ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

SCHOOL RELATED FACTORS AFFECTING STUDENTS' MAP READING SKILLS IN AMHARA REGION SECONDARY SCHOOLS: THE CASE OF WESTS GOJJAM, EAST GOJJAM, AWI AND BAHIR DAR ZONES

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Acronyms

The following acronyms are used as mean in the study:

ADA	Amhara Development Association
AREB	Amhara Regional Education Bureau
Esdp	Education Sector Development Program Finnish Government Supported Program
ESDP I	Education Sector Development Program I (1996/97-2001/02)
ESDP II	Education Sector Development Program II (2002/03-2004/05)
ICDR	Institute of Curriculum Development and Research
MOE	Ministry of Education
NRS	National Regional State
OECD	Organization for Economic Co-operation and Development.
REB	Regional Education Bureau
SPC	School Pedagogical Center
TEC	Teacher Education College
TESO	Teacher Education System Overhaul
TGE	Transitional Government of Ethiopia
TTI	Teacher Training Institute
WEO	Woreda Education Offices
ZED	Zone Education Department

Abstract

There have been growing concerns on improving the map reading skill performance of students since maps are central in the study of Geography in schools. The main purpose of this study is to investigate the school related factors that affect map reading performance of students and to forward the findings with possible recommendations to concerned stakeholders so that they would take measures in improving at various levels.

A descriptive survey method was employed. For this purpose, the dependent and independent variables were identified. The dependent variables was map reading performance of secondary school students and the independent variables are the school related factors particularly quality of the teaching force, availability of physical facilities; efficient use of instructional time; characteristics of pupils and teaching learning process. The target population was the school community found in 28 general secondary schools situated in the East Gojjam, East Gojjam, Bahir Dar and Awi Administrative Zones. A total of 894 samples that specifically consisted of 810 students, 50 geography teachers, 17 department heads and 17 principals were involved in the study. Questionnaires, interviews, classroom observations, performance tests and school and classroom inventory checklists were employed to collect the data. Descriptive statistics like percentile, mean, standard deviation, and univariate correlation were preferred in analyzing the data.

The major findings of the study include: students readiness for learning map reading which is explained through students academic background, attitude towards map reading and age were appropriate. However, for various reasons map reading performance of students is generally low (their score was below 50% in map reading performance) with significant variations across gender and City Categorization. The level of teachers' qualifications and teaching experience particularly those who do not have specialization in Geography were not adequate to teach map reading. The contents in the syllabus are difficult to understand due to problems related to presentation of map reading. The contents in the syllabus are difficult to understand due to problems related to presentation of map reading. School physical facilities (library services, instructional materials were inadequate. The total periods allotted for map reading teaching was not sufficient enough to cover the topic which in turn affected the frequency of teaching learning process. On top of this wastage of instructional time was observed. The teaching learning process related variables (quality of instructional planning, effectiveness of implementation and effectiveness of assessment) had differential effect on map reading performance of students.

The study has implication for educational policy and practice as well as further studies in the field.

CHAPTER ONE: INTRODUCTION

1.1. Background of the Problem

There is a general consensus that geography is a discipline that deals with place and space and the interaction of people with environment (Roselius, 1983:94). What is not yet clearly agreed upon among scholars in the discipline is the relative emphasis given to each element. At times place and space have been seen as complementary; at others, as competitive concepts, with different underlying methodologies. Nevertheless, in the 1960s, there was a paradigm shift from place to space (Bill, 1995:12; Graves, 1980).

In spite of the broad agreement on geography as spatial subjects distinct from other disciplines, scholars still don't agree unanimously and there is a challengeable claim on the issue. Some scholars confirmed that geography is not the only discipline that deals with space. Other disciplines from atomic physics to astronomy, geometry to architecture, emphasizes space in their study. Nevertheless, the obvious difference is the scale at which spatial patterns are studied (Bill, 1995:12).

From these remarks, we can easily see that geography as a spatial resolution level is relatively wider than other disciplines. It ranges from the local, through regional, national and continental scales, to the global. Furthermore, it focuses on the inter-relationships between particular physical and social environment. Therefore, the criterion of mappability is one that is central to geography (Bill, 1995; Roselius, 1983).

Maps are useful for eliciting information such as the distribution pattern of phenomena; discerning spatial relationships between various phenomena; making statistical and descriptive analysis; identifying geographical problems for study purpose and communicating the results of research in a more summarized form (Keates, 1982; Mendelsohn, 1996; Pritchard, 1986:1).

In order to obtain the aforementioned benefits from maps, one has to develop the skill of map reading and interpretation. Kraar and Ormeling, 1999 and Savage & Armstrong, 1987 specify the following comprehensive map reading skills and categories to determine the degree to which

a reader can interpret a map. These are: (1) ability to orient the map and to note direction; (2) ability to recognize the scale of a map and to compute distance; (3) ability to locate places on maps and globes by means of grid systems; (4) ability to express relative locations; (5) ability to read map symbols and (6) ability to compare maps and to make inferences.

Students are expected to develop these six categories of map reading and interpretation skills when they complete their secondary education (Boardman, 1986; Hanna, 1966).

Nevertheless, an experimental study conducted in developed countries to investigate the performance in map reading skills clearly indicates that the performance of students was unsatisfactory (Giannangelo & Frazee, 1977). Although the above findings reflect the experiences of developed countries, it could have an implication in other countries including the Amhara Region of Ethiopia.

Research conducted elsewhere in the world pointed out that the in-school and out of school related factors affect academic performance of students. Failure to recognize and realize these factors ultimately would result in poor academic performance of students. That is why one may say that if factors in any way related to the academic performances of pupils are not identified and given appropriate attention, then the performance of students is unlikely to be effective as desired and intended (John et al, 1993).

External school factors (pupils personal characteristics and pupils home background) are generally established as superior to school and teacher attributes in explaining students performance in developed countries (Good & Brophy, 1986).

However, in developing countries, the socio economic and cultural status of students is much less influential on student performance than in the developed countries. In other words, school related factors play an important role and explain a higher proportion of the variance observed in student academic performance (Fuller & Clarke, 1994; Levin and Lockheed, 1993:1 and World Bank 1995). Therefore, school related factors that are indicated in the conceptual framework are closely examined in the current study.

1.2. Statement of the Problem

Education must serve the interests of the individual and the society (TGE, 1994a: 1). However, education in Ethiopia has failed to do so because it was 'short sighted' and lacks clear long-term objectives; and it was not rooted in the socio-economic fabrics of the society (TGE, 1994b: 1). To this effect, a New Education and Training policy was introduced in 1994. One of the major changes introduced by the policy was the revamping of the curriculum at all levels (TGE, 1994b: 14). The development of secondary education program curriculum materials is the responsibilities of the Federal MOE.

To this end, the geography experts at ICDR (MOE) prepared draft syllabi for secondary education and invited regions and selected teachers to a workshop for further ratification and improvement of the syllabi. Following this, Publishing Enterprises took part in writing geography textbooks and teachers guides based on the syllabus and guidelines. These draft text books and teachers guide were submitted to ICDR. The geography experts at ICDR critically look into the materials and then gave their comments. The Publishing Enterprises developed the final version of the manuscripts on the basis of the comments. Lastly, this final version of the manuscripts was introduced for teachers.

Accordingly, the newly developed curriculum materials for secondary schools have been implemented as of 2002. Nowadays, the whole curriculum materials for secondary education program have been changed (MOE, 2002; Amhara REB, 2001).

The general objectives of the newly developed grade nine geography syllabus (MOE, 1998a: 4) pointed out that "After completing grade nine the students will be able to ...understand the nature, uses and types of maps, and also acquire skills on scale conversion and change". Besides, the syllabus for grade ten (MOE, 1998b: 4) states that "develop skills on how to measure distance and areas on maps as well as map enlargement and reduction; acquire basic skills of locating places and objects and understand different ways of representing relief on maps".

On top of this, the general secondary schools geography textbooks (MOE, 1999b: 174-208 and MOE, 2000b: 209-250) and teacher's guides (MOE, 1999a: 66-81 and MOE, 2000a: 72-89)

specifies that general secondary school students should have basic skills in map reading and interpretation.

The discussion made with geography teachers when the student researcher was a geography department head in some secondary schools of Amhara region revealed that the map reading performance of general secondary school students is low. There hardly exists study made on influence of school related factors on map reading performance of students in Ethiopia. Therefore, the investigator is initiated to diagnosis the extent to which school related factors affect the map reading performance of secondary school students.

The Education and Training Policy document of Ethiopia (TGE, 1994a) stipulates that teachers for secondary education program should have at least a bachelor degree. However, out of 2,045 teachers in the general secondary schools in Amhara NRS, 32 percent have Bachelor degree (Amhara REB, 2005a: 20-21). Moreover, experienced teachers tend to concentrate in schools at administrative Cities (Amhara REB, 2005c). What is the qualification of geography teachers in Amhara region looks like? Do geography teachers have sufficient knowledge of map reading in their pre-service and in-service training program? How many years of teaching experience do geography teachers have? What is the subject area of specialization of teachers who teach geography at general secondary schools looks like? Therefore, the extent to which these teachers' related issues (qualification, experience and assignment) influence the map reading performance of secondary school students is the first problem that has to be addressed in this study.

A close examination of the Annual Educational Statistical Abstract of Amhara Region (Amhara REB, 2005a) revealed that there is a great variation in physical school facilities among secondary schools. Does this variation in physical facilities lead to deviation to students' map reading performance at secondary schools? Therefore, the level to which school physical facilities particularly class size, instructional materials (teaching aids, syllabus, teachers guide and textbooks) and school libraries influence map reading is the second problem that has to be investigated in this study.

Although there is paucity of data on the effective utilization of instructional time, annual reports reflect that wastage of instructional time are frequently observed and critical problems at all schools (Amhara REB, 2005b). Do geography teachers effectively use instructional time? Therefore, the level to which the time devoted for teaching learning influences map reading performance is the third problem that has to be investigated in this study.

Previous academic background and attitude towards the various subject disciplines is likely to vary in general secondary schools. Do variations in these students' related variables (age, previous academic background and attitude) influence map reading performance of students in Amhara Region too? Therefore, student's previous academic background, attitude and age are the fourth area of the problem that needs to be addressed in the study.

The fifth area of the problem to be explored is the extent to which the teaching learning process particularly quality of instructional planning, presentation (effectiveness of teaching styles; utilization of appropriate teaching aids) and utilization of effective assessment techniques have affected map reading performance of secondary school students.

The suggested general secondary school map reading teaching methods are explanation, discussion, demonstration and fieldwork (MOE, 1998a and MOE, 1998b). If this is the case in point, then are the teaching methods suggested in the syllabus adequate? Has the actual map reading teaching methods employed at secondary schools match with the suggested in the syllabus? Has the teaching method affected the map reading performance of students at secondary schools in Amhara NRS? The adequacy of the suggested teaching aids as well as the match between the teaching methods suggested in the syllabus and actual teaching methods of map reading skills on the basis of variety, similarity and practicality has to be investigated.

The suggested teaching aids for enhancing and concretizing map-reading teaching at general secondary schools in Ethiopia are maps, globes, sketches, photographs, compass and atlases (MOE, 1998a: 21-22 and MOE, 1998b: 16-17). With this connection, has the utilization of teaching aids influence map reading performance of general secondary school students? Are the recommended teaching aids in the syllabus appropriate to teach map reading? Is there a match

between suggested teaching aids in the syllabus with the prevailing classroom situation on the basis of variety, adaptability and similarity? These issues have to be investigated for the attainment of better map reading performances.

Concerning assessment and examination, the Education and Training Policy (TGE, 1994a: 18) states that tests will be conducted on a continuous and regular basis while examinations will be set at different levels locally and at the ends of grade 8 and 10 nationally. Moreover, review questions, exercises, group work, group report and quiz/test are recommended to evaluate and follow-up the map reading topics dealt at general secondary schools (MOE, 2004a; MOE, 2004b).

Nevertheless, many teachers and educational systems in Ethiopia continue to rely almost exclusively on traditional paper and pencil test of factual knowledge that tend to promote rote memorization rather than higher order thinking skills (Hassen Abdu, 1998:274). Are the suggested methods of assessment in the syllabus appropriate for map reading? What types of assessment methods are frequently employed in map reading at secondary schools of the Amhara Region? Has the suggested assessment techniques in the syllabus have matched with the actual practice in secondary schools of the Amhara Region? Therefore, the appropriateness of the recommended method of assessment as well as the variety and practicality of suggested assessment techniques has to be the focal issues in this study.

Therefore, the core of this investigation is to diagnose the extent to which school related factors particularly quality of the teaching force, availability and quality of school facilities, efficient use of learning time by the teacher, students readiness for learning, and teaching learning process influence on map reading performance of general secondary school students in Amhara NRS.

1.3. Objective of the Study

The general aim of this study is to examine the extent to which school related variables are affecting map-reading performance in some secondary schools of the Amhara region. In particular, the purpose of the study is to:

- Investigate the relationship between pupils performance in map reading and the quality of teaching force;
- Asses the relationship between the pupils performance in map reading with physical facilities of the school;
- Examine the relationship between teacher's efficient use of instructional time for learning and map reading performance of students;
- Explore the relationship between students performance in map reading and students readiness for learning at the classroom; and
- Identify the relationship between pupils performance in map reading with teaching learning process.

1.4. Basic Research Questions

In line with the objectives of the study, the following basic questions were raised to be investigated in the current study.

- Do the variations in the quality of the teaching force particularly teachers' qualification; teachers' professional experience and teachers teaching assignment have influence in pupils' map reading performance at secondary schools?
- Do availability and quality of school facilities (class size, availability and quality of a school library, availability of instructional materials specifically teaching aids, syllabus, teachers guide and textbooks) have influence in pupil's map reading performance at secondary schools?
- Do differences in the level of utilization of instructional hours have influence on map reading performances at secondary schools?
- Do students previous academic background, attitude, and age influence map reading performances of pupils at secondary schools?
- Do differences in the teaching learning process mainly quality of instructional planning, effectiveness of teaching methods, teaching aids and assessment techniques have influence in pupil's map reading performance at secondary schools?

1.5. Significance of the Study

The study would be of great practical significance to curriculum designers, geography teachers, educational administrators at various levels, teacher-training universities and researchers in the following ways.

Firstly, curriculum work is a dynamic process, which requires continuous change and improvement with the changing world. All the curriculum materials implemented should be reviewed and improved periodically. Hence, the study shows the extent to which curricular objectives are being attained. Furthermore, it would show the major problems faced while implementing the newly designed curriculum materials for secondary schools especially for map reading courses. Hence, the study is useful for Geography curriculum developers in indicating the major school related factors that impede the proper implementation of the planned map reading topic for secondary school.

Secondly, the study comes up with a list of geography teacher qualification and classroom behavior variables which are variously correlated to pupils map reading performances in secondary schools. The results may be of great practical significance for faculties/college of education which deals with teacher education particularly for appraising their pre-service training program. In addition to this, the study identifies the gap between the actual level of performance of the teachers and the intended or expected level of performance in map reading. This would be useful for secondary school principals and other educational administrators to design continuous professional development of teachers through in-service programs.

Thirdly, the study could be of some help to geography teachers, secondary school principals, Woreda Education Offices, Regional Education Bureau and parents to be informed about the relative impact of various school related factors on their children performance so as to take corrective measures whenever possible.

Fourthly, the procedure followed in this study would also assist other researchers who may be interested in related studies at different levels in the educational system of Ethiopia.

