. However, it has been underutilized due to student engagement in other activities. Apart from the above, parents and teachers mention that there is a loose relationship between the school and the community. The fact that students perceive lack of preparation on the part of teachers has to also be understood in terms of competence. If teachers are unable to cope with what they teach, it is very difficult to expect a satisfactory level of preparation.

A comparison of the findings of the quantitative study with the above findings ascertains that teachers' behavior and competence is a strong factor influencing student achievement. In the multiple regression analysis, it has been found out that teachers' behavior explains 17.1% (Grade 4) and 32.5 % (Grade 8) of the variations in student learning. In the correlation analysis, teacher training on the average has shown a strong significant relation with student achievement. For summary of teacher behavior that influences student learning, refer to Table 134 above.

In summary, the most important teacher qualities that were identified to influence student learning are lack of teachers' qualification and competence, late assignment of teachers to the work place, inability of teachers to cover portions given in the curriculum, absenteeism and lack of preparation for teaching.

3. Student Characteristics

Student behaviors that negatively influence academic achievement have been identified in almost all regions. From teachers' perspectives student absenteeism, less interest and lack of motivation for learning among few students due to engagement in unwanted and wasteful environment, lack of discipline, lack of study time, lack of background in kindergarten education, and engagement in business have been mentioned as the most important influences on student learning.

Student absenteeism has been associated with parental labor demands on children. Since students' achievement very much relates to the time spent on learning, absenteeism of students can be considered as a national problem demanding attention. Less interest in learning and lack of motivation of students have been related to the presence of undesirable environments around the schools as well as the consideration of employment perspectives. This may be in urban centers and appropriate measures can be taken.

Teachers complain in almost every part of the nation about lack of student discipline. One explanation for such feeling may be related to the new approaches to teaching-learning in which teachers require to adopt new attitudes towards student-centered approach. Given the passive nature of the instruction process in previous circumstances such reflection from teachers is only normal. Capacity building in this area seems vital.

Table 135 Student behaviors influencing academic achievement

Regions	Respondents views on the influence of student characteristics on student learning		
	Teachers	Students	Parents
Oromia	Less class attendance due to parental labour demands Undisciplined acts of students	Attraction towards TV, radio, movies, etc. Low level of parental support	Lack of discipline due to large number of students in the classrooms
Amhara	Some students have less interest to learn. Some waste time in unwanted engagements. Some students lack discipline. Students lack study time due to labour work.	Most students have low material support from home.	Some students have less interest to learn. Some students waste time in unwanted engagements.
Tigray	Most students do not attend KG and that creates problems for later learning. Students lack interest in learning. Students have confused assumptions.	Less time for study due to parental need for labour	Most students receive low material support from home.
SNNPR	Engaged in trade for helping themselves. Irregular classroom attendance	Engaged in trade for helping themselves.	Most students get low parental support. Do petty trade to help their schooling.
Addis Ababa	Less interest to learn and study Student engagement in wasteful environment	Less interest to learn and study	Students get low parental support and follow-up.
Dire Dawa	Students have interest to learn Less classroom attendance because of business	Less classroom attendance because of business	Students have interest to learn
Somali	Lack of study time due to engagement in trade	Lack of study time due to engagement in trade	Lack of study-time due to engagement in trade
Afar	Less interest to learn Engagement in chewing chat Lack of discipline from students	Lack of study time due to labour demands at home	Low level of parental support
Harari	Students are engaged in trade to help themselves. Students are discouraged by jobless school leavers.	Students are engaged in trade to help themselves. Students are discouraged by jobless school leavers.	Students are engaged in trade to help themselves. Students are discouraged by jobless school leavers.
Ben-Gumuz	Students have less interest to learn Lack of discipline among students	Lack of confidence in education	Students have less interest to learn Arrogance of school children on the rise

From teachers explanations, it is also understood that students lack competence for primary schooling due to the fact that the curriculum requires attending pre-primary education. It is equally and significantly mentioned by teachers that students lack study time due to their engagement in business and other activities. The findings show that student achievement is not only conditioned by school factors, but also by matters outside it as well. If students do business to help themselves, it is obvious that their living standards need to be improved to enable them concentrate on their studies. Since this requires a long-term strategy, however, schools may need to consider these situations of learners by arranging flexible programs to minimize lost learning.

Students and parents agree with teachers concerning student behaviors influencing their academic performance. A different expression from the students shows that there is lack of confidence on

the part of students to learn. This can be explained in different ways, but as the next section shows, the difficulty of the curriculum also contributes to this state of affairs.