1.6. Delimitation of the Study

Shortage of time, facilities and materials don't allow considering all secondary schools in Amhara NRS. Therefore, the researcher preferred to delimit the scope of the thesis to a manageable size of schools. Accordingly, the study was delimited to seventeen general secondary schools found in West Gojjam, East Gojjam, Awi and Bahir Dar city Administration.

A thorough investigation into the map reading performance of students should basically include a close examination of the pupils personal and home characteristics, however, these factors were not considered in this study.

1.7. Limitation of the Study

The most serous limitation of the study was lack of sufficient literature on relationship of school library and instructional time with map reading performance that forced the researcher to depend mainly on the general school related factors that affect the performance of students. Other problem encountered in conducting this research was lack of time for conducting the research work since the full time office work engagement was expected by the employing organization of the researcher.

1.8. Definition of Key Terms Used in the Study

The following key terms used in the study has the following definition.

- **Administration Cities:-** any city in the region with a total resident population of 50,000 or more, the capital city of the zone Administration and that is strategically important.
- **Emerging Cities:-** any city in the region with a total resident population of 2,000 or more and at least half of it engaged in non-agricultural activities, the capital city of the Woreda Administration.
- **General Secondary School**:- The grade 9 and 10 levels in the Ethiopian education system.
- **Municipal Cities:-** any city in the region with a resident population between 3,000 up to 5,000; the capital city of the Woreda Administration and a city that is important for future development of the region.
- **Performance test:-** a test that is administered on map reading of general secondary schools in Amhara National state for 2005.

1.9. Organization of the Study

The first three chapters provide the research settings for the study by describing the background of the problem, statement of the problem, purpose of the study, basic research questions, significance of the study, delimitation of the study, limitation of the study and organization of the study in Chapter One; by reviewing the relevant literature concerning school related factors influencing performance of students in Chapter Two; and by presenting the methodological aspect of the study in Chapter Three. Chapter Four reports the results of descriptive analysis in this study. Chapter five is the final chapter which presents with summary, conclusions and recommendations.

CHAPTER TWO: LITERATURE REVIEW

The purpose of this chapter is to present the conceptual framework of the current study and the literature review. The first section (section 2.1) provides an overview to various conceptual models of school learning, the second section (Section 2.2) discusses the conceptual model of the current study and its components and the third section (section 2.3) reviews various literature for the current study .

2.1. Conceptual Model of School Learning: An Overview

A model specifies or visualizes phenomena that cannot be easily or directly observed. Models illuminate certain aspects of reality and help make sense of what is otherwise hidden and chaotic.

The systematic examination of school related factors on students results have raised the need for models to be postulated for school learning. Prominent conceptual models for school learning are Carroll's Model, Bloom's Model, Walberg's Model and Carron and Chau model. The nature of each of these models is presented briefly as follows:

2.1.1. The Carroll's Model School Learning

According to Carroll Model's of School learning (Caroll, 1963 and Caroll, 1989) in Nebiyu Taddese (2000:240) aptitude, perseverance, ability, opportunity to learn, and quality of instruction account for variation in school achievement. Aptitude refers to the amount of time necessary to master a given task or unit of instruction under optimal conditions of instruction and student motivation. Perseverance is the amount of time the learner is willing to be engaged actively in learning a task. Ability is defined as the learner's capacity to comprehend instruction, which is assumed to depend on general intelligence or verbal ability. Opportunity to learn refers to the amount of time allocated by a teacher for learning a unit of instruction. Quality of instruction refers to instructional process or curriculum organization which as clarity of instruction and appropriate sequencing of lessons that makes students efficient and rapid learners. Time is the basic component of this model in which degree of learning is a function of engaged time divided by time needed for learning.

2.1.2. The Bloom's Model School Learning

According to Bloom's Model of School learning in Nebiyu Taddese (2000:241) and in businessballs web site; cognitive entry behaviors, affective characteristics and quality of instruction are the three main variables that affect learning. Cognitive entry behaviors include task-specific learner behavior and more general cognitive entry behavior such as verbal ability and reading comprehension. Affective characteristics are defined to include task specific attributes such as attitude towards the subject matter under consideration and more general characteristics of the learner such as self-concept, and attitude towards school. Quality of instruction refers to cues, reinforcement, feedback and correctives. Stated differently, cues refer to clarity of education. Reinforcement involves the use of praise and blame or other kinds of rewards and punishment that contribute to learning. Feedback and correctives involve formative mastery testing at the end of each unit of instruction, followed by supplementary instruction as deemed necessary.

2.1.3. The Walberg Model School Learning

As Walberg (1981) expressed in Nebiyu Taddese (2000:242-43) Walberg's Model conceptualizes that learning is dependent on student aptitude (ability, development or age, motivation, self concept or perseverance on learning tasks); instructional factors (quantity of instruction, quality of instruction); Environmental factors (home environment, classroom environment, peer group environment and mass media in particular television viewing). The aforementioned idea was also confirmed by others in Marilyn Ann Verna and James Reed Campell; Jim C. Fortune and ERIC Identifier.

2.1.4. The Carron & Chau Model of School Functioning

Carron and Chau (1996:246) present the different factors influencing the functioning of a school and their interrelations. The basic hypothesis behind the framework is that the functioning of a school can only be properly analyzed within its local environment.

Characteristics of the environment in which the school belong directly influence the operation of the school in different ways like the kind of pupils it receives, the material and human resources

it can mobilize, the nature of its relations with the community, to in particular the support it obtains from parents.

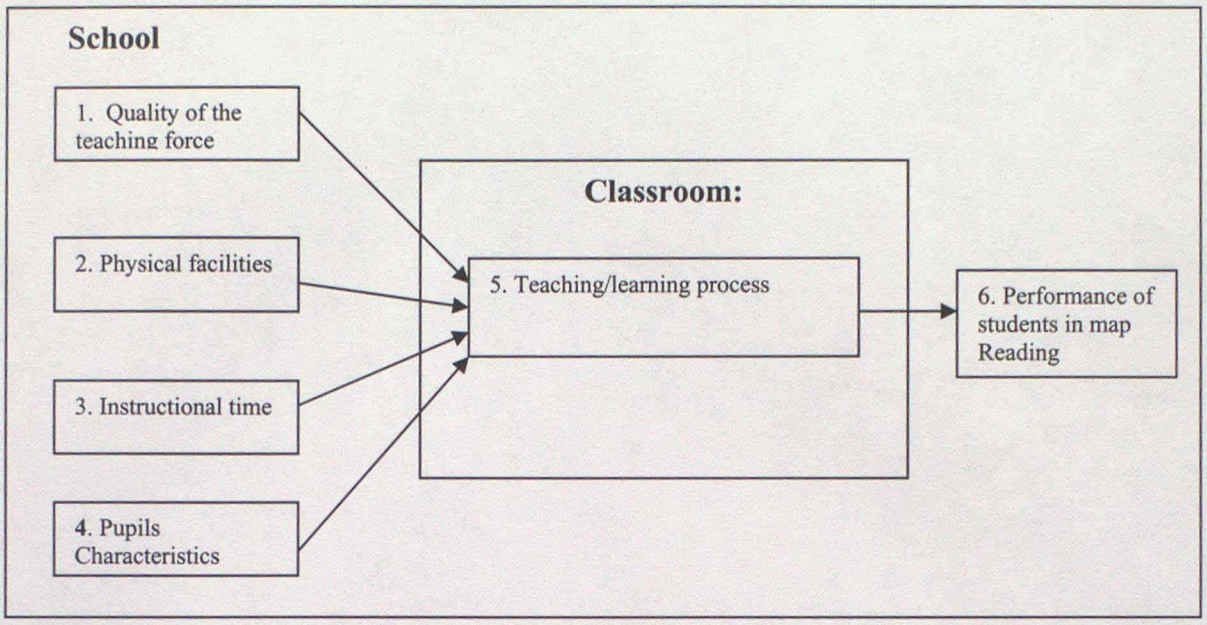
In the model, school results are the direct outcome of teaching process measured against its objectives. The factors which influence the teaching learning process are basic inputs (infrastructure, learners and teachers) and pedagogical act which in turn influences the number of interaction between teacher and other actors intervening in school function. This includes in school relations, relations with parents and relations with Administration.

More precisely, the material teaching learning conditions includes various equipments for the classrooms, pupils supplies, guidance and materials for the teachers etc. Pedagogical teaching learning conditions compositions of learners (number of pupils per class, the distribution by gender, by age, by number of repeaters, by socio-cultural background, by degree of absenteeism, etc), pedagogical organization of the class, the program being taught, the teaching language used, the time devoted to learning etc. Teaching staff refers to the availability and quality of the teaching staff in terms of their level of education and training, experience, competence, stability, living conditions, level of integration in the community, job satisfaction and motivation etc. In-school relations refer to role played by head teacher and teachers relations among themselves. On the other hand out of school relations refers to relations of the school with parents and school Administrations outside the school (inspectors or supervisors).

2.2. Conceptual Model of the Present Study

Each of the above conceptual models deals with a wide variety of factors in which identifying the impacts of all the factors are hard to measure. In addition, neither of the models specifically deals with school related factors influencing students results. As a result, on the basis of the aims of the present study, eclectic of these models have been used to guide the literature review and data analysis. To put it differently, quality of the teaching force and physical facilities are adopted from Carron and Chau model; instructional time factor is undertaken from Carroll's model, student's readiness for learning is taken from Bloom's and Walberg models. More detailed interpretation and discussions of the components in this model will be presented by following the chart.

Chart 2:1. The Conceptual Model for the present study



Effective schools made significant contribution to the development of relevant knowledge, useful skills and appropriate attitudes of pupils, through efficient use of material and non-material inputs of the school (Fuller & Clarke, 1994; and World Bank 1995). The student results in this model are correlated with the teaching learning process. In turn, out of classroom variables particularly quality of the teaching force, physical facilities of the school, instructional time, and pupil characteristics are correlated with teaching/learning process.

2.2.1. Quality of the Teaching Force

Some authors connect effectiveness of teachers with quality teaching. Effectiveness of teacher plays a magnificent role in fostering quality learning (Sears & Marshall, 1990:10; Calderhead & Shorrock, 1997:1; esdp and Amhara REB, 1999:9). In support of this, Anderson (2004:20) pointed out:-

> *A growing body of evidence suggests that schools can make a great difference in terms of student achievement, and a substantial portion of that difference attributable to teachers. Specifically, differential teacher effectiveness is a strong determination of difference in student learning, far outweighing the effects of differences in class size and class heterogeneity. Students who are assigned to one ineffective teacher after another have significantly lower achievement and learning (that is, gains in achievement) than those who are assigned to a sequence of several highly effective teachers. Thus the impact of teacher effectiveness (or ineffectiveness) seems to be additive and cumulative.*

The effectiveness of teacher is increasingly becoming the focus of interest particularly in developing countries because they are agent of educational reform in the classroom (Darling-Hammond, 2000; Sanders and Rivers, 1996).

Observable indicators of effectiveness of teachers that are strongly related to performance of students are: maximize instructional time to increase content coverage (Verwimp, 1999); the use of lesson plans (Perrott, 1994), employ of appropriate and variety of teaching materials (MOE, 1998a and MOE,1998b); clarity and variety of teaching styles including student center methodology (Anderson, 2004; MOE, 1999a; MOE,1999b); apply continuous methods of assessments (MOE,2004c; MOE,2004d).

Characteristics of effective teacher is partly the result of teachers qualification (Anderson, 2004; Wragg, 1994:1); and attitude towards teaching profession (David and Vallen, 1972; Craig, et al, 1998).

2.2.1.1. Teachers' Qualification

Effectiveness of teachers is determined by their competency in terms of both subject matter and pedagogical skills (Anderson, 2004; Darling-Hammond, 1997; Mullens & Murnane, 1996). With this regards Wragg, (1994:1) states:

> *An effective teacher should possess knowledge and understanding of the content of the subjects and topics being taught, as well as the ability to manage a class, explain clearly, ask intelligence and appropriate questions, and monitor and assess learning.*

Most educators underlined that effective teachers must understand the curriculum from the perspective of the intended learning outcome. The mastery of each academic subject demands a specific area of knowledge (Anderson, 2004). Accordingly, perceptual skills, space concept, art and mathematics are essential skills required by teachers for the mastery of map reading skills (Bale et al., 1973; Graves, 1980). According to David in Bale et al, (1973:168) transfer effects may be expected to take place if more experiences involving the analysis of shape are organized in school, and the work in Art should provide opportunities for this. By analyzing shapes, with verbalization to reinforce the process, the student will become more conscious of the process

involved. On top of this, teachers must have mathematics ability since map reading is related with calculations and geometry (Bale et al, 1973:168; Graves, 1980).

Teachers' pedagogical skill is the second most important element in delivering effective teaching learning process in the classroom (Anderson, 2004:43). A research study undertaken by Lockheed and Levin, (1993:29) states:

> *Teaching is a complex enterprise and requires that teachers have command of a wide range of instructional strategies. These strategies include those for teaching specific subject and those for managing the classroom. At a bare minimum, effective teaching involves (a) presenting material in a rational and orderly fashion at a pace appropriate to the students' age; (b) requiring active student participation; (c) providing students opportunities to practice and apply what they have learned, particularly in relationship to their own experience; (d) monitoring and evaluating students performance; and (e) giving appropriately paced feedback on student performance.*

Therefore, teaching map reading at secondary schools require its own specific strategies in which the teachers must cope with better students performance. Hence, teachers level of subject matter knowledge and pedagogical skills are related to teachers level of education and experience.

2.2.1.2. Teacher's Level of Education

Teachers' level of formal education is often used as an indicator of their subject matter knowledge. Although the impact of teachers' years of education on their students' performance is not consistent in all studies, in most cases the higher the level of teacher qualification the better is its effectiveness (Fuller, 1987).

Regarding the teachers training requirement on a subject matter and mastery of pedagogy, Carron and Chau, (1996:263) state;

> *Competence, which is the result of training and experience, found to be important to a certain extent. In some cases, teachers manifestly did not master the subjects, which they were supposed to teach. This did affect their performance in two ways. First of all their teaching in the given subject was poor, but also they tended to devote less time to the subjects in which they were not at ease. However, a more important problem of competence was the lack of pedagogical skills, which, because of poor pre-service as well as in-service training, was a more widespread and more serious handicap for efficient teaching.*

It is likely that the poor performance of students is attributed not only to the existence of unqualified or under qualified teachers but also lack of continuous professional development. Continuous professional development of teachers is significant to overcome shortcomings that may have been part of teacher's pre-service education and keep teachers abreast of new knowledge and practices in the field (Anderson, 2000; Craig, et al, 1998; Maheshwari & Raina, 1998). In support of the importance of continuous professional development for geography teachers, a UNESCO publishing (1965:200) reports:

> *Although special training for secondary school geography teacher is given at university level, it is paramount significant to arrange periodical refresher and information meeting at regional, national or even international level.*

Major approaches to professional development and support to teachers are conducting by various in-service training programs, pedagogical supervision support, dialogue and reflections with other teachers and personal readings (Amhara REB, 2001; UNICEF, 2000).

The first ongoing professional support to teachers could be carried out through teachers centers or school clusters. This is relatively cost effective, as teachers do not have to spend significant periods away from home (Levin and Lockheed, 1993:11). In this school-based system, school principals and teachers play a crucial role in bringing better students performances (Levin and Lockheed, 1993:143; UNESCO, 1965:199).

Availability and quality of pedagogical supervision service is the second form of providing in-service development and support to teacher. Supervision service is carried out by external (educational administrator at various levels) or internal (school principals and teacher) bodies.

External pedagogical supervision support provided to teachers by inspectors and supervisors includes: Pedagogical control and support, provided to teachers and school principals in carrying out their respective tasks; the extent to which they receive continuous information and clear instruction on the aims to be achieved, programs to be taught, standards to be met etc, and the quality of the administrative backing on which they can count (Carron and Grauwe, 1997:11; Dalin et al, 1994).

Various literatures on the quality of education exhibited that classroom and school pedagogical supervision and support play a key role in improving the school quality and accountability (Carron and Grauwe, 1997:19-23; Levin and Lockheed, 1993:11-12). Nevertheless, the trend in developing as well as developed countries is on administrative supervision (Carron and Chau, 1996:256).

Dialogue and reflection among teachers at the school level is the third form of school based professional development that plays important role in the determination of the performance of students (Levin and Lockheed, 1993:11).

In summary, geography is a complex discipline standing between the natural sciences and human sciences. On top of this, it has an approach of its own since it involves techniques, which enables the interpretation of maps made through aerial photographs and cartography. To this effect, materializing the intents of the geography curriculum demands teachers who are specialist in the field (UNESCO, 1965:199).

2.2.1.3. Teachers Professional Experience and Attitude towards their Profession

Teaching experience, which is expressed in the number of years in teaching profession in general and geography in particular is, important factor influencing performance of students. In most cases the higher the experience of teachers in teaching profession, the better is the students performance. In support of this proposition, in Zimbabwe, Riddell and Nyagura (1991) found that performance was higher in schools with more textbooks, less teacher turnover and a higher percentage of trained teachers.

Teacher's attitudes towards teaching profession have great value in improving performance of students. Regarding teachers attitude towards teaching David et al (1972:5) write;

> *The attitude of teachers in students success, a study among elementary school students seems to indicate that teacher's expectancies are self-fulfilling. Teacher's attitude is particularly crucial, in the case of ESL students. Positive attitude on the part of the teacher is essential to success. .*

Teachers must be committed for the delivery of the subject matter effectively. Effective teachers are highly committed and care about their students (Craig et al, 1998); they need supportive working conditions to maintain these positive attitudes.

Therefore, the experience and attitude of teachers towards teaching profession are significant elements that need due consideration in addressing better teachers qualification.

2.2.2. Physical Facilities

Physical learning environments, or the places in which formal learning occurs, includes school buildings, water supply, teacher chair, playground, school office, toilet, blackboard, separate classroom, electricity, fan, school library, pupil desk, telephone, pupil bench, television and laboratory (Carron and Chau, 1996).

There have been controversial findings over the relationship between the school physical facilities and student's performances (Nebiyu Tadesse, 2000). Some scholars argued that availability and quality of school facilities positively related with performance of students (Brunswic et al., 1990; Levin & Lockkheed, 1993). Others argued that availability and quality of school facilities are unrelated with performance of students (Pennycuick, 1993).

Furthermore, other researchers (Miske et al, 1998; Anderson, 2004) argued that existing empirical evidences are inconclusive as to whether the condition of school building is related to higher students achievement. To put it differently, there is no systematic relationship between a school physical facilities and student learning. School physical facilities can facilitate the teachers or students tasks thereby indirectly influences what and how much students actually learn (Anderson, 2004:51). Such factors as on-site availability of libraries, laboratories and a

clean water supply, classroom maintenance, space and furniture availability all have an impact on the critical learning factor of time on task (Miske et al, 1998).

However, for the present study, those physical facilities of the school that may be directly related to the map reading performance of secondary school students (availability and quality of school library, availability and quality of geography laboratory) are reviewed hereunder.

2.2.2.1. Availability and Quality of the School Library

Researchers have proved that the availability and quality of school library play a fundamental role in the acquisition of knowledge by pupils, and in the improvement of school results (Carron and Chau, 1996; Levin and Lockheed, 1993; Williams, 2000).

In the case study made by Carron and Chau (1996) in India, the quality of the school library was strongly correlated with pupils' achievement in Hindi and Mathematics. Michelson (1970) also reports the existence of positive association between verbal achievements when he related library books measured by number of volumes for the sample 597 white students enrolled in 36 schools in a large Eastern City. Moreover, in Latin America, a study that included 50,000 students in grades three and four indicates that children whose schools had an inadequate library were significantly more likely to show lower test scores and higher grade repetition than those whose schools were well equipped (Willms, 2000).

Generally, from the above studies it is possible to conclude that the presence or absence of school library and pertinent facilities contribute to the difference in performance of students.

2.2.2.2. Availability and Quality of Geography Laboratory

The availability and quality of geography laboratory refers to the availability of separate room for geography (Bailey, 1974); the equipment and material that are placed in the geography room (UNESCO, 1965); and the number of students in the room (ibid). These pedagogical organizations influence the attitude and behavior of students towards learning (Anderson, 2004:51). .

2.2.2.2.1. Availability of Geography Laboratory

The idea of a separate geography room was first put forward towards the end of the ninetieth century in England (UNESCO, 1965). By the middle of twentieth century the geographer has at last received due recognition and has persuaded education authorities of the absolute necessity of providing a special geography room or laboratory (Bailey, 1974; UNESCO, 1965:184-188). In connection to this, the standard for secondary schools in Amhara NRS (Amhara REB, 2005b) has pointed out the need for geography room at general secondary schools.

Nevertheless, few secondary schools have a laboratory room. As a result, geography teachers have to employ the conventional classroom (Bailey, 1974; UNESCO, 1965:184-188).

2.2.2.2.2. Class Size

As to the relationship between class size and student performance, empirical studies show that between class sizes of 15-40 pupils, there are little differences in student performance (OECD, 1989). Excessive class size is a barrier to effective teaching. Wherever possible, classes should be small enough to permit effective teaching (OECD, 1989; Willms, 2000).

On the contrary, as Rutter, 1979 cited in Pennycuick, (1993) class size has not consistently been linked to student achievement. This may be due to the fact that many schools and classrooms have not yet adopted the more demanding but higher quality student centered learning practices. Moreover, quantitative relationship between class sizes and academic achievement rarely take other key quality factors into account, such as teachers' perceptions of working conditions and their sense of efficacy (UNICEF, 2000:6).

Generally, educators and researchers from diverse philosophical perspective have debated on the relationship between class size and student learning at length.

2.2.2.2.3. Equipment, Teaching Aids, Textbooks, Teachers Guide and other Supplies

The availability and quality of equipments, teaching aids, text books, teachers' guide and other supplies provide information, organize the presentation of information in terms of scope and

sequence, and provide students opportunities to use what they have learned. Hence they have to be considered for the attainment of better student performance (Anderson, 2004:49; Levin and Lockheed, 1993; Harbison and Hanushek, 1992).

In an attempt to suggest a list of equipments being employed for map reading teaching, two major categories, minimum equipment and optimum equipment, become evident (UNESCO, 1965:142). The minimum equipment includes textbooks, teachers' guides, atlases, terrestrial globes, wall maps, models of earth orbit, the sand tray etc. The minimum equipment seems already to be fairly extensive. Moreover, all of them are not very costly. The teacher's ingenuity, stimulated by his desire to teach geography properly, will enable him to take the best advantage of local circumstances, improvise appliances and ways of using them, and secure the co-operation of his pupils (UNESCO, 1965:157).

On the other hand, the optimum equipment includes the opaque projector, other projectors (film strips, slides, stereoscopic pictures, backwoods appliances, etc), duplicators, the cinematography, television, radio, tape recorder, map collections and the geographic library (UNESCO, 1965:157-170). The acquisition of these optimum equipment depends upon the funds available. Some of the items are expensive to buy and can make the operating expenses (electric current) or hiring charges (slide or films) increase. As a result, optimum equipment are ambitious, but the realization of it nevertheless remains an ideal which every teacher should seek to attain if only by stages (UNESCO, 1965:157-170).

Generally, from this review of literature we can deduce that existence of equipments, teaching aids, text books, teachers guide and other supplies for the teachers influence the performance of students.

2.2.3. Instructional Time

Time is one of the most important factors in the teaching learning process. Education is a time dependent task wherever second, minute has its own value and meaning. So, teachers and students must use their time efficiently (Verwimp, 1999).

It is clearly evident that the greater the time of presence of the learner, the greater is also the opportunity to be exposed to the curriculum. Thus, time available to pupils for learning directly affects the achievement of pupils (Fuller et al., 1999). Research conducted on village based school in Malawi demonstrated that students with higher rates of attendance had greater learning gains and lower rates of repetition. This finding is consistent with many other studies (Miske et al., 1998).

Caroll (1963) proposed a "Model for Learning" with five elements. Three of them are time-related: time needed, time allowed, and time spent on learning. As a unit of measurement, time has equality of units, an absolute zero, and a facility to permit comparison. Many of the studies have pursued the conceptually simple presumption that time produces higher level of achievement (Smith, 1995).

Generally, the quality of a school and the quality of teaching of the individual teacher is higher in schools that are and willing to make more efficient use of the available time of its teachers and its pupils.

2.2.4. Pupil Characteristics

Implementation of effective teaching learning process requires close examination of the learners. According to Anderson (2004:45), one must request the following in the teaching learning process:

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

Students related variables that have influenced the pedagogical teaching learning conditions in map reading skills are: students background, attitude and behavior in the school.

2.2.4.1. Student's Academic Background

Success in map reading and interpretation at secondary level highly depends on the quality and quantity of instruction provided at primary level (Blaut, 1971; Grisdale, 1965:31). This is

because the level of development of abstract reasoning depends upon age of the child. To put it differently, the higher the age of the child, the better is the level of understanding factual information with the teaching of skills and the understanding of geographical relationships (Bailey, 1974; Bale et al, 1973:173; Graves, 1980). Hence, a child must learn at an early stage something about distance, direction, and the location of places. Once the perception of simple spatial concept has been made, it will be easier to analyze and interpret complicated maps at latter ages (Cole, 1969; Bale et al., 1973; Graves, 1980).

From the point of view of intelligence, psychologists like Jean Piaget and his followers evolve the best-known and most useful theory. Piaget suggests that the skills and concepts in map drawing, map reading and interpretation is based upon a careful analysis of the development of spatial concepts (Bale et al., 1973; Bailey, 1974; Graves, 1980). In asking the children to draw a map of a village from a model, he found that a child aged 4 to 7 had no system of reference for locating objects and there was neither spatial nor one-to-one correspondence between the model village and the map. Later a system of reference was gradually built up, though buildings were frequently shown in elevation and difficulty was experienced in reversing left/right and before/behind relations when a change of viewpoint suggested changes in the relative position of objects.

By about age 9-10 the system of references attained a more stable form so far as qualitative relationships were concerned, though without precise judgment of distance. By the final stage of concept development, however, attained by the majority of the children tested by Piaget at about eleven years of age, the concept of a map had been acquired in a broad and general way (Bale et al., 1973; Graves, 1980.

According to the work of Gustav Jahoda in the early 1960s, the concept that towns are located in regions, and that regions are parts of the countries, may not be understood by children under eleven; yet most geography teachers would probably assume that such relationship are self evident. In a well known experiment the children were given a small black circle to represent a town a some what larger white square to represent a region; and a colored rectangle, larger again, to represent a country. They were asked to place these shapes in logical relation to one another. The older children had least difficulty in perceiving the 'correct' answer. Few below the age of

nine had yet grasped the concepts involved, and almost no children younger than eight had done so (Bailey, 1974:27).

Research studies reported elsewhere in the world indicates that growth of intellectual skills and of the ability to classify, interpret, apply and analyze is a gradual and continuous process, fed on experience (Dale, 1971; Savage and Armstrong, 1987).

Generally, the theory of development of intelligence and associated research works has many implications for teaching of map reading at secondary schools. First, children of early secondary age should study maps of areas, which are well known to them-ideally the catchment's area of the school. Features of this area could be more easily identified on a map than those of an area less known to them. Second, the geography teacher has to know the pupils' perceptual ability and space concept development for the delivery of effective teaching at the classroom.

2.2.4.2. Students Attitude towards Learning Map Reading

Over the decades, interest has become an important concept within the field of education (Engstrom, 1994). In the teaching learning process, basic motivation to learn map-reading skill is pivotal. It is difficult for geography teacher to teach map reading if students haven't interest for learning. Major factors that influence students interest for learning map reading are social background of child; interaction of teachers with pupils and the individual characteristics of the child (Graves, 1980:141).

In any given classroom, there may be 30-40 students on the average. These students obviously have shown individual differences in curiosity to learn map reading. Furthermore, the attitude of each student towards map reading may be influenced by his/her interaction with the teacher personality and by his interaction with other individuals in the classroom. In most cases, students interest towards map reading may derive from the charisma of the particular teacher (Graves, 1980:142).

2.2.4.3. Students Classroom Behavior

There is an increasing interest in having measures of problems in student behaviors (Postlethwaite, 1994), such as absenteeism, disciplinary problems, and vandalism. When students are absent from school, they forgo their opportunities to learn. In the meantime, they may interfere with other students' opportunity to learn through peer relations. Absenteeism is also harmful for students to establish the habits of consistent and on-time attendance. Such habits will serve young people well in their further work lives (Smith et al., 1995).

Student disciplinary problem and vandalism affect teachers and students by reducing school effectiveness, inhibiting student learning, and disrupting the school-learning environment. The measurement of problems in student behavior helps to provide a more comprehensive picture of student outcomes. Meanwhile, it increases the predictive power of background variables on student performance.

2.2.5. The Teaching Learning Processes

In order to promote better students performance, some researchers argue that more attention has to be given in improving the educational process in the classrooms (Kyriacou, 1994:1; Levin and Lockheed, 1993:92-94).

Teachers are pivotal for effectiveness of teaching learning process. The three basic teachers activities that are decisively related to performance of students are Lesson planning (Perrott, 1994); effectiveness of teaching methods and materials (Anderson, 2004:42-44; MOE, 1999d:17) and effectiveness of assessments (Anderson, 2004). According to Borich (1988:1) important behaviors expected from classroom teaching include:

> *...Teaching is a complex and difficult task. One of the most complex and difficult tasks facing the fields of education to day is determining exactly what constitutes an effective teacher. Some of the comprehensive pictures of an effective teacher are objective writing, lesson planning, teaching strategies, questioning style and classroom management.*

Educational research findings show that determinants teachers activities that are related to students performance are setting clear and specific instructional plans, efficiency of teaching methods, materials and assessment techniques.

2.2.5.1. Preparation & Utilization of Lesson Plans

Planning is one of the factors that influence the amount and rate of learning since it employs suitable principles of ordering the sequence of subject matter and constructing its internal logic and organization. A further look into the need for planning, Perrott, (1994:6) has explained:

> *The planning function requires the teacher to make decisions about pupils needs, the most appropriate goals and objectives to help meet those needs, the motivation necessary to attain their goals and objectives and the most appropriate teaching strategies for the attainment of those goals and objectives. The planning function usually occurs when the teacher is alone and has time to consider long-term and short term plans: the pupils progress; the availability of resources, equipments and materials; the time requirements of particular activities and other issues.*

In view of identifying the significance of lesson plan preparation, the manual for School Management and Administration (Amhara REB, 2000:67-80) has revealed the lesson-planning guide including the formats for the preparation of annual plans, weekly plans and daily plans.

2.2.5.2. The Teaching Process

Teaching is used to change and shape the behavior of students through the given medium of instruction. Borich (1988:22) states:

> *Most modern definitions of effective teaching identify patterns of teacher student interaction in the classroom that influence the cognitive and affective performance of students. Five key behaviors of effective teaching and some indicators pertaining to them are clarity, variety, task orientation, engagement, moderate to high survive rate.*

Hence, effective teaching consists of the interaction of two inseparable elements: teaching methods and instructional materials. Each of these is reviewed in the following sections.