Like the qualitative data, the quantitative results summarized in the previous section indicated that most of the variations in student academic achievement in Ethiopia are explained by student behavior. In the correlation analysis, significant relations have been observed between student behavior and student achievement more than any other factor. In the regression analysis it has been demonstrated that student behavior explains 18.9% (Grade 4) and 38.6% (Grade 8) of the variation observed in the current study. This is by far the strongest factor explaining student learning in the country.

4. School curricula

Issues related to school curricula and the school systems have strongly surfaced during the interviews and focus group discussions. As Table 136 below shows, teachers, students and parents were unanimous in pointing out some of the features of the curriculum and the system. These include the difficulty of the curriculum both to the students and teachers, difficulty to cover portions due to the mismatch between contents and time the impracticality of self-contained classes, and the fact that continuous assessment is wrongly understood as “free promotion”. Teachers indicate that the curriculum is difficult both for themselves and the students. This has already been indicated in the previous section where a belief of the teachers indicated that they lack the necessary qualifications and competence in relation to the new curricula. It is alarming that the curriculum is seen as a mismatch between time and content. Even more so is the perceived difficulty of the subjects for students. Unless students understand the subject they are supposed to learn, it threatens the whole effort of schooling.

Table 136 The influence of the curriculum on students achievement.

Regions	Respondents' views on the influence of the curricula on student learning		
	Teachers	Students	Parents
Oromia	Curriculum is difficult both to the students and teachers Difficult to cover portions due to the mismatch between contents and time Self-contained classes are impractical, discourage hard work for promotion.	Curriculum is relevant. Learning in the mother tongue is relevant. Self-contained classes are impractical for a single teacher. Continuous assessment is a useful practice.	Curriculum does not prepare children for work. Curriculum misses some social values of society. Moral education is lacking. Learning in the mother tongue is relevant.
Amhara	The curriculum is difficult particularly for rural children. Curriculum demands unavailable facilities and conditions. Curriculum lacks cohesion. Teachers can not implement self-contained classes Problems of translation and interpretation of books.	Curriculum demands unavailable facilities and conditions. Self-contained classes are impractical. English at higher levels may be difficult.	The curriculum is difficult particularly for rural children. Self-contained classes are difficult for teachers and students.
Tigray	Teachers were not involved in policy formulation. Self-contained classes are not supported by appropriate methods and materials.	The curriculum is difficult. Portions are not covered.	Self contained classes are impractical.
SNNPR	Curriculum is relevant, but difficult. Self-contained classes to make learning difficult, and discourage hard work.	Curriculum is relevant, but difficult. Self-contained classes are boring.	Curriculum is relevant, but difficult. Self contained classes make learning difficult. Textbooks need better language and preparation.
Addis Ababa	Curriculum is difficult to students. Self contained classes are inappropriate, and do not encourage quality learning.	Curriculum is difficult for teachers and students. Textbooks are full of errors and there is problem of repetition.	Curriculum is irrelevant. Self contained classes are inappropriate. Textbooks are big and full of errors.
Dire Dawa	Subjects are difficult. Self-contained classes are impractical and discourage hard work.	Subjects are difficult.	Subjects are difficult. Self contained classes cause insufficient learning
Somali	The curriculum is difficult.	Period allotment is inappropriate.	The curriculum is difficult.
Afar	Regional promotion policy at lower Grades is discouraging.	Subjects are difficult.	Self contained classes are not useful
Harari	Learning in the mother tongue is good. Subjects are difficult. Self-contained classes are better than non-self contained. Continuous assessment is good.	Learning in the mother tongue is good. Subjects are difficult. Curriculum is relevant. Continuous assessment is good.	Learning in the mother tongue is good. Subjects are difficult. Continuous assessment is good.
Ben-Gumuz	Subjects are difficult. Curriculum is irrelevant to life conditions. Self contained classes are difficult, discourages hard work.	Subjects are difficult. Curriculum helps to solve some problems.	Subjects are difficult. Curriculum does not prepare for work.

Self-contained classes were considered impractical for the reason that teachers are not competent to teach all subjects. It is also considered boring both for teachers and students. Since the policy to use self-contained classes is meant to improve the progress of students in their learning, it is important that teachers develop the competence required to work in such environments and remove the doubts as to whether such an approach is relevant or not.