2.2.5.2.1. Teaching Methods

Various researchers have classified teaching methods differently. But, the common basis for all classifications is the degree of students participation in the instruction process (MOE, 1999c:68). In the present study, teacher centered versus student centered are the selected frame of references.

In the teacher-centered method, teachers are the center of the teaching learning process. Students are the passive receivers of education. Teacher and textbooks are the source of authority. Thus it belongs to positivists' school of thought. Teaching methods that fall under teacher centered teaching methods are: lecture, demonstration as well as question and answer (McLean, 1995; Leu, 1998; MOE, 1999c:68).

In the learner-centered method, students actively work in groups; discover knowledge and make it their own. Hence it is dynamic which emphasizes on interaction and participation. Hence it belonged to constructivist epistemology (Mclean, 1995; Leu, 1998, MOE, 1999c; Clark, 1986). Several studies conducted at secondary schools have examined the long-term effects of active student participation instruction and then have concluded that there would be greater probability of the performance of students in comparison to the group of students taught with less active student participation (Stallings and Stipek, 1986). Inquiry learning, discovering learning, problem solving, project method, role playing technique, student seat work and assignment and group work are learner centered method of teaching (MOE, 1999c:68).

As a result of this, a significant paradigm shift from teacher centered to learner-centered methods of teaching is observed across the world. Levin and Lockheed (1993:16) states:

> *The emphasis on student learning is to shift from a more traditional passive approach in which all knowledge is imparted from teachers and textbooks to an active approach in which the student is responsible for learning. Effective schools approaches emphasize self instruction, the use of manipulative and object around which activities are built, problem solving, and meaningful applications. Each of programs seems to emphasize a clear and manageable focus rather than a proliferation of goals.*

The best method of learning skill is through actually performing the skill or practicing (Boardman, 1986). In line with this, Cole (1969) argued that map reading and interpretation deals with the recognition of spatial skills. Hence, emphasis must be given to active, interactive,

participatory methods for children so that they may handle concepts and ideas more realistically. He further emphasizes that active and participatory method of learning promotes critical thinking, problem solving, and teamwork. Among the student-centered methods of teaching, field trip is best for teaching map reading (Graves, 1980; UNESCO, 1965:36; Boardman, 1986).

Teaching techniques based on direct observation in the field involves three steps, namely, observing phenomena; recording this on a map or in a notebook; interpreting what has been recorded (Bayliss et al,1966). A study was conducted in England for different age groups to investigate the child ability to correlate what he observe on the ground with what is shown on large scale map. This result of the study portrays that teaching geography by direct observation reduces much misunderstanding that is resulted from popular misconceptions about other people, from inaccurate second hand or third hand information. Furthermore, it enables pupils how to observe accurately various facts and it makes them critical comprehensive generalizations such as may sometimes be found in certain textbooks. On top of this, direct observation is essential for geography teachers teaching with a minimum of equipment and few textbooks (Graves, 1980; Bayliss et al, 1966; UNESCO, 1965).

Generally, the premise is that students learn more when they are actively engaged in the learning process, not when they are passive recipients of teachers lecture. Nevertheless, teachers have not employed student centered method of teaching for the following reasons. First, teachers teach the way they were taught than they were told how to teach.

They world imitate more of what they "saw" than what they "heard" and "read" (Amare Asegedom, 1998:4). In Ethiopia, teachers have been well trained in teacher centered methods. Vivian (2000b:4) states:

> *...Teachers are well practiced in teacher-centered methods. The challenge facing them to able to extend the range of methods they are able to apply, in particular to develop the use of participatory approaches that engage the students in active learning. This will make them more able to teach effectively more of the time and address the needs of more of the students.*

Second, student centered method consumes time and requires more preparation and continuous monitoring of learning by the teacher (MOE, 1999c:73; Melese Bedane, 1999; Aggarwal, 1996).

From the above viewpoints, we can conclude that pedagogically it is worthwhile that pupils should be thought map reading mainly by reference to concrete examples. Nevertheless, practically it is not possible partly because of constraints of time, space and cost. To this end, most map reading teaching must necessarily relay on second hand materials. Hence, hard ware models form useful aids in teaching map work and ideas about three-dimensional space. Furthermore, at the early stage of child development, direct observation must be considered since the child level of understanding at this stage is based on concrete reality and not on abstraction.

2.2.5.2.2. Utilization of Teaching Aids

The quality of education is influenced by the way teachers make use of teaching aids in the teaching learning process (Amare Asgedom, 1998). Teaching aids refer to the different resources teachers use to facilitate pupils learning. They enable teachers to make learning more concrete, effective, interesting, inspirational, meaningful and vivid. Teaching aids could be original objects, imitations (models), and symbols, which are used for a specific subject area (Amare Asgedom, 1998; esdp and Amhara REB, 1999:40).

Students exposure to different media is believed to broaden students experiences and improves students creativity (Dale, 1969). With this regards, teaching aids suggested to map reading teaching at secondary schools fall under the following major categories. These are: charts, pictures, photographs, wall maps, diagrams, models (terrestrial globes, models of earth orbit, and sand tray) atlases, etc. (UNESCO, 1965:157-170; MOE, 1998a; MOE,1998b).

2.2.5.3. The Methods of Assessments

As Rutter and his colleagues cited in Lockheed and Verspoor, (1991:7) one of the main requirement of effective learning is that teachers continuously check and evaluate students learning and behavioral outcomes. Hence, assessment and teaching are so closely interrelated that it is virtually impossible to work in either field without being constantly concerned with the other (Heaton, 1990:5).

Classroom assessment is carried out for a variety of purposes. Kellaghan T and Greaney V. (2001:20) have explained the purpose of assessment as follows:-

> *At the individual student level, it is used (a) to describe students' learning, to identify and diagnose learning problems, and to plan further teaching/learning; (b) to provide guidance for students in selecting further courses of study or in deciding on vocational options; (c)to motivate students by providing goals or targets, by clarifying the nature of learning tasks, and by letting students, and their teachers, know how they are progressing; (d) to certify that individual have reached a certain level of competence; and (e) to select individuals for the next level of the education system or for a job.*

Teachers are highly expected to assess pupils and make sound decisions in relation to planning and delivering instruction, determining pupils' academic achievement, controlling order and discipline, etc. (MOE, 1999c:189).

In recognition to the value of continuous assessment in enhancing quality education, the education and training policy of Ethiopia (TGE, 1994a: 18) states "continuous assessment in academic and practical subjects, including aptitude tests will be conducted to ascertain the formation of all round profile of students at all levels". Accordingly, Students' assessment at the classroom could be carried out at the start, during the process of learning and towards the end (MOE, 1999c:199).

While implementing continuous assessment, teachers must employ variety of techniques. In line with this, the assessment techniques suggested for map reading topic in grade 9 and 10 are review questions, exercises, group work, and quizzes/test (MOE, 1998a; MOE, 1998b).

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

This chapter describes the way in which the study was designed and conducted (how it was planned and implemented) in the selected sample secondary schools of the Amhara National Regional State. It includes the research design (section 3.1), Variables selected in the study area (Section 3.2), sampling procedure and sample size (section 3.3), instruments and procedures of data collection (Section 3.4), general characteristics of respondents and sample schools (section 3.5) and strategy of data analysis (section 3.6).

3.1. The Research Design

The two broad categories of research designs are quantitative research and qualitative research. Unlike the qualitative research, the quantitative research comprises of those studies in which the data concerned can be analyzed in terms of numbers. It is further sub divided into descriptive survey research and experimental research study. Descriptive study is concerned with investigating the relationships that exits between or among variables. On the other hand, experimental study focuses on manipulation of certain stimuli, treatments, or environmental condition and observes how the condition or behavior of the subject is affected or changed (Best et al, 1993:81; Gosh, 1992).

The study has employed descriptive survey research approach of the quantitative category. The study seeks to find relationships through the analysis of independent variables (school related factors) with dependent variables (map reading performance of students), then the appropriate method employed was found to be descriptive research of the causal comparative type.

3.2. Variables Selected in the Study Area

The first step was the selection of school related independent variables. Here, list of all school inputs and process variables that are likely to influence pupil's map reading performances at secondary schools were constructed. On the basis of the review of literature for developing countries (Carron & Chau, 1996; Nebiyu Tadesse, 2000; Postlethwaite, 1994), the following school related independent variables have been identified. Input variables include condition of

school building, condition of teachers housing, school furniture, school supplies, school libraries, school laboratories, total number of pupils, age and sex of pupils, quality of teachers, pupil teacher ratio, hours of instruction, school size. Process variables comprise of teachers workload, teachers perception of factors influencing instruction, curriculum, opportunity to learn, number of pupils per grade level and inspectors visit.

Nevertheless, all of the above lists of school inputs and process may not be relevant to map reading performance of secondary schools in Amhara N.R.S. Therefore, only those independent variables that are assumed to have main, direct impact were considered in the study.

The second step was the selection of dependent variable. For this, work of some investigators (Nebiyu Tadesse, 2000; Postlethwaite, 1994) was reviewed. To these authors, indicators of students outcome includes: performance in key subjects at major points in system, percentage of grade group graduating, percentage of students obtaining examination results, expectation and attitude of pupils, violence, and drug use. Among the constructed lists of students outcomes, map reading performance of students has been pertinent for the current study.

3.2.1. Independent Variables

On the basis of the above criteria, five main groups of independent variables (School related factors) with their respective specific elements were selected as it is presented below.

3.2.1.1. Quality of the Teaching Force Related Variables

X_1: Teacher's qualification
X_2: Teacher's professional experience
X_3: Teacher's area of specialization

Teacher's qualification (X_1) is defined as the optimum level of education attained by the geography teacher. Teachers experience (X_2) is described as the total number of years served by the teacher in the teaching profession. Teacher's area of specialization (X_3) is explained to the field of specialization of teachers who teach geography.

3.2.1.2. School Physical Facilities Related Variables

X_4: Availability of school library
X_5: Number of books per school library
X_6: Class size
X_7 Availability of instructional materials

Availability of school library (X_4), is defined as the presence or absence of a library in the school. Number of books per school library (X_5), refers to total number of geography books available at the library. Class size (X_6), is defined as the average number of students in classes of grades in which the study is conducted. Availability of instructional materials (X_7), is described as the availability of teaching aids, syllabus and teachers guide to teachers and textbook for students.

3.2.1.3. Instructional Time Related Variable

X_8: Efficient use of instruction time

Efficient use of instructional time (X_8) is defined as the amount of instructional time that each teacher actually spends on teaching.

3.2.1.4. Students Related Variables

X_9: Students previous academic background
X_{10}: Students attitude towards map reading
X_{11}: Student age

Student's previous academic background (X_9) denotes whether a student has learned map reading while he was at primary schools or not. Student's attitude towards map reading (X_{10}) refers to student's predisposition towards map reading topic. Student's age (X_{11}) is defined as the age of students.

3.2.1.5. Teaching Learning Process Related Variables

X_{12}: Lesson plan preparation and utilization
X_{13}: Variety of Teaching techniques
X_{14}: Adequacy of Teaching aids
X_{15}: Methods of student's assessment

Lesson plan preparation and utilization (X_{12}) refers to the teacher's level of preparation and utilization of annual and weekly Instructional plan. Variety of Teaching techniques (X_{13}), is defined as the extent of utilization of the suggested teaching methods (discussion, demonstration and field work) that are presented in the syllabus on the basis of variety, similarity and

practicality. Adequacy of teaching aids (X_{14}), refers to the availability and quality of the suggested teaching aids in the syllabus (maps, globes, sketches, photographs, compass and atlases) on the basis of variety, adaptability and similarity. Teacher's methods of students' assessment (X_{15}) refer to the quality and frequency of assessments recommended in the syllabus (review questions, exercises, group work, quiz/test) on the basis of variety and similarity.

3.2.2. Dependent Variables

The selected dependent variables (map reading performance of general secondary schools) with its specific elements were presented below.

3.2.2.1. Map Reading Performance Test Scores

- Describe uses of maps and marginal information on map
- Distinguish types of maps
- Compute scales
- Convert scales
- Prepare statistical diagrams
- Convert maps scales through enlargement and reduction
- Change map distance and areas to ground
- Identify directions and bearings on maps
- Explain positions on maps
- Identify the relief on maps

The performance of map reading denotes the test that is administered by the study on ten major skills as indicated above.

3.3. Sampling Procedure and Sample Size

Currently, the total numbers of general secondary schools functioning in the Amhara NRS are one hundred three (see Appendix A). The availability of limited resources has forced the investigator to focus only on some selected secondary schools in the region. On top of this, the researcher taught geography in secondary schools situated in East Gojjam, West Gojjam and Awi. To this effect, the presence of colleagues of the researcher in these zones would facilitate the access to and collection of information. As a result, the main target population was 28 general secondary schools situated in West Gojjam, East Gojjam, Awi and Bahir Dar zone Administrations.

It is to be noted that there is not fixed number or percentage of samples that determines the size of an adequate sample. It depends upon the nature of the population of interest or the data to be gathered and analyzed (Best et al., 1993:19). With this regard, the proportion of sample size from the total target population was 2.06% of the students, 53.75% of geography teachers, and 60.71% of the department head and 60.71% of the principals. The sampling design was stratified, cluster design. More specifically, steps being involved for the selection of sample schools, students, teachers, principals and department heads were the following:

3.3.1. Sampling Procedure for Sample Schools Selection

The selection of 17 sample schools from 28 target general secondary schools population depended on the following procedures.

The first step was identifying the distribution of general secondary schools in east and west part of the Amhara NRS. Accordingly, of the total of one hundred three general secondary schools, fifty-nine of them are situated in West Amhara and the rest forty-four schools are found in East Amhara (Appendix A). Here, the Western part of the Amhara region is selected for the study since they are found in proximity to the working place of the researchers in which the problem of distance and time is minimized.

The second step was identification of the zone from the western part of Amhara in which the target population belonged. Accordingly, East Gojjam, West Gojjam, Awi and Bahir Dar Administration zones were selected for investigation. The major criteria employed for selection of these zones is that these Zones are situated in proximity to the working place of the researcher, Bahir Dar, in which the problem of time and accessibility for conducting the research is minimized. Therefore, the population of the study area comprised of a total of thirty-one general secondary schools from West Gojjam (9), Bahir Dar city Administration (4), Awi (5) and East Gojjam (13) administrative zone by employing stratified sampling technique, because the technique involves selecting a sample so that certain subgroups in the population are adequately represented in the sample (Gall et al., 1996:226).

The third step was to identify the schools that have similar characteristics so as to reduce the effect of uncontrolled variables. The study belonged to General Secondary Schools. Hence, those

schools that have not both grade nine and ten (Gish Abay, Yejubie and Debre Elias) were not considered in the selection of the population. After scrutinizing through these criteria, the total numbers of schools remaining for the study were twenty-eight, which accounts about 66.67% of the total population.

The fourth step was to construct clusters of schools in the target population on the basis of the categorization of Cities so as to provide a more concrete idea of the range of variations among secondary schools which will serve as a basis for the comparative analysis of the present study. According to ANRS (2004:3) there are three levels of categories for Cities namely Administration Cities, Municipal Cities and Emerging Cities. Major criteria employed for categorization of Cities are: size of the resident population, whether it is a capital city of the respective Administration or not, and importance of the city for future development of the region (ANRS, 2004:3-6 and ANRS, 2003). Details of the categorization criteria are indicated in Table 3:1.