Students and parents reflected similar opinions concerning the curriculum. In this respect, parental special concerns require special attention. In addition to what has been commonly pointed out in the above analysis, they say that the curriculum is irrelevant since it does not prepare children for the world of work. Given the two primary cycles which also have terminal points in their structure, this concern is valid. Parents also say that some social values are not embedded in the curricula. There is a suggestion that moral education be included in the curricula. Parents appreciate that learning takes place in the mother tongue. Some complained, however, that the current curriculum is particularly difficult for rural children. This observation has to be understood in relation to the previous finding which indicated the negative influence of the absence of kindergarten education for children. Since most rural children have no access to these facilities, there is a possibility that the curricula become difficult for learning.

5. Parental Support

All respondents perceive that parental support of students' learning is very low. Even though parents say that they provide learning materials, teachers pointed out that once parents send their children to school, they feel they are relieved and never go back to school to follow the progress of their children. In almost all regions, except Addis Ababa, respondents confirm that students are self-supporting, and are engaged either in petty business or home labor. They feel that these resulted in students' truancy and low achievement. Parents say that they do not let their school children attend tutorial classes when it is out of school time.

The fact that parents provide less academic support is not surprising. This is because parents are neither as educated as their children nor do they understand how schools operate. Follow up of children and the interest to discuss with teachers help find out what goes on between their child and the school or teachers. On the other hand, parents do participate in formal committees, raising funds, and classroom construction or school expansion. This is by itself a positive trend in school-community relations. Table 137 below is a summary of the findings regarding parental support to school children nation wide.

Table 137 The influence of parental support on school achievement in Ethiopia.

Regions	Respondents' views on the influence of parental support on student learning		
	Teachers	Students	Parents
Oromia	Inadequacy of academic support and follow up.	Demand for children's labour Support limited to basic learning materials	Low perception of the importance of education Poverty of parents Participate in construction of rooms and teacher- homes
Amhara	Participation in schools' affairs especially in fund raising Academic support is minimal.	No time for studying due to labour demands at home	No support for tutorial time
Tigray	Participation in school affairs is minimal.	Parents have no participation	Rare participation in student affairs
SNNPR	Low parental academic support Participation in formal committees	Low parental academic support.	Lack of awareness on the importance of education Participation in school expansion
Addis Ababa	Parents make no follow-up and do not come to school for discussing children's affairs.	————	Schools do not invite parents for discussing children's affairs
Dire Dawa	Fund raising whenever requested	Less academic support by parents	Employing teachers Building classes
Somali	Parental participation and support is insignificant.	Parental participation and support is insignificant.	Parental participation and support is insignificant
Afar	Parents' academic support is minimal. Demand for labour	Parents' academic support is minimal. Demand for labour	Parents' academic support is minimal Demand for labour Participation in school affairs is insignificant
Harari	Low parental academic support	Parental academic support is low. Teachers employed at home?	Fund raising and construction of rooms and teachers' residences
Ben-Gumuz	Minimal parental academic support	Participate in school committees	Participate in school expansion Construct teacher residences

5. School administration

In most of the discussions, the influence of school administration on student achievement has been implied to have direct or indirect consequences. One of the most important findings is the fact that school administrations have been able to initiate student support services that were insignificantly used. Reasons for this have been related to students' lack of time to make use of those services and the lack of parental will to let children benefit from those support initiatives like tutorials and guidance and counseling. On the other hand, there are reports that schools assign less competent teachers to teach in lower primary Grades. In some regions there are indications that schools operate under severe shortage of budgetary resources.

Although schools were unable to initiate significant parental academic support for children, it is obvious that their initiatives in terms of generating community support for school expansion, classroom construction and construction of residential houses for teachers are common in almost all regions. However, it is clear that the construction of classrooms and student enrolment do not match since reports from all regions point to the problem of large classes.

Another interesting finding is the prevalence of student and teacher absenteeism in schools. In the quantitative study, it has been found out that in schools where the director supervises student and teacher attendance, student achievement has been higher than others. However, the failure to deal with disciplinary issues has been found out to negatively affect student learning. In fact, it was one of the responsibilities of the school administration to maintain discipline in schools. It was also indicated that the lack of school facilities and supplies are grounded in school operations all over the nation. The school administration has been unable to tap community resources to alleviate this problem throughout the nation.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The main purposes of the Ethiopian Second National Learning Assessment (for Grade 8) was to measure learning attainments of Grade 8 students and identify the factors that determine those attainments. It was also aimed at providing comparative information on school improvement from the Ethiopian National Baseline Learning Assessment conducted in 1999/2000. In order to obtain the required information for the study, both quantitative and qualitative research approaches were used. All Grade 8 students in the country were targeted for the purpose of providing national and regional estimates of student achievement results. A total of 7, 982 randomly selected sample students from 272 schools in all regions except Gambella have been included. For the purpose of generating data on factors determining scholastic achievement, 751 teachers and 375 school principals were included. In the qualitative study, 321 students, 326 teachers and 246 parents from 44 schools provided information. The instruments of data collection included achievement tests, attitude surveys, school checklist forms, questionnaires for teachers and school directors, and focus group discussion guides. Findings from the study show the following main results.

1. ***Overall Achievement or national mean score was by far less than 50% correct achievement level expected by the Education and Training Policy of Ethiopia.***

The national composite mean score (the average of what the students scored in the five subjects) was 39.74%, which is well below the 50% correct achievement level and the score obtained in the Baseline study. The average scores the sample students scored in the entire subjects lagged behind the minimum 50% correct achievement level required by the Ethiopian Education and Training Policy. Their achievement in physics was particularly low.

Table 138 below shows the percentile scores of the achievement tests at five key markers. These give clues on how high and low achievers were performing in each subject. If we look at the highest achievers, they (90th percentile or 10% of the candidates) scored better in mathematics (65%) than in any other subject. The same group obtained equal score (60%) in biology, chemistry and English. Physics still remained the most difficult even to the highest achievers (52.50%). On the other hand if we look at the lowest achievers (10th percentile or 10% of the candidates), they scored below chance level in almost all subjects. The median score or the 50th percentile (the value above and below which half the cases fall) in each subject was less than the mean score.

Table 138 Grade 8 students' achievement scores at five key markers

Percentile Rank	English	Mathematics	Biology	Chemistry	Physics	Composite
10 th	25.00	22.50	25.00	22.50	20.00	27.50
25 th	30.00	30.00	32.50	30.00	27.50	31.50
50 th	37.50	37.50	40.00	37.50	35.00	37.50
75 th	47.50	50.00	50.00	47.50	42.50	45.50
90 th	60.00	65.00	60.00	60.00	52.50	55.00

2. Male students performed better than female students in the composite score in all regions and nationally.

There were 5,262 males and 2,636 females in the national samples. On aggregate, males scored an average of 41.56 percent whereas females had an average of 36.56 percent. This shows that there is a gender gap in student performance in the country.

3. The national composite achievement results by location indicate that rural students gained more than urban students.

Overall, urban students scored an aggregate of 38.71 mean percent while rural students had an average of 40.76 percent in Grade 8 Second National Learning Assessment. Table 8 previously showed that the mean differences between urban and rural students in all subjects except English were statistically significant in favor of the students from rural schools. The mean difference in biology (4.28) was the highest.

4. Percent score of all subjects and the composite score of all regions show that there was disparity in student achievement among regions.

The table below shows that the overall achievement of sample students in Oromia, Tigray, Amhara and Harari regions were better than the performance of samples in other regions. The mean difference between the students in Oromia, Tigray and Amhara were not statistically significant. Students of Benishangul-Gumuz and Afar were least achievers.

Table 139 Percent score of all subjects and the composite score of all regions

REGION	Biology	Chemistry	English	Mathematics	Physics	Composite
TIGRAY	49.08	42.98	39.06	44.40	39.48	43.01
AFAR	31.96	33.84	39.64	36.62	30.65	34.56
AMHARA	48.33	44.59	39.07	41.39	41.78	42.99
OROMIA	48.43	43.59	41.61	42.84	39.33	43.22
SOMALI	36.26	37.55	42.40	42.63	34.53	38.63
BEN-GUMUZ	35.15	34.52	36.96	33.32	28.42	33.65
SNNPR	36.80	37.94	41.04	39.73	31.33	37.37
HARARI	39.38	42.45	46.82	43.37	35.07	41.46
ADDIS ABABA	33.67	35.93	42.30	40.53	31.13	36.65
DIRE DAWA	37.68	38.15	42.36	40.98	33.47	38.58

It is also clear from the above table that disparity also existed among and within regions by subjects. The highest scoring region of Oromia was good for biology at 48 percent, but its physics result was only 39 percent.

5. ***The summary of descriptive statistics for the achievement tests indicates that in none of the subjects tested the scores of students amounted to 50%.***

Table 140 shows a summary of the descriptive statistics for the five subjects and their composite mean score. All the scores were below the expected minimum mean score (50%) set in the Education and Training Policy. The highest mean score was for biology (41.34%) and the lowest was for physics (35.32%). The composite score of 39.74 was also very low.