Table 3:1. Criteria used for categorization of Cities

S.N	Criteria of categorization of Cities	City Administration level city	Municipal City	Emerging City
1	size of the resident population	Total Population of 50,000 or more.	Total Population of 5,000 or more for any city and a total population of 3,000 or more for Cities that are seat of the woreda Administration.	Total Population of 2,000 or more of these at least 50% is engaged in non-agricultural activities.
2	Capital city of the respective Administration	Capital city of the zone Administration	Capital city of the Woreda Administration	Capital city of the Woreda Administration
3	importance of the city for future development of the region	City must be strategically important	City must be important future development of the region.	

On the basis of the aforementioned criteria, the total number of Cities at various levels , that is city Administration level, Municipal and Emerging are four (7.84%), twenty nine (46.86%) and eighteen (35.29%) respectively.

Among the Cities located in West Gojjam, East Gojjam, Awi and Bahir Dar Administration Zones only 24 (47.06%) of them have General Secondary Schools in 2004/05. However, the

distribution of these general secondary schools is not uniform. Bahir Dar city has 4 schools; Debre Markos city has 2 schools and each of the remaining 22 Cities have one school each. The distribution of secondary schools is indicated in Table 3:2.

Table 3:2. Distribution of general Secondary Schools on the basis of the Categorization of Cities

Zone	Woreda	City Administration	Municipal City	Emerging City
West Gojjam	Achefer Bahir Dar Zuria Yilemana Densa Burie Dega Damot Dembecha Mecha Quarit Fenote Selam	 Damot	 Adet Shikudad Dembecha Merawi Gebeze Mariyam	Yismala Feres Bet
Sub total	**8 schools**	**1 school**	**5 schools**	**2 schools**
East Gojjam	Awabel Bibugn Dejen Goncha siso Enesie Hulet Eju Enesie Inarj Inawuga Inemay Machakil Enebse Debre Markos	 Debre Markos and Abima	Gunbot 20 Gojjam Ber Bahir Negash Motta Bechena Belay Zeleke Amanuel Abreha Wo Atsebha	 Leyew Asres
Sub total	**11 schools**	**2 schools**	**8 schools**	**1 school**
Awi	Dangila Ankesha Guangua Banja Enjibara	 Enjibara	Dangila Gemeja Bet Chagni Tilelie	
Sub total	**5 schools**	**1 school**	**4 schools**	
Bahir Dar (4 schools)	Bahir Dar	Tana Haik, Ghion, Fasilo and Catholic		
Sub total	**4 schools**	**4 schools**		
Total	***28 schools***	***8 Schools***	***17 Schools***	***3 Schools***

The population for investigation on the basis of the Cities categorization was 8 schools from city Administration, 17 schools from Municipal Cities, and 3 schools from Emerging Cities.

The fifth step was to select a sample school from each category. It is apparently clear that when sample groups are to be subdivided into smaller groups to be compared, then at the initial stage of sample selection, large sizes are recommended so that the sub groups are of adequate size (Best et al., 1993:20). With this respect, samples selected for the study were 5 schools (71.45%) from

Administration Cities, 9 schools (52.94%) from Municipal Cities and 3 Schools (100%) from Emerging Cities through simple randomization technique (drawing a lottery).

Once the selection of the sample school is completed then for the sampling of pupils, teachers, department heads and principals the following procedures have been employed.

3.3.2. Sampling Procedure and Sample Size for Students

Selection of 435 grade nine and 375 grade 10 sample students from the selected 17 sample general secondary schools follows the following procedures.

The first step was to closely examine the educational characteristics of the study area. This is indicated in Table 3:3.

Table 3:3. Educational characteristics of the sample schools

Name of the Zone	Name of the Woreda	Name of the School	Average Pupil/Section ratio		% of female Students from the total	
			Grade 9	Grade 10	Grade 9	Grade 10
West Gojjam	Achefer	Yismala	61	60	40.00	36.33
West Gojjam	Burie	Shikudad	65	65	34.76	23.79
West Gojjam	Dega Damot	Feres Bet	179	82	28.19	25.04
West Gojjam	Dembecha	Dembecha	75	81	30.72	27.86
West Gojjam	Mecha	Merawi	170	117	31.46	25.40
East Gojjam	Dejen	Gojjam Ber	67	59	38.53	28.33
East Gojjam	Hulet Eju Enesie	Motta	106	94	36.82	20.81
East Gojjam	Inemay	Belay Zeleke	88	84	41.23	29.38
East Gojjam	D/Markos Ketema	Debre Markos	76	71	40.49	42.82
East Gojjam	D/Markos Ketema	Menkorer	80	82	41.25	28.94
East Gojjam	Bibugne	Leyew Asres & his family	79	68	29.19	23.56
Awi	Dangila	Dangila	59	59	38.06	34.66
Awi	Ankesha	Ankesha	73	62	21.55	12.83
Bahir Dar City Administration	City Council One	Tana Haik	71	69	44.63	47.91
Bahir Dar City Administration	City Council One	Ghion	71	74	39.12	39.84
Bahir Dar City Administration	City Council One	Fasilo	68	72	47.38	48.01
Bahir Dar City Administration	City Council One	Catholic	65	57	53.85	52.63
Averages for the sample schools			**79**	**72**	**36.74**	**32.13**

Source: Amhara REB (2005).

The total numbers of available sections for grade 9 and 10 were 320 and 189 respectively (see Appendix B). Besides, the total number of students attending in all sections in grade nine and ten

were 25,290 (15,999 male, 9,291 female) and 13,695 (9,295 male, 4,400 female) respectively (Appendix B). Therefore, the average class size for grade nine was 79 while for grade ten was 72. In addition, the percentage share of female students accounted 36.74% for grade nine and 32.13% for grade ten. These general characteristics have forced the investigator to select sample students from each section from each school.

The second step was to randomly select one section from each grade level in each school. The method employed for the selection of the section was the simple randomization method, which specifically deals with aggregate events.

The third step was to select sample students from each section. Here, information on students name, age and gender were collected from each section. Following this, in consultation with each homeroom teacher, mentally retarded and blind students were excluded in the study since they could not perform the test. In line with this, all of the students have not problems for investigation. Then after, 30% of the students from grade 9 and 10 were selected for the study through simple randomization method. In the selection process, to ensure that female students were proportionally represented to their male counter parts in the sample, 36.74% of grade nine students and 32.13% of grade 10 students were considered to be females. At the end, 435 (275 male and 160 female) grade nine and 375 (256 male and 119 female) grade ten students in the selected samples schools were selected to participate in filling the questionnaire and sittings for the performance tests.

3.3.3. Sampling Procedures and Sample Size for Teachers

The process that had been involved in the selection of 50 geography teachers from the seventeen sample general secondary schools were the following:

The first step was to identify the total number of geography teachers in the sample schools. Accordingly, 50 teachers were teaching geography, of which, 10% of them were females (see Appendix C).

The second step was the selection of sample teachers for the study. Researchers argue that the larger the sample size, the better is the interaction between school communities and the more likely is the correlation of performance of students with school related factors. Moreover, the larger the sample, the smaller is the magnitude of sampling error (Best et al., 1993:20). Viewed in this context, the whole 45 male and 5 female geography teachers in the sampled schools were involved in filling up the questionnaire.

3.3.4. Sampling Procedure and Sample Size for Geography Department Heads and School Principals

It has to be recalled from the general population, a sample of 17 general secondary schools were selected. Educational researchers recommended that the ideal sample have to be large enough to serve an adequate representation of the population (Best et al, 1993:81).

In line with this, all the heads of geography department (17), and all school principals (17) that were working in sampled schools were involved in the study. Therefore, 60.71% of the target school principals and 60.71% department heads, were involved in filling the questionnaire.

3.4. Data Sources and Instruments of Data Collection

As it is explained above, the method of design is descriptive, which employs the dependent variable and the independent variables. In light of this, the following data sources and tools of data collection were employed.

3.4.1. Data Sources: Primary and Secondary Sources

The collection of information was carried out through primary and secondary sources. In the secondary data, relevant books, booklets, journals, newsletters, which show the practices of school related factors influencing performance of students were reviewed in the literature part, to support the findings of the study. In addition, available reports and documents regarding the issue were reviewed.

Primary data was collected from field observations, official records, case studies, focus group discussion (held with teachers and department heads) and the four groups of respondents (school principals, department head, teachers and students).

3.4.2. Data Gathering Tools

Five different instruments were employed to collect the necessary information about the school related factors affecting the performance of students in map reading at 17 secondary schools of Amhara NRS. They are: questionnaires, interviews, classroom teaching observation, performance tests and school and classroom checklists.

3.4.2.1. Questionnaires

Extensive questionnaires that covered a wide range of themes were designed and administered for principals, pupils, teachers, and geography department heads.

The first structured questionnaire was prepared for school principals (Appendix H). It was designed mainly to collect data on the personal information of the principal, teachers' continuous professional support, physical school facilities and efficient use of instructional time. In total, 17 questions were asked in the principals' questionnaire.

The second questionnaire was designed for students in Amharic version to facilitate communication and increase understanding. The structured questionnaire (Appendix IB) filled by pupils was intended to collect mainly their personal information, teaching learning process, students attitude and academic background and other general issues. There were about 21 questions asked in students questionnaire.

The third questionnaire was designed for teachers. The structured questionnaire (Appendix J) includes items regarding teachers personal characteristics; teacher educational qualification, attitude and teaching assignment; instructional materials; students classroom behavior; teaching learning process and other general issues. The total questions asked in this questionnaire were 27.

The fourth questionnaire focused on head of geography department. It was designed to gather data on their personal information, mechanism of teachers professional development; teaching

learning process and general issues (Appendix K). A total of 18 questions were asked in the geography department head questionnaire.

Following the preparation of the aforementioned questionnaires for different groups, the draft questionnaires were pilot tested to the respective cohort at Adet, Damot and Gebeze Mariam General Secondary Schools for comments on the content, language and clarity. Based on the comments of the tryout test, the questionnaires were refined and finalized with the inclusion of all the necessary comments. Lastly, the final form was distributed to the respective groups in the sample schools.

3.4.2.2. Interviews and Focus Group Discussion: Geography Teachers and Department Heads

This technique was intended to acquire qualitative data on issues that had been related to the current study by conducting semi-structured group interview with geography department heads and geography teachers (Appendix L).

The interview guide mainly focused on the emphasis given to map reading topic in the overall geography education, vastness and level of difficulty of the contents of map reading topic; adequacy of time allotment, appropriateness of teaching aids, teaching methods and assessment techniques; interests of students, teachers and department heads in map reading.

3.4.2.3. Document Review through Field Works

Document review through observation was employed as complementary technique to gather the necessary data concerning to the general information on the schools, teachers related issues, availability and adequacy of physical facilities of the school, availability of instructional materials and general comments.

Accordingly, data collection checklist was prepared (Appendix M). Then after, data was collected either through document review or interviewing some of the concerned officials in the school. The fieldwork was conducted from the first week of December to April 2006.

3.4.2.4. Classroom Observation

The geography department head of each school had undertaken classroom observation for two periods of 40 minutes in each of the selected sample sections. It was intended particularly for recording teachers activities, students activities and utilization of instructional materials in the teaching learning process.

To materialize this, the rating scale was prepared based on literature review and experiences of supervisors working at various levels. In order to confirm the accuracy of the instruments, the scales were delivered to well experienced and senior professionals on classroom teaching evaluation. These professionals include the supervisors at various levels of educational Administration (Amhara REB, ZED and WEO) and three instructors of the education faculty of the Bahir Dar University. They basically requested to confirm the level of relevance of the observation checklists with their prior knowledge and experiences. The feedbacks were obtained used for further improvements of scales. Finally, the approved scale (Appendix N) has been used for the actual evaluation of teacher classroom behavior.

Following the development of the observation checklist, the head of the geography department of three Secondary Schools (Adet, Damot and Gebeze Mariam) were oriented for two hours in how to use the observation checklist, and to tally the observed classroom events. Then after, two sections from each grade level were observed while teachers were teaching map reading in two different periods. Necessary improvements of observation checklist were made after taking the comments of judges into consideration. Finally, 17 sample classrooms were observed for two periods, each observation having at least a one day interval. Thus a total of 34 periods were used to observe the sample sections, care was taken not to repeat observation of a single sub topic of map reading topic.

3.4.2.5. Teacher Made Performance Tests

The tests were intended to evaluate to what extent national objectives of map reading were attained in terms of pupil performance. The tests were specifically made for grade nine and ten, taking into account the objectives and the content of the curriculum. Hence, the performance tests prepared for grade nine was designed to measure five specific content areas, namely, (i)

Uses of maps and marginal information on map, (ii) Types of maps, (iii) Scales, (iv) Scale conversion and (v) Statistical diagrams. For grade ten map reading performance test, this study was designed to measure five content areas, namely, (a) Map enlargement and reduction, (b) Measurement of distance and areas on maps, (c) Directions and bearings on maps, (d) Positions on maps and, (e) Relief on maps.

Regarding the designing of performance tests, first, all geography teachers from Bahir Dar city were drawn for consensus building on common frame works and relative emphasis that would be placed on each topic. The reason behind for selecting teachers from Bahir Dar schools was that they are situated near the working place of the investigator in which budget for training was minimal. As a consequence of this, common table of specification for test construction was developed (Appendix D and Appendix E). Second, each school prepared and then submitted 20 test items that they felt were appropriate and met the requirements of the performance test. With this regards, a total of 80 specific questions were prepared. Third, each item was evaluated and rated for its relevance against the framework and appropriateness for the curricula by A.N.R.S. student's ability measurement and student's service team leader and the experts. Furthermore, measurement and evaluation as well as geography lecturers at Bahir Dar University have given their general comments. The items with highest ratings across the aforementioned subject specialists and measurement specialists were placed into a pool of acceptable questions.

Following the preparation of the test, pilot testing was carried out for 243 students (131 grade nine and 113 grade ten) of the respective grade level drawn from Adet, Damot and Gebeze Mariam General Secondary Schools. After the test had been piloted, their fidelity was verified with respect to clarity of selected items and their internal consistency.

Accordingly, the Kuder and Richardson method which deals with individual item was used. Conventionally, test fidelity is considered good if the score error variance is in the order of 10%, and still acceptable if it is less than 20%. Estimation of the Kuder Richardson coefficient value, using the formula 20, revealed that grade 9 and grade 10 had got 0.86 and 0.90 values respectively. On the basis of these, it can be said that test fidelity is satisfactory.

In the final Administration of the test, 20 map reading questions were selected. All Grade nine items used multiple choice and short answer format. Grade ten items used a multiple choice format. The total number of students who took this final examination was 435 (275 male and 160 female) grade nine and 375 (256 male and 119 female) grade ten students. The time of the map reading performance test was January 2006.

3.5. General Characteristics of Respondents and Sample Schools

Using the data collection instruments prepared for the present study, questionnaires were filled, direct observation was made and interviews were conducted. The numbers as well as the characteristics of the respondents are narrated hereunder.

3.5.1. Number of Respondents in the Sample Schools

After the instruments for data collection have been prepared and then dispatched to the respondents, the total numbers of forms completed are shown in Table 3.4.

Table 3.4. Number of respondents by city categorization in which the school belonged

Respondents	Schools in Administration Cities		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No.	%	No.	%	No.	%	No.	%
Principals Questionnaires	6	100	8	100	3	100	17	100
Students Questionnaires	254	99.22	391	98.74	158	100	803	99.15
Geography teachers Questionnaires	15	100	27	100	8	100	50	100
Geography department heads Questionnaires	6	100	8	100	3	100	17	100
Students who took map reading test	256	100	396	100	158	100	810	100

All the principals (17), almost all students (803), all teachers (50) and all department heads (17) completed and then returned the questionnaires that were distributed to them. Interviews were held with 50 (100%) geography teachers and department heads. Moreover, checklists were filled in 17 (100%) schools in order to collect data on school and classroom variables. Classroom observation was conducted at seventeen grade 9 and seventeen grade 10 sections. The total number of students who took the examination were 435 grade nine and 375 grade ten students.

3.5.2. Characteristics of Respondents

3.5.2.1. Characteristics of School Principals

A four page questionnaire with 16 objective items and sub items totaling 19 and one open ended question (question 15) were administered to 17 secondary school principals who are believed to have impact in the school effectiveness. Table 3:5 below shows that personal characteristics of school principal in the sample schools.

Table 3:5. General Information on School Principal Respondents

No	Characteristics	Schools in Administration Cities		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No.	%	No.	%	No.	%	No.	%
1	Sex								
	• Male	3	100	8	100	6	100	17	100
	• Female	-----	-----	-----	-----	-----	-----	-----	-----
	Total	**3**	**100**	**8**	**100**	**6**	**100**	**17**	**100**
2	Education Qualification								
	• MA/MSc	----	----	----	----	----	----	----	----
	• BA/BSc	1	33.33	8	100	6	100	15	88.24
	• Diploma	2	66.67	----	----	----	----	2	11.76
	• TTI	----	----	----	----	----	----	----	----
	Total	**3**	**100**	**8**	**100**	**6**	**100**	**17**	**100**
3	Age	----	----	----	----	----	----	----	----
	• 20 & below	----	----	----	----	----	----	----	----
	• 21 – 25 years	1	33.33	----	----	----	----	1	5.88
	• 26 – 30 years	2	66.67	3	37.5	1	16.67	6	35.29
	• 31 – 35 years	----	----	1	12.5	----	----	1	5.88
	• 36 – 40 years	----	----	3	37.5	----	----	3	17.65
	• 41 – 45 years	----	----	1	12.5	4	66.67	5	29.41
	• 46 – 50 years	----	----	----	----	1	16.67	1	5.88
	• 51 & above	----	----	----	----	----	----	----	----
	Total	**3**	**100**	**8**	**100**	**6**	**100**	**17**	**100**
4	Work Experience								
	• 5 & below	----	----	1	12.5	1	16.67	2	11.76
	• 6 – 10 years	1	33.33	2	25.0	----	----	3	17.65
	• 11 – 15 years	1	33.33	2	25.0	----	----	3	17.65
	• 16 – 20 years	----	----	2	25.0	3	----	5	29.41
	• 21 – 25 years	1	33.33	----	----	2	----	3	17.65
	• 26 & above	----	----	1	12.5	----	----	1	5.88
	Total	**3**	**100**	**8**	**100**	**6**	**100**	**17**	**100**

All of the General Secondary school principals under investigation (100%) were males. This is the reflection of the unbalanced participation of females in educational management which is also a national and global problem that has not yet been solved (MOE, 1996:5-8).

With regard to the educational qualification, the majority 15 principals (88.24%) were BA/BSc graduates and the rest two of them (11.76%) were college diploma holders. This indicates that principals are likely to give relevant and refined information on the issue under study.

As to the age range of principals, greater minority of them (35.29%) were between 26and 30 years; while a little more than a quarter of them (29.41%) were between 41 and 45 years. This indicates that all of the respondents were adolescents who are in their vital working age to provide reliable data.

Concerning on work experience of principals that five (29.41%) have work experience of 16 to 20 years followed by 6 to 10 (17.65%); 11 to 15 (17.65%); 21 to 25 (17.65%); 5 and below (11.76%) and 26 and above (5.88%) respectively. Hence, the vast majority of the principals have accumulated sufficient experience and knowledge in their respective occupation.

3.5.2.2. Characteristics of Student Respondents

A six page questionnaire with 20 objective item and one open ended question (item 21) were administered to 803 students. The characteristics of the student respondents is indicated in Table 3:6.

Table 3:6. Personal Characteristics of Students

No	Characteristics	Schools in Administration Cities		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No.	%	No.	%	No.	%	No.	%
1	Sex								
	• Male	145	57.09	273	69.82	111	70.25	529	65.88
	• Female	109	42.91	118	30.18	47	29.75	274	34.12
	Total	**254**	**100.0**	**391**	**100.0**	**158**	**100.0**	**803**	**100.0**
3	Age								
	• 12 and below	-----	-----	-----	-----	-----	-----	-----	-----
	• 13 – 14 years	13	5.12	5	1.28	-----	-----	18	2.24
	• 15 – 16 years	133	52.36	101	25.83	27	17.09	261	32.51
	• 17 – 18 years	93	36.61	241	61.64	121	76.58	455	56.66
	• 19 & above	15	5.91	44	11.25	10	6.33	69	8.59
	Total	**254**	**100.0**	**391**	**100.0**	**158**	**100.0**	**803**	**100.0**

Most of the students (65.88%) were males and the remaining 34.12% were females. The number of girl's students in the study schools is relatively small.

A little more than half (56.66%) were between the age category of 17 and 18; 32.51% were between 15 and 16 years; 8.59% 19 and above and 2.24% were between 13-14 years of old.

3.5.2.3. Characteristics of Geography Teacher Respondents

A seven page questionnaire with 26 objective items and one open ended question (item 27) were administered to 50 geography teachers. The personal characteristics of geography teachers who were involved in the study are presented in Table 3:7.

Table 3:7. Personal Characteristics of Geography Teachers

No	Characteristics	Schools in Administration Cities		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No.	%	No.	%	No.	%	No.	%
1	Sex								
	• Male	13	86.67	25	92.59	7	87.5	45	90.0
	• Female	2	13.33	2	7.41	1	12.5	5	10.0
	Total	**15**	**100.0**	**27**	**100.0**	**8**	**100**	**50**	**100**
2	Education Qualification								
	• MA/MSc	-----	-----	-----	-----	-----	-----	-----	-----
	• BA/BSc	7	46.67	9	33.33	1	12.5	17	34.0
	• Diploma	6	40.0	12	44.44	4	50.0	22	44.0
	• Others (12+summer)	2	13.33	6	22.22	3	37.5	11	22.0
	Total	**15**	**100.0**	**27**	**100.0**	**8**	**100**	**50**	**100**
3	Age								
	• 20 & below	-----	-----	-----	-----	-----	-----	-----	-----
	• 21 – 25 years	-----	-----	9	33.33	5	62.5	14	28.0
	• 26 – 30 years	4	26.67	16	59.26	3	37.5	23	46.0
	• 31 – 35 years	-----	-----	2	7.41	-----	-----	2	4.0
	• 36 – 40 years	6	40.0	-----	-----	-----	-----	6	12.0
	• 41 – 45 years	2	13.33	-----	-----	-----	-----	2	4.0
	• 46 – 50 years	-----	-----	-----	-----	-----	-----	-----	-----
	• 51 – 55 years	2	13.33	-----	-----	-----	-----	2	4.0
	• 56 & above	1	6.67	-----	-----	-----	-----	1	2.0
	Total	**15**	**100.0**	**27**	**100.0**	**8**	**100**	**50**	**100**
4	Work Experience								
	• 5 & below	2	13.33	11	40.74	7	87.5	20	40.0
	• 6 to 10 years	4	26.67	5	18.52	1	12.5	10	20.0
	• 11 to 15 years	----	----	----	----	----	----	----	----
	• 16 to 20 years	----	----	----	----	----	----	----	----
	• 21 to 25 years	4	26.67	5	18.52	----	----	9	18.0
	• 26 to 30 years	1	6.66	1	3.70	----	----	2	4.0
	• 31 to 35 years	3	20.0	4	14.81	----	----	7	14.0
	• 36 & above	1	6.66	1	3.70	----	----	2	4.0
	Total	**15**	**100.0**	**27**	**100.0**	**8**	**100**	**50**	**100**

With regards to the gender of geography teachers, it was revealed that the vast majority of geography teachers (90.0%) were males and the rest (10.0%) were females.

As to the academic qualification of geography teachers, 34% of geography teachers hold BA degree, 22% have 12+3 and the rest 66.0 % have college diploma. Teachers with 12+3 qualification are in the pipeline of summer residential training at different universities.

Concerning the age distribution of geography teachers, it was found out that a little less than half of the geography teachers (46.0%) were between the age of 26 - 30; a little more than a quarter of them (28.0%) were between 21 - 25; 12.0% were between 36 – 40, 4% of them were between 31 – 35; 41 – 45; and 51 – 56 and 2.0% were 56 and above years old.

As to the experience of geography teachers, about 38% of the teachers had served less than 5 years; 20 % of them had served 6 to 10 years; 18% had served 21 to 25 years, 14% had served 14 years; 4% had served 26 to 30 and more than 36 years. Aged and more experienced teachers were found in administrative Cities.

3.5.2.4. Characteristics of Geography Department Heads Respondents

A four page questionnaire with 17 objective item and sub items totaling 21 and one open ended question (item 27) with four sub items were administered to 17 geography department heads. This group was in fact very small in number and very informative. Characteristics of geography department head is indicated in Table 3:8.

Table 3:8. Personal Characteristics of Geography Department Heads

No	Characteristics	Schools in Administration Cities		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No.	%	No.	%	No.	%	No.	%
1	Sex								
	• Male	6	100	8	100	3	100	17	100
	• Female	-----	-----	-----	-----	-----	-----	-----	-----
	Total	**6**	**100**	**8**	**100**	**3**	**100**	**17**	**100**
2	Education Qualification								
	• MA/MSc	-----	-----	-----	-----	-----	-----	-----	-----
	• BA/BSc	6	100	1	12.5	-----	-----	7	41.18
	• Diploma	-----	-----	7	87.5	3	100	10	58.82
	• Others (12+summer)	-----	-----	-----	-----	-----	-----	-----	-----
	Total	**6**	**100**	**8**	**100**	**3**	**100**	**17**	**100**
3	Age								
	• 20 & below	-----	-----	-----	-----	-----	-----	-----	-----
	• 21 – 25 years	-----	-----	-----	-----	1	33.33	1	5.88
	• 26 – 30 years	2	33.33	6	75.0	2	66.67	10	58.82
	• 31 – 35 years	1	16.67	2	25.0	-----	-----	3	17.65
	• 36 – 40 years	1	16.67	-----	-----	-----	-----	1	5.88
	• 41 – 45 years	-----	-----	-----	-----	-----	-----	-----	-----
	• 46 – 50 years	1	16.67	-----	-----	-----	-----	1	5.88
	• 51 – 55 years	1	16.67	-----	-----	-----	-----	1	5.88
	• 56 & above	-----	-----	-----	-----	-----	-----	-----	-----
	Total	**6**	**100**	**8**	**100**	**3**	**100**	**17**	**100**
4	Work Experience								
	• 5 & below	1	16.67	1	12.5	3	100	5	29.42
	• 6 to 10 years	-----	-----	7	87.5	-----	-----	7	41.18
	• 11 to 15 years	-----	-----	-----	-----	-----	-----	-----	-----
	• 16 to 20 years	1	16.67	-----	-----	-----	-----	1	5.88
	• 21 to 25 years	1	16.67	-----	-----	-----	-----	1	5.88
	• 26 to 30 years	2	33.33	-----	-----	-----	-----	2	11.76
	• 31 to 35 years	1	16.67	-----	-----	-----	-----	1	5.88
	• 36 & above	-----	-----	-----	-----	-----	-----	-----	-----
	Total	**6**	**100**	**8**	**100**	**3**	**100**	**17**	**100**

Concerning the gender of department heads, all of geography department head in the study area were males. There is unbalanced male representation in the sample, due to low number of female education in the upper levels.

With regards to level of qualification, about 58.82% of the geography department heads were college diploma graduates and the rest 41.18% were graduates of Bachelor degree.

As to age of geography department heads, about 58% of them were between 26 and 30; 17.65% were 31 to 35 years old; 5.88% were between 21 and 25; 5.88% were between 46 and 50 and 5.88% were between 51 and 55.

Regarding the total work experience, the majority of the department heads (70.6%) had work experience of 10 and below years. It was also observed that the better the level of city development, the higher is the age and the experience of department heads.

3.6. Strategy of Data Analysis

Once the collection of data was completed, then tallying, organizing, describing and summarizing of the data for each of the schools had been carried out through different methods. Accordingly, the raw data collected through questionnaires and performance tests were stored in a separate data files. The SPSS statistical software package (SPSS, 11.5 for windows) were used to recode variables and conduct descriptive statistics, univariate and bivariate analysis.

3.6.1. Preparation of the Code Book

Once the data were collected through various instruments then the next step was obviously facilitating data using the code book. Elements included in the code book were (i) the establishment of variable names, label names and values for each type of data; (ii) the definition of missing values for each type of data; and (iii) the design of a data entry screen to be used in a user friendly way.

With regards to data transformation, the responses collected from students, teachers, department heads and principals were organized into coding books. However, some raw data were not convenient for analysis. As a consequence, transformation of some raw data was made. These includes (1) all responses that were given in alphabetical order was converted into numerals. (2) Some of the interval data like teachers experience; number of books per school library, class size, and age of students were converted into categorical data.

Concerning the handling of missing data, in the raw data files, the following alphabetical codes were used to represent the responses. For multiple-choice question, "A" to "H" represents responses, while "I" represents "Ambiguous Answer", "J" represents "No Answer", and "K" represents "Non reached".

For open ended questions, "A" represents "Correct Answer", "B" represents "Incorrect or Ambiguous Answer". "J" and "K" represent "No Answer" and "Non Reached" respectively.

In doing so, the summary of the overall missing data revealed that except for students questionnaire (0.86% of missing data), in other questionnaires it was not observed. This revealed that the amount of missing data in the study was generally low and insignificant. As a consequence, the missing data was not considered in the investigation.

Concerning map reading performance test Administration, for each response that was classed as correct, a student was assigned a score of "+1". For each response that classed as incorrect, a student was assigned a score of "0". The student test score attained from such simple scoring procedure was call raw score. The map reading performance scores in this part were based on raw scores.

3.6.2. Analysis of Data

Concerning student map reading performance test analysis, percentage of correct answers, instead of the total number of correct answers, was used to express raw scores for individual student since it is relatively easy to be understood by others. For each mean correct percentage, standard deviation (SD) was calculated to indicate the range of the difference.

With regards to analysis of the data on the level of relationship between map reading mean scores of various levels of City categorizations, correlation analysis was employed. The statistical impact on the dependent variable of any independent variable was then accepted at 0.05 (or better) significance levels.

As to the analysis of each independent variable, mean scores and percentages were employed. The results have been presented using tables.

CHAPTER FOUR: ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the analysis and interpretation of two main issues. First, it investigates the student's map reading performance test scores. Second, it examines school related factors that explained variation in map reading performances.

4.1. Analysis and Interpretation of Students' Map Reading Performance Test Results

The analysis and interpretation of this section is based on data collected through teacher made map reading performance tests for grade nine and ten. The purpose of these tests was to find out to what extent map reading skills were acquired by students. The map reading performance test has been analyzed on the basis of the regional guideline for measurement and evaluation of students (Amhara REB, 2004b). Accordingly, if a student correctly answers at least 50% of the items in a given discipline, it is considered that he/she has performed the mastery of the discipline.

4.1.1. Map Reading Mean Scores for Grade Nine

The map reading performance test results of the present study including mean and standard deviations for grade nine are presented in Table 4:1.