Table 140 Summary of the descriptive statistics for the achievement tests

Subjects	N	Mean	SD
Biology	7982	41.34	13.42
Chemistry	7995	40.10	14.74
English	8026	41.07	14.68
Mathematics	8017	40.93	16.15
Physics	8024	35.32	12.14
Composite	7898	39.74	11.36

6. ***The national mean score for biology test was 41.34%, which is not only well below the 50% requirement, but also lower than the results of the Baseline study.***

The national mean score for the test was 41.34%, which is well below the 50% achievement level (N=7,982), and the national mean score obtained by the students who sat for the Baseline national biology assessment test (47.16%). Other findings also include:

- Students in Tigray, Oromia and Amhara respectively obtained better mean score than students in the other regions. On the other hand, students in Afar and Addis Ababa were found to be the least achievers. The regions in the group of high achievers were also better achievers in the Baseline study of the same test, except that the position of Amhara has shifted from the best performer to least performer in the group.
- Students taught in Tigrigna, Afan Oromo and Amharic scored better mean than those students taught in other languages. Among students who are taught in the instructional language of the region, sample students of the Somali Regional State performed the least.
- Male students performed better in all the regions compared to females. The mean difference between the two sexes was the highest among students from Harari region (7.13%) followed by Afar region (6.52%) and Dire Dawa (6.41%). The least difference was between students of Somali region (1.71%). A similar pattern was observed during the Baseline study.
- Rural students performed better than urban students in biology test in Tigray, Afar and Oromia. In the rest of the regions, students in urban areas obtained better mean scores than their rural counter parts.

7. *The national mean score for the chemistry test was 40.10%, which was not only lower than the 50% requirement, but also lower than the results of the Baseline study.*

The national mean score for chemistry was 40.10%, and this was lower than the 50% achievement level (N=7,995) required by the Educational and Training Policy of the country. It is also slightly lower than the national mean score of the Baseline study (40.27%). Other findings for this subject also include the following.

- Group comparison of chemistry scores by region shows that there was great disparity among regions. Students from Amhara, Oromia, Tigray and Harari regions made up the group of high achievers. Afar, Benishangul-Gumuz and Addis Ababa students were included in the least performing group. There was a wide gap between the mean score of the students of the Amhara (44.59%) and those of the Afar (33.83%) regions. Interestingly, the regions in the high achieving group are identical in the two national assessments with slight reshuffling of their order, i.e. the order in the Baseline was Tigray, Amhara, Oromia and Harari regions.
- A Summary of the descriptive statistics for Grade 8 chemistry across language of instruction in other subjects indicated that there was significant difference in chemistry scores across instructional languages: Students taught in Amharic, Afan Oromo and Tigrigna obtained better results in chemistry than students taught in other languages. Students instructed in Somali, however, obtained nearly equal mean score with those taught in English.
- Boys have achieved greater mean score than girls in all regions in chemistry. The mean difference between boys and girls in chemistry was bigger than the mean difference in the biology achievement test, the biggest being among students of Dire Dawa (8.98%) and the least among students of Benishangul-Gumuz (3.02%). Males were also better achievers in all regions in the Baseline study.
- An independent t-test for equality of means for chemistry indicates that rural schools scored better than urban schools. Rural school students in Somali, Benishangul-Gumuz, SNNPR and Dire Dawa obtained greater mean than their urban counterparts. There is no significant mean difference between the urban and rural students of other regions in chemistry.

8. *The national mean score for English test was 41.07 %. Although this was lower than the 50% minimum requirement, it is a slightly better result than the Baseline score.*

The national mean score was 41.07%, which despite being lower than the 50% achievement level, was found to be a bit better than the mean score registered in the Baseline study for the same subject, which was 38.74%.

- Group comparison of English scores by region shows that there was a great disparity among regions. If the regions were grouped according to the mean score obtained by their students, three distinct groups would be formed. Harari region alone would make up the highest achieving group. The least performing group would include Benishangul-Gumuz followed by Tigray, Amhara and Afar regions. It could be seen that the consistently better achieving regions like Tigray and Amhara were here related to the low performing group. The performance of Oromia region was not much better than the above two. Addis Ababa and Dire Dawa, which were in the high achieving group in the Baseline national assessment, have now joined the middle group.
- There was a significant difference in English scores across languages of instruction in other subjects. Students instructed in Somali obtained the highest mean English score,

followed by those who were instructed in Afar Oromo and English. The least mean scores were obtained by students instructed in Tigrigna and Amharic.