Table 4:1. Map Reading Performances for Grade Nine

Schools on the basis of city categorization	sex	No of students	Mean	SD
Schools in City Administration	Female	56	34.02	14.998
	Male	73	40.33	20.773
	Total	129	37.59	18.688
Schools in Municipal Cities	Female	73	42.88	6.610
	Male	137	45.84	4.560
	Total	210	44.81	5.530
Schools in Emerging Cities	Female	29	36.72	16.705
	Male	67	43.06	15.906
	Total	96	41.15	16.327
All sample schools	Female	158	38.61	12.855
	Male	277	43.71	13.736
	Total	435	41.86	13.632

The average map reading score obtained for all grade nine sample schools (41.86%) was lower than the intended value (50%). This implies that the level of map reading performance of students is low. The average score earned by female students was found to be 38.61% and 43.71% for males. This indicates that males out perform females. On the other hand, the highest map reading score were found in schools at Municipal Cities with an average of 44.81 percent correct followed by schools at Emerging Cities (41.15%) and schools at Administration Cities (37.59%).

In order to examine whether there existed a significant difference in the mean scores of the map reading performance test across gender and city classification, standard deviation was calculated. The fact that the standard deviation is high shows that there are many students who have performed extremely poor. Furthermore, it was found out that higher deviation in map reading performance was observed in males than females. Across city categorization, highest standard deviation of 18.66 of schools at Administration Cities implies a perceived difference of map reading learning performances.

So as to compare whether there existed a significant difference in the mean map reading performance score for the various groups of schools on the basis of city classification, Post Hoc test was carried out. The results of the analysis presented in Table 4:2.

Table 4:2. Multiple Comparisons of Map Reading Performances Score for Grade Nine

(i) Name of city categorization	(j) Name of city Categorization	Mean difference (i-j)	SE	Sig.	95% confidence interval	
					Lower Bond	Upper Bound
Emerging	Municipal	-3.66*	1.617	0.024	-6.84	-.48
	Administration	3.56*	1.769	0.045	.08	7.03
Municipal	Emerging	3.66*	1.617	0.024	.48	6.84
	Administration	7.22*	1.468	.000	4.33	10.11
Administration	Emerging	-3.56*	1.769	.045	-7.03	-.08
	Municipal	-7.22*	1.468	.000	10.11	-4.33

Based on observed means.
*.The mean difference is significant at the 0.05 level.

The average map reading mean score between schools at various level of categorization showed significant difference at 0.05 level of significance. To put it differently, at 0.05 level of

significance, students at Emerging city schools performance significantly correlated with the performance of students of Municipal and Administration.

4.1.2. Map Reading Mean Scores for Grade Ten

A close examination of map reading performance of students at grade ten was carried out. The map reading performance test results of Grades ten are presented in Table 4:3.

Table 4:3. Map Reading Performances for Grades Ten

Schools on the basis of city categorization	sex	No of students	Mean	SD
Schools in City Administration	Female	54	39.35	16.167
	Male	73	41.90	17.235
	Total	127	40.82	16.771
Schools in Municipal Cities	Female	47	45.43	5.195
	Male	139	48.49	3.885
	Total	186	47.72	4.444
Schools in Emerging Cities	Female	18	38.06	15.824
	Male	44	44.66	13.784
	Total	62	42.74	14.589
All sample schools	Female	119	41.55	13.193
	Male	256	45.95	11.514
	Total	375	44.56	12.227

It was found out that the overall map reading performance of students in Grades ten was low (44.56%). The average score obtained by female students was found to be 41.55% while that of male students 45.95% resulting in a mean difference of 4.4. The variation in map reading performance of students was found not only across gender, but also among levels of city classification. Accordingly, schools at Municipal Cities (47.72%) out performed than schools at Emerging Cities (42.74%) and schools at Administration Cities (40.82%) respectively.

A further look into grade ten map reading performance test score indicated that there is significant mean difference between schools with regards on the basis of city classification. Furthermore, a significant difference was observed across sex.

In order to compare variations among school groups on the basis of city categorization, Post Hoc test analysis was carried out. The results of the analysis are presented in Table 4:4.

Table 4:4. Multiple Comparisons of Map Reading Performances Score for Grade Ten

(i) Name of city categorization	(j) Name of city Categorization	Mean difference (i-j)	SE	Sig.	95% confidence interval	
					Lower Bond	Upper Bound
Emerging	Municipal	-4.97*	1.724	0.004	-8.36	-1.58
	Administration	1.92	1.821	0.292	-1.66	5.50
Municipal	Emerging	4.97*	1.724	0.004	1.58	8.36
	Administration	6.90*	1.353	.000	4.24	9.56
Administration	Emerging	-1.92	1.821	.292	-5.50	1.66
	Municipal	-6.90*	1.353	.000	-9.56	-4.24

Based on observed means.
*.The mean difference is significant at the 0.05 level.

The average map reading mean score between schools at Emerging Cities and schools on Municipal showed that there was significant difference in terms of sex and level of city classification at 0.05 level of significance.

In summary, the differences in map reading mean scores across grade nine and ten on the basis of city classifications and gender was significant. This variation could partly be attributed to variation in the school related factors, which is dealt in the next section.

4.2. School Related Factors that Influence Map Reading Performance of Students

This part of the study presents the possible school related factors that attributed to variations in map reading performance of students. To this end, the data collected through questionnaires (School principal, department heads, teachers, and students), interviews (department head and teachers) have been used. Along side with this, information collected from classroom observation and check lists were employed.

4.2.1. Teacher's Qualification, Professional Experience and Teachers Area of Specialization

Poor performance of students in map reading at secondary schools may result from low qualification of geography teachers, professional experience and area of specialization. Accordingly, theses issues were investigated in the following sections.

4.2.1.1. Teachers Qualification

Success in map reading skill highly depends on the qualification of geography teachers since teaching map reading involves specialized skill (UNESCO, 1965:199). The qualification of teachers are the result of pre-service and in-service training programs (Anderson, 2000; Craig et al, 1998; Maheshwari & Raina, 1998). With this regards, the Education and Training Policy of Ethiopia (TGE, 1994a) states that secondary school geography teachers should have at least Bachelor degree. To this end, structured questionnaires were administered to geography teachers in each sample school to asseses their academic and professional qualification. Accordingly, the results have been presented in Table 4:5.

Table 4:5. The Levels of Academic Qualification of Geography Teachers

No	Teachers level of education related questions	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No	%	No	%	No	%	No	%
1	What is your Level of education?								
	• MA/MSc	----	----	----	----	----	----	----	----
	• BA/BSc	7	46.67	9	33.33	1	12.5	17	34.0
	• Diploma	6	40.0	12	44.44	4	50.0	22	44.0
	• Others (12+3)	2	13.33	6	22.22	3	37.5	11	22.0
2	Where did you graduated from?								
	• Addis Ababa University	----	----	----	----	----	----	----	----
	• Bahir Dar University	14	93.33	25	92.59	7	87.5	46	92.0
	• Alemaya University	----	----	----	----	1	12.5	2	2.0
	• Dilla TEC	1	6.67	----	----	----	----	2	2.0
	• Gondor TEC	----	----	2	7.41			2	4.0

Out of 50 teachers who filled out the questionnaire, 17 (34%) had got Bachelor degree, 22 teachers (44%) had got diploma and the rest 11 teachers (22.0%) had diploma qualification and they are involved in the summer in-service program. Across schools, the proportion of teachers with bachelor qualification was very high in schools at Administration Cities (46.67%), comparatively high in schools at Municipal Cities (33.33%) and very low in schools at Emerging Cities (12.5%). Teachers from school at Emerging Cities seem to benefit more from the summer in-service education program than Administration Cities and Municipal Cities. With this teachers qualification profile, it is difficult to think of effective teaching in the schools. Thus, the low performance of students can be partly attributed to lack of qualified teachers.

Teachers with the same level of academic and professional qualification may exert differences in the mastery of map reading skills. This is due to the difference in the appropriateness and sufficiency of the courses that they took at the university. As a result, teachers were requested to name the university they graduated from. Accordingly, about 92 % of the teachers were identified to be graduates of Bahir Dar University. Other teachers graduated from Gondor Teachers Education College, Alemaya University and Dilla Teachers Education College accounted 4.0%, 2% and 2% respectively. The percentage of teachers that graduated from Bahir Dar University in schools at Administration Cities, Municipal Cities and Emerging Cities accounted 93.33%, 92.59% and 87.5% respectively. Therefore, the vast majority of teachers were graduates of Bahir Dar University.

So as to evaluate the relevance of undergraduate program courses with secondary school map reading topic, structured questionnaire were administered to teachers. The responses obtained are indicated in table 4:6.

Table 4:6. Evaluation of Undergraduate Maps Reading Related Courses

Questions on evaluation of tertiary education program map reading courses and geography teachers level of agreement.	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No.	%	No.	%	No.	%	No.	%
Did you take map reading or related courses while you were studying for your graduate studies?								
• Yes	15	100	27	100	8	100	50	100
• No	----	----	----	----	----	----	----	----
• No response	----	----	----	----	----	----	----	----
The map courses provided when I was at college or university were sufficient.								
• Strongly Agree	2	13.33	3	11.11	1	12.50	6	12.0
• Agree	2	13.33	5	18.52	2	25.0	9	18.0
• Undecided	----	----	----	----	----	----	----	----
• Disagree	11	73.33	19	70.37	5	62.5	35	70.0
• Strongly Disagree	----	----	----	----	----	----	----	----
The map reading courses provided when I was at college or university were appropriate.								
• Strongly Agree	2	13.33	6	22.22	3	37.5	11	22.0
• Agree	2	13.33	8	29.63	5	62.5	15	30.0
• Undecided	----	----	----	----	----	----	----	----
• Disagree	11	73.33	13	48.15	----	----	24	48.0
• Strongly Disagree	----	----	----	----	----	----	----	----

All geography teachers unanimously confirmed that they have taken map reading related courses while studying their undergraduate education program though its sufficiency and appropriateness

to teach secondary education program varied considerably. Accordingly, nearly half of geography teachers (52%) replied that map reading courses that they took at the undergraduate program are appropriate to teach secondary school students. Besides, about 30 percent of teachers responded that the map reading courses that were offered in undergraduate program were sufficient.

On top of this, the variations among schools were quite striking. The appropriateness of the map reading courses that are given at colleges or universities to secondary schools varied from 100 percent in schools at Emerging Cities, to 51.85 percent in schools at Municipal Cities and only 26.67 percent in schools at city Administration. Therefore, the significance difference between appropriateness of the map reading courses may be related to the service years of teachers. To put it differently, teachers with long years of experience that teach at schools in Administration Cities argued that the courses were in appropriate.

The problem associated to geography teachers is not only under qualification for the level, but also that either limited or absence of any professional development (UNESCO, 1965). To this end, continuous professional development of teachers has been put in place (MOE, 2004). Major mechanism used for continuous professional development are personal reading, discussions with other geography teachers, supervision support of department head and school principals (Levin and Lockheed,1993:11; Amhara REB,2001; UNICEF,2000). With regards to continuous professional development of teachers, geography teachers were requested to rate the level of utilization of channels of professional development including supervision service with "lot", "some", and "not at all". The geography teacher's response is summarized in table 4:7.

Table 4:7. Channels of Continuous Professional Development of Teachers

Channels of continuous professional development and the level of utilization by geography teachers	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Personal reading								
• Lot	11	73.33	20	74.07	6	75.0	37	74.0
• Some	4	26.67	7	25.93	2	25.0	13	26.0
• Not at all	----	----	----	----	----	----	----	----
Discussion with other geography teachers on the meeting								
• Lot	3	20.0	7	25.93	3	37.5	13	26.0
• Some	8	53.33	14	51.85	5	62.5	27	54.0
• Not at all	4	26.67	6	22.22	----	----	10	20.0
Supervision support of geography department head								
• Lot	2	13.33	2	7.41	----	----	4	8.0
• Some	5	33.33	7	25.93	1	12.5	13	26.0
• Not at all	8	53.33	18	66.66	7	87.5	33	66.0
Supervision support by school principal								
• Lot	----	----	----	----	----	----	----	----
• Some	----	----	7	25.93	----	----	7	14.0
• Not at all	15	100	20	74.07	8	100	43	86.0

The vast majority of geography teachers (74%) reported that personal reading has been important channel of professional development of teachers followed by discussion with other geography teachers (26%) and supervision support of geography department head (8%). Furthermore, remarkable difference was not observed among schools at Administration Cities, Municipal Cities and Emerging Cities. This indicates that so as to build competence and confidence, teachers are expected to take sixty hours of training in two years of time through various mechanisms was not practiced in the schools.

As it is indicated in Table 4:7, about 14 percent of geography teachers responded that supervision support by school principal was used to develop the academic and professional qualification of teachers. Across schools, only 25.93 percent of geography teachers situated in Municipal Cities had got supervision support by the principal.

A similar question on the aforementioned issue was posed to geography department heads of the sample schools. They were asked to respond on the frequency of meeting that they have conducted with members of the department and the major issues raised in the discussion. The responses of the department heads are summarized in Table 4:8.

Table 4:8. Pedagogical Meetings of Geography Teachers by Department Heads

Questions on meetings with geography teachers and responses of school principals	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
How frequently do you conduct meetings with geography teachers?								
• Once in a month	----	----	----	----	----	----	----	----
• Once in a semester	4	66.67	----	----	----	----	4	23.53
• Twice in a semester	1	16.67	6	62.5	----	----	7	41.18
• Never	1	16.67	2	37.5	3	100	6	35.29
Which issue took most of the time in the meeting with geography teachers?								
• Discussion of difficult ideas that teachers have faced while teaching in the classroom	----	----	----	----	----	----	----	----
• Implementation of innovative teaching methods	3	50.0	3	37.5	----	----	6	35.29
• Application of appropriate teaching aids	1	16.67	1	12.5	----	----	2	11.76
• Efficient use of instructional time	1	16.67	----	----	----	----	1	5.88
• Collection of various classroom data.	1	16.67	4	50.0	3	100	8	47.06

Geography department heads of the school were asked how often they conduct meeting with other department members and the greater minority of them (41.18%) replied that twice in a semester. On top of this, there were significant variations among schools in different levels of Cities. Geography department heads at schools in city Administration make high use of discussions among member teachers than schools at Municipal Cities.

A further question was posed on the issue that took most of the meeting time and about 47% of the department head responded that collection of various students data followed by implementation of innovative teaching methods (35.29%), application of appropriate teaching aids (11.76%), and efficient use of instructional time (5.88%). The data collected on agenda of the meeting varied among schools. Hence, improving of innovative teaching methods is the highest in schools at Administration Cities while collection of students data accounted 50.0 percent and 100 percent of the schools in Municipal Cities and Emerging Cities respectively.

Regarding the question on the discussion of difficult ideas that teachers have faced while teaching in the classroom as presented in Table 4:8, all of geography teachers responded that this form of professional development was not exercised in their school.

As it is indicated in Table 4:7 above, about 34.0 percent of geography teachers responded that they obtained supervision support by their department head. In relation to this, similar question was posed to geography department head of the school to report on frequency and kind of supervision support that they avail to geography teachers. Their responses are summarized in Table 4:9.

Table 4:9. Provision of Supervision to Geography Teachers

Questions on supervision support and responses of Geography Department Heads	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Have you conducted classroom supervision to support geography teachers in map reading teaching learning process?								
• Yes	5	83.33	4	50.0	1	33.33	10	58.82
• No	1	16.67	4	50.0	2	66.67	7	41.18
If you conduct classroom supervision, then how often do you carry out?								
• Once in a week	----	----	----	----	----	----	----	----
• Once in a month	----	----	----	----	----	----	----	----
• Once in a semester	2	40.0	3	75.0	1	100	7	70.0
• Twice in a semester	3	60.0	----	----	----	----	2	20.0
• As necessity arises	----	----	1	25.0	----	----	1	10.0

A little more than half of geography department heads (58.82%) responded that they have given supervision support service to geography teachers. The frequency of visit was mostly once in a semester. There was major difference among schools supervision in most of the schools at Administration Cities was carried out twice in a semester whereas it is once in a semester for schools at Municipal Cities and Emerging Cities.