- Males scored better than females in Grade 8 English tests in all regions. In the Baseline study, the girls of Harari region performed better in the subject than boys.
- There was no significant difference in English scores by location: The mean difference between students of urban and rural areas in English was more pronounced in Tigray region (urban = 50.13%, rural = 36.81%) than in any of the other regions. Elsewhere in the country, urban students scored greater mean than rural students in Afar, Oromia and Benishangul–Gumuz. Though differences were observed in mean scores between urban and rural students in other regions, the difference were not statistically significant. The mean difference pattern of the Baseline National Assessment showed that rural students did better in Tigray, Afar, Amhara and Benishangul-Gumuz regions, while urban students did better in Oromia and SNNPR.

9. *Achievement on mathematics test was far below the minimum national standard, though the current results have slightly improved over the Baseline results.*

The national mean score for mathematics was 40.93%, which is below the 50% correct achievement level, but slightly better than the national mean score registered during the Baseline assessment (38.23%).

- Mathematics results vary among students in the regions: The sample students from Tigray achieved relatively higher mean score than the students in the rest of the regions. On the other hand, sample students in Benishangul-Gumuz and Afar scored the lowest two mean scores. Students in the other regions obtained mean scores that lie between these two extremes. In the Baseline study students of Tigray and Amhara were the best achievers, while those of Benishangul-Gumuz, Afar, SNNPR, Dire Dawa and Addis Ababa had been relatively least achievers.
- Mathematics results of students varied following languages of instruction: Students instructed in Tigrigna language scored the highest mean followed by students instructed in Afan Oromo and Somali. Those who were taught in English obtained the least mean score. Those who were instructed in Amharic scored a mean that is between the mean obtained by students instructed in Somali and English.
- Male students scored better than female students in Grade 8 mathematics: Female students of Somali region performed better than their male counterparts. Male students obtained relatively greater mathematics mean score in all the other regions. The same trend had been observed in mathematics achievement of the Baseline study.
- Rural students scored more than urban students in Grade 8 mathematics: Urban sample students scored better mathematic mean than their rural counterparts only in Afar. Mean differences in other regions were either statistically not significant or favored rural students.

10. *Achievement on Physics test was extremely low in comparison to minimum national expectations with wide variations of results among regions.*

The national mean score for physics was 35.32%, which was found to be well below the 50% correct achievement level required by the ETP.

- Physics results in Grade 8 varied among regions: sample students from the Amhara region obtained a better physics mean score than the rest of the regions followed by students from Tigray, and Oromia. Those from Benishangul-Gumuz, Afar and Addis Ababa scored the lowest consecutive mean.
- Attainments in physics also varied among instructional languages: Students taught in Amharic scored better than students taught in other languages. Those who were taught in English obtained the least mean score while those taught in other language obtained mean scores between these two extremes.
- Male students performed better than female students in Grade 8 physics: In all regions the mean differences were found to be statistically significant.
- Rural students performed better in Grade 8 physics than urban students: Sample students in urban areas performed better in Tigray, Benishangul-Gumuz, and Dire Dawa than their rural counterparts. In Afar, Amhara and Oromia, students from the rural schools performed better than those from urban schools. In the rest of the regions, there was no marked difference between performance of the urban and rural students.

11. *Students' background analysis shows that there was a relationship between academic scores and student background characteristics.*

Students whose home language and school language is the same scored greater mean than those whose languages are not. Those who sometimes help with household activities were also better off in their achievements than those who always work after school. Students who do not always spend their time reading books other than textbooks were better achievers than those who always read other books. Listening to the radio (other than educational radio) throughout the week led to lower achievement than not listening at all. Students who said they never watched television programs scored better than others involved with TV watching. Eating meals twice led to better achievement while traveling longer hours to reach school resulted in relatively poorer mean score. Participation in the production of learning materials in the school led to higher achievement. Interest in learning a subject as well as amount of homework given was also associated with higher achievement. Those students who claimed high level of understanding a lesson in the classroom also showed high achievement.

12. *The analysis of Grade 8 students' general attitudes indicates that the country's social development curriculum was making a difference in shaping students' attitudes towards health, environmental protection, civics and ethics, cultural issues and education values.*

In health care, the main issues were modes of transmission of diseases, family planning, mode of HIV/ AIDS transmission, environmental hygiene, disease prevention and population control. Students demonstrated positive attitudes towards these issues. In environmental protection, issues related to protection of historical heritages, beautification of the school, reforestation, protection of drought, and planting of flowers were raised. Students were unanimously positive to all of these concerns. In ethics, respect of human rights, observation for the rules of law, fighting corruption, knowledge of past history, fight against poverty, obligation to pay taxes, honesty, the habit of saving, need to use

information, culture of criticism, and proper use of time were all included. In culture, the need to fight against harmful practices was emphasized while in education, participation in extra-curricular activities, student participation in teacher evaluation, the advantages of schooling were the main issues. In all these areas, the majority of students demonstrated positive inclinations.

13. ***Correlation analysis for verifying the variables that influence (co-vary with) student achievement shows that student achievement was related to material supplies and school structure, teacher variables, school management, student background, instructional practices and language of instruction in Grade 8.***

School supplies show positive relations with academic achievement except for the availability of TV at home which showed negative relations. Teacher variables were also positively related to school achievement except for teacher qualifications, distance to school which showed negative relations. Among school management factors, director's qualifications, director's teaching experience, director's distance to home were negatively related to student achievement whereas all others were positively related. Among the negatively influencing factors in students background variables were chore time, family size, father and mother education, reading non-textbooks, time spent listening to the radio and watching TV, daily meals, distance to school, and preparation of instructional materials. Instructional practices positively influence achievement **except for percentage of contents of curriculum taught.**

14. ***School level multiple regression results on the composite score show that student achievement was influenced by different factors in varying degrees when considered separately.***

The various factors accounted for the following percentages: Students background 38.6%, language of instruction 37.3%, teacher variable 32.5%, school supplies and structure 20.5%, instructional support 13.6%, and school management 11.1% of the variability in the students' achievement.

15. ***School level multiple regression results on the composite score contribution of each block to r-square in the final model show that student achievement was decisively influenced by different factors in varying degrees when considered jointly.***

- The decisive influences on student achievement were student background, teacher variables, school supplies and structure, language of instruction, school management, and instructional support in a descending degree of order.
- Within *student background factors*, the strongest positive influence came from alignment between home and school language, reduced distance between home and the school, and average interest in subjects. Student sense of ownership of school property had significant influence on the student but not as strong as the above factors. Reading non-text materials had the strongest negative influence on student learning.
- Among *teacher variables*, teachers perceptions of students learning attitudes, and periods taught per week were the strongest explanatory factors influencing learning. Teacher training on new teaching techniques, and total teacher experience in teaching were second degree strong explanations. Distance of the teacher from school had a negative significant impact on student learning.
- *School structure and curriculum materials* that mattered most were availability of different materials, time it takes to reach woreda education office and budgetary support from internal revenues.

- *Language of instruction* was an important factor, i.e., whether learning should be in English or a local language. It has been observed that learning through local languages has been advantageous even for the acquisition of skills in English by itself.
 - Among *school management* factors, the effect of the directors' social obligations on job had the strongest impact on student learning.
 - Among *instructional support practices*, the sum of student understanding of subjects, help at home and directors' perception of quality of instruction were the strongest predictors of performance.
16. ***A comparison between the two national learning assessments showed no progress, but rather a slight deterioration.***
17. ***The qualitative study showed that learning takes place in schools, but not at the expected standard. Conditions that influenced students' learning were identified as school supplies, student behavior, teacher behavior, availability, and competence, school curricula, parental support, and school administration.***

5.2 Recommendations

Based on the findings of this study, the following general recommendations are stated:

1. ***Student achievement has to be improved in Grade 8. The findings of the study show that*** student achievement was extremely low (i.e. 39.74%) in relation to the minimum national standard (i.e. 50%). Therefore, attention has to be paid to improve the situation.
2. ***Disparity in student achievement has to be improved by eliminating gaps between regions and gender.*** It is only the gap between the urban and rural schools that has been eliminated. The remaining gaps are still strongly prevalent. For instance, the mean difference between male and female students was 5.43% in favor of males at the national level. When regional differences are considered, Oromia had the highest composite score of 43.22% while Benishangul Gumuz had the lowest (33.65%). The range between these regions was 9.57%.
3. ***Student attitudes in socially relevant issues in general showed the educational system made a positive difference. However, further work and study has to be*** conducted in order to channel positive attitudes to more attainments in academic scores.
4. ***Teacher quality and working conditions need improvement. Teacher in-service training*** on new methods of teaching emerged as an important measure to improve student achievement. Moreover, retaining as many experienced teachers as possible in the education system, and enabling teachers to reside around schools in order to reduce distances between teachers' homes and schools are some of the crucial areas that need improvement. There is a lot to be desired from the regular teacher training as certification from these institutions did not show the desirable contribution to student learning. It is necessary that the relevance of teacher training improved in relation to the curriculum and the benefits of learners.
5. ***Attention has to be given to the improvement of school structure. The most important*** areas of school structure that contribute to the improvement of student achievement are encouraging schools to focus on income generation, supply of different materials, availing or organizing school libraries and improving the interaction between *woreda* Education Offices and schools using various means of communication.
6. ***The quality and supply of curriculum materials have to be improved in order to improve student achievement.*** Teachers, students and parents expressed similar views that textbooks are difficult to understand. Teachers and students also indicated that the contents of the textbooks were too much to be covered during one academic year. In addition to this, the quantitative analysis showed that student achievement decreased as the percentage of the content of subject covered increased. In the face of these findings, it would be required to review the difficulty level and volume of the textbooks, and the proportionality of contents to be provided in schools within the available time.
7. ***Instructional practices and instructional support have to be strengthened to improve student achievement.*** Schools need to have instructors dedicated to quality of instruction. Enabling students to understand their lessons and attracting their attention to learning must be their duties. It is also important for school principals to understand and follow-up the instructional process. Too much volume of the curricula showed negative relations with student achievement and this requires reconsideration.

8. ***Focus of school management on school affairs is required. The role of school management*** is an important factor for student achievement. Particularly, director's communication or sharing with teachers of school affairs and his/her capacity to generate income had positive contributions to student achievement. Director's participation in social obligations other than directing also had a positive contribution to learning. Although, such an involvement takes away the director from school activities, it will be important to further study which social involvements of the director will contribute to student achievement.
9. ***There is a need to shift to local languages from English in order to attain better achievements of students.*** Grade 8 results indicate that learning through local languages related very strongly with better achievements. Since there are only very few nationality languages used for classroom instruction in Ethiopia, a lot remains to be done to enable all students to learn in these nationality languages instead of English.
10. ***Schools must be encouraged to generate their internal incomes. Students who learn in schools that supplement the budget allocated to them by generating their own incomes were relatively better performers than those taught in schools that do not generate their own income.*** It was also observed that the existence of various instructional materials in a school had a positive impact on student achievement. It seems therefore, worthwhile to encourage schools to generate their own income, which could be used for availing at least some required instructional materials, or see to it that all schools are equipped with all the necessary instructional materials.
11. ***The alignment of home and school language has to be enhanced. The alignment of home and school language*** was found to have strong positive relationship with achievement of students at this level. This finding concurs with modern day pedagogical conclusions and with the Ethiopian Education and Training Policy. Therefore, efforts have to continue to introduce to schools as many student languages as possible to enhance student learning.
12. ***Special attention has to be given to the attractiveness of learning. Grade 8 students' interest towards their learning*** was found to be one of the factors that influenced achievement. Especially, the level of their interest in English, mathematics, physics, biology and chemistry showed good degree of association with both subject mean and composite mean achievements. Therefore, special attention needs to be given to further improve the quality and attractiveness of textbooks and other learning materials, and build teachers' capacity in teaching methods (such as student-centered approach) and subject matter and make school environment conducive for teaching and learning..
13. ***Progress needs to be achieved in student academic scores overtime. The comparative analyses between the findings of NLA1 and NLA2*** showed that change in achievement has not been registered as desired since the baseline assessment. Bringing changes in the quality of schooling at the primary education system, in general, and at the Grade 8, in particular, would demand interventions like revising the curricula, providing teachers and head teachers with trainings, improving school inputs and facilities, and creating girls-friendly atmosphere in schools. Therefore, all concerned bodies should give proper attention to this challenge. It is also important to make use of the results and recommendations of the National Learning Assessments.

14. ***Disparities in student attitudes towards social issues in some regions need to be corrected.*** Grade 8 students' attitude towards socially relevant issues was in general in the desired direction. However, students from some regions differed from others with regard to fighting against corruption, early marriage, gender inequality, staple dietary habits and family planning. To narrow the observed difference over time, interventions in terms of awareness creation and co-curricular activities need to be initiated, planned, implemented and strengthened in schools.
15. ***Availing school facilities particularly libraries enhance achievement.*** Findings of the qualitative and quantitative study showed that the absence of libraries in schools has negatively affected student achievement. The finding from the quantitative data that showed negative implication of lack of additional reading on learner's achievement could be alleviated by organizing libraries in schools from which students could get such reading materials directly related to the curriculum and save the students from reading materials unrelated to the subject they are taught. Responsible bodies should, therefore, enable schools to organize their own libraries.
16. ***Community participation and support is essential to the development of schools.*** The findings from the qualitative study showed that this participation was growing in certain areas. More has to be done to make parents participate in school management and monitoring. This can at the same time help to raise their awareness towards supporting the education of their children.
17. ***School distance from student's home needs improvement.*** Student achievement decreased as distance from home to school increased. The effect of distance on school children is well known in the education sector. Therefore, locating student homes and schools as near as possible is an important issue for better achievement.

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