4.2.1.2. Teaching Experience and Teachers Attitude

In developing countries, some of the teachers improved their capacities through self-learning and teaching experience. The analysis of teaching experience and teachers attitude towards map reading were based on structured questionnaire given to teachers.

4.2.1.2.1. Teaching Experience

It is an established fact that experienced teachers should always have greater opportunity to practice map reading teaching than low experienced or fresh teachers. Thus, in most cases it is expected that the higher the teaching experience of geography teachers, the better is their teaching performance. In relation to this, the experience of geography teachers was collected from teachers questionnaire and then transformed into percentages on the basis of seven categories which is in table 4:10.

Table 4:10. Distribution of Geography Teachers by Experience

Teachers experiences	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Total years of service in teaching geography at general secondary schools								
• 1 to 2 years	----	----	11	40.74	8	100	19	38.0
• 3 to 4 years	4	26.67	4	14.81	----	----	8	16.0
• 5 to 6 years	4	26.67	5	18.52	----	----	9	18.0
• 7 to 8 years	4	26.67	5	18.52	----	----	9	18.0
• 9 to 10 years	----	----	----	----	----	----	----	----
• 11 to 12 years	2	13.33	1	3.7	----	----	3	6.0
• 13 to 14 years	1	6.67	1	3.7	----	----	2	4.0
Total years of service in the school you are now								
• One year	2	13.33	8	29.63	6	75.0	16	32.0
• Two years	2	13.33	4	14.81	1	12.5	7	14.0
• Three years	1	6.67	2	7.41	1	12.5	4	8.0
• Four years	----	----	----	----	----	----	----	----
• Five years	4	26.67	5	18.52	----	----	9	18.0
• Six years	3	20.0	4	14.81	----	----	7	14.0
• Seven years	----	----	----	----	----	----	----	----
• Eight years	3	20.0	4	14.81	----	----	7	14.0

With regards to professional experience in teaching geography at secondary schools, 38 percent of teachers had 1 to 2 years followed by 5 to 8 years (18%), 3 to 4 years (16%) and 11 to 14 years (2%) respectively. Disparities among schools was found and as a result a big proportion of teachers (26.67%) at schools in Administration Cities had a total service years from 3 to 8 years, 40.74% of teachers at schools in Municipal cites between 1 to 2 years and 100% of teachers in schools at Emerging Cities 1 to 2 years.

A little more than one quarter (26.67%) of geography teachers in schools at Administration Cities had served 5 years in the school they are now against 18.5 percent and 18 percent in schools at Municipal Cities and Emerging cities. On the other hand, the a great number of geography teachers in Municipal Cities (29.63%) and schools in Emerging Cities (75%) had a total experience of one year in their current school. This implies that the extent in which geography teachers stay in their present school is related to the level of development of Cities.

In summary, in all schools geography teachers experience at their present school was lower than their professional experience at any grade level. It seems that this is so because geography teachers have served long years before coming at their current school. Geography teachers at schools in Administration Cities had a large percentage of teachers who had taught more than 10 years though most of the teachers at schools in Municipal Cities and Emerging Cities were employed within the last ten years.

4.2.1.2.2. Teachers Attitude towards Map Reading

The importance of teachers' attitude in determining students performance was widely recognized (David & Vallen, 1972:5; Craig, Kraft & Du Plessis, 1998). Measurement of geography teacher's attitude towards map reading was obtained indirectly through the structured questionnaire administered to them. The geography teacher's attitude towards map reading teaching is presented in Table 4:11.

Table 4:11. Teacher's Attitude towards Map Reading Teaching

Level of geography teachers agreement on their attitude towards map reading teaching	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Teaching map reading at secondary school is not important for the life of the pupils								
• Strongly agree	----	----	----	----	----	----	----	----
• Agree	2	13.33	2	7.41	----	----	4	8.0
• Undecided	----	----	1	3.70	1	12.5	2	4.0
• Disagree	7	46.67	11	40.74	2	25.0	20	40.0
• Strongly Disagree	6	40.0	13	48.15	5	62.5	24	48.0
Teaching map reading at secondary schools require teachers competency in mathematics, art and drawing.								
• Strongly agree	5	33.33	9	33.33	3	37.5	17	34.0
• Agree	8	53.33	13	48.15	3	37.5	24	48.0
• Undecided	----	----	----	----	----	----	----	----
• Disagree	2	13.33	5	18.52	2	25.0	9	18.0
• Strongly Disagree	----	----	----	----	----	----	----	----
There is mismatch between map reading topics that I have learned in the university with the curricula of secondary school.								
• Strongly agree	9	60.0	4	14.81	----	----	13	26.0
• Agree	2	13.33	16	59.26	1	12.5	19	38.0
• Undecided	2	13.33	2	7.41	----	----	4	8.0
• Disagree	2	13.33	5	18.52	5	62.5	12	24.0
• Strongly Disagree	----	----	----	----	2	25.0	2	4.0
Teaching map reading is relatively difficult to deal and requires more planning and preparation.								
• Strongly agree	6	40.0	13	48.15	5	62.5	24	48.0
• Agree	5	33.33	9	33.33	3	37.5	17	34.0
• Undecided	----	----	----	----	----	----	----	----
• Disagree	3	20.0	4	14.81	----	----	7	14.0
• Strongly Disagree	1	6.67	1	3.7	----	----	2	4.0

It was found that almost all of the geography teachers (88.0%) in the school under study unanimously claimed that teaching map reading at secondary school is important for the life of the students.

Most of geography teachers (82.0%) argued that teaching map reading at secondary schools require teachers competency in mathematics, art and drawing. However, slight difference has been observed among schools at various levels of city classification. Geography teachers who supported the above arguments were 86% in schools at Administration Cities, 55% in schools at Municipal Cities and 40% in schools at Emerging Cities.

About 82.0% of geography teachers asserted that there had been mismatch between map reading topics that they have learned in the university with the curricula of secondary school. Across schools, the mismatch is relatively high in schools at Administration Cities (73.33%) followed by schools in Municipal Cities (74.07%) and Emerging Cities (12.5%) respectively.

The vast majority of geography teachers (82.0%) indicated that teaching map reading is relatively difficult to deal and requires more planning and preparation. This conforms to the interview responses of geography teachers and department heads. Students also replied the same to the issue.

4.2.1.3. Teachers Area of Specialization

Research studies in United Kingdom investigated that specialized teachers have to teach map reading at schools since the topic demands specific strategies of its own (UNESCO,1965). In the teacher's questionnaire, questions related to teachers' area of specialization was asked. The responses of teachers are presented in Table 4:12.

Table 4:12. Distribution of Teachers by Area of Specialization

Specialization of geography teachers	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Geography major	14	93.33	25	92.59	8	100	47	94.0
Geography minor	1	6.67	2	7.41	----	----	3	6.0
Neither major nor minor in Geography	----	----	----	----	----	----	----	----

With regards to field of specialization, teachers with geography major area of specialization accounts 94% while geography minor accounted about 6%. Major area of specialization for most of the teachers teaching at City Administration Schools was geography. The percentage of teachers who had geography major area of specialization in schools at Municipal cites and Emerging Cities accounted 92.59 percent and 100 percent respectively.

4.2.2. Physical Facilities of the School

School facilities here refer mainly to the availability of a school library, number of instructional materials (syllabus, textbooks, teacher's guide) and class size.

4.2.2.1. Library Facilities

In the absence of functioning library, the mastery of map reading skills will be questionable. School principals were asked about the availability of school library and if available, they were requested to state the number of days in the week and hours in a day that the library was functioning and the number of classes that have access to the library every week. The results from this structured questionnaire are presented in Table 4:13.

Table 4: 13. Availability and Functioning of School Libraries

School library facilities	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Availability of school library								
• Have library	6	100	8	100	3	100	17	100
• No library	----	----	----	----	----	----	----	----
Number of days that school library is actually working.								
• Less than one day	----	----	----	----	----	----	----	----
• One day	----	----	----	----	----	----	----	----
• Two days	----	----	----	----	----	----	----	----
• Three days	----	----	----	----	----	----	----	----
• Four days	----	----	----	----	----	----	----	----
• Five days	6	100	8	100	3	100	17	100
Number of hours that school library is actually working in a day.								
• Less than 1 hour	----	----	----	----	----	----	----	----
• 1 to 2 hours	----	----	----	----	----	----	----	----
• 3 to 4 hours	----	----	----	----	----	----	----	----
• 5 to 6 hours	----	----	----	----	----	----	----	----
• 7 to 8 hours	6	100	8	100	3	100	17	100
Number of hours in a week that each class has access to the library.								
• Less than 1 hour	5	83.33	7	87.5	2	66.67	14	82.35
• 1 to 2 hours	1	16.67	1	12.5	1	33.33	3	17.65
• 3 to 4 hours	----	----	----	----	----	----	----	----
• 5 to 6 years	----	----	----	----	----	----	----	----
• 7 to 8 years	----	----	----	----	----	----	----	----

It was found that all school principals (100%) confirmed that they had school library. The observation made by the student researcher also reinforced the responses obtained from principals that all schools have library though the size of the library with respect to its adequacy to the total number of enrolled students varies significantly.

School library is expected to work five days in a week and eight hours in a day. This may not be true in some secondary schools. To prove this, school principals were asked to indicate the number of days that the school library is working. With this regards, the number of principals who responded every day were 100.0%. Across schools, variations were not observed. Further question was posed to school principal to rate the total number of hours that the school library has served the students. In view of this, all of them replied eight hours a day.

The other library related variable which may influence the level of utilization was the number of geography books available in the library. In relation to this, observation of the school libraries was carried out to identify the distribution of books in each school library and the results of this are presented in Table 4:14.

Table 4:14. Distribution of Books in Libraries

Number of books per school library	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
less than 50 books	1	16.67	2	25.0	1	33.33	4	23.53
51 to 100	2	33.33	1	12.5	2	66.67	5	29.41
101 to 150	----	----	2	25.0	----	----	2	11.76
151 to 200	----	----	----	----	----	----	----	----
201 to 250	3	50.00	3	37.5	----	----	6	35.30
More than 250	----	----	----	----	----	----	----	----

Data on the actual counting of books in the library clearly revealed that about 35.3 percent of the schools under study possessed a set of geography books ranging from 201 to 250 and schools with a total of 51 to 100 books accounted 29.41%, schools with less than 50 books comprised of 23.53% and schools between 101 to 150 books accounted 11.76%.

As regards to the distribution of library books, it was found out that better numbers of books are found in schools at Administration Cities and Municipal Cities than schools at Emerging Cities respectively.

Concerning school variations in book distribution, significant differences was observed in schools at Municipal Cities. Accordingly, 37.5 percent of them had 201 to 250 books, one

quarter of them had either 101-150 or less than 50 books and around 12.5 percent had 51 to 100 books.

4.2.2.2. Instructional Materials

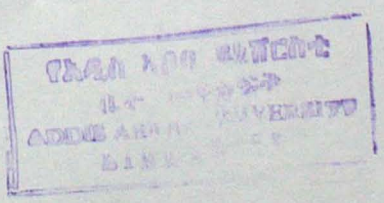
4.2.2.2.1. Appropriateness of Curricula Materials

In order to asses the appropriateness of the map reading topic (content, teaching aids, teaching methods and assessment methods) interview guides were prepared and directed to geography teachers and department heads. Their responses to this question are summarized in Table 4:15.

Table 4:15. Evaluation of Appropriateness of the Map Reading Topic

Appropriateness of map reading topic	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Contents of map reading topic are difficult to understand.								
• Yes	13	86.67	10	37.04	3	37.5	26	52.0
• No	2	13.33	10	37.04	5	62.5	17	34.0
• No response	----	----	7	25.92	----	----	7	14.0
Contents of map reading topic are vast to understand.								
• Yes	7	46.66	5	18.52	3	37.5	15	30
• No	8	53.33	22	81.48	5	62.5	35	70
• No response	----	----	----	----	----	----	----	----
The suggested teaching methods in syllabus are appropriate.								
• Yes	13	86.67	24	88.89	8	100	45	90
• No	2	13.33	3	11.11	----	----	5	10
• No response	----	----	----	----	----	----	----	----
The suggested teaching aids in the syllabus are appropriate.								
• Yes	15	100	7	87.5	3	100	16	94.12
• No	----	----	1	12.5	----	----	1	5.88
• No response	----	----	----	----	----	----	----	----
The intended assessment methods in the syllabus are appropriate.								
• Yes	15	100	8	100	3	100	17	100
• No	----	----	----	----	----	----	----	----
• No response	----	----	----	----	----	----	----	----

All teachers and department heads unanimously agreed that the map reading topic has been given due attention in the overall geographic education at secondary schools, though the content is difficult to understand. A little more than half of them (52.0%) agreed that the content is difficult to understand. Teachers and department heads explained the difficulty of the map reading topic



as follows. (a) The map reading topic emphasizes more of general theoretical explanation of ideas concepts and little attention is given to provision of detailed information. (b) Steps and procedures for performing exercises are not clearly indicated. (c) Little attention has been given to enable students to exercise the theoretical knowledge they acquired in the classroom. (d) Exercises that encourage students independent activity and personal effort are almost absent.

About 70% of teachers and department heads confirmed that the content of the map reading unit is not vast.

As to the appropriateness of the suggested teaching methods in the syllabus, document analysis of the geography syllabus for general secondary schools was carried out. Furthermore, open ended questions were posed for geography department heads and teachers in each school. As Table 4:15 depicts, 94.12% of department heads and teachers agreed that the suggested teaching aids are appropriate.

On top of this, from the review of related literature, it is apparently clear that map reading can best be taught through observation at the field. Young students should have direct exposure to the actual landscape while older ones should make full use of maps (Boardman, 1986:138; Bayliss et al, 1966; Graves, 1980; and UNESCO, 1965). On the other hand, a document analysis looking at the syllabus for grade nine and grade ten was done to analyze the teaching methods. It was found out that the suggested teaching methods for map reading teaching are explanation, discussion, demonstration and field work. It is, therefore, reasonable to conclude that the suggested general secondary school map reading teaching methods in the syllabus are appropriate or adequate to teach map reading in general secondary schools.

To prove the appropriateness of the teaching aids suggested at the syllabus to teach map reading at secondary schools effectively, related literatures has been reviewed. Accordingly, the identified lists were charts, pictures, photographs, wall maps, diagrams, models (terrestrial globes, models of earth orbit, and sandy tray) and atlases. On the other hand, the syllabus for geography for grade nine and ten suggest maps, globes, sketches, photographs, compass and atlases to be employed in teaching map reading. Therefore, the suggested teaching aids for map

reading in the syllabus appear to be appropriate to teach general secondary school students. The appropriateness of the teaching aids are also confirmed by responses of teachers and department heads as it is indicated in 4:15.

As indicated in Table 4:15 above, all of geography teachers and department heads confirmed that the intended assessment methods in the syllabus are appropriate to map reading.

4.2.2.2.2. Availability of Instructional Materials

Instructional aids refer to the different resources teachers and students use in the teaching learning process. It includes syllabus, teachers guide, student text, maps, globes etc.

4.2.2.2.2.1. Availability of Map Reading Instructional Materials in the School

Teaching aids enable teachers to make learning more concrete, interesting, inspirational, meaningful and vivid. Teaching aids could be original objects, imitations (models) and symbols, which are used for a specific subject area. The standard for secondary schools of the ANRS (Amhara REB, 2005b) has set minimum essential facilities to be available for teaching geography at secondary schools. In line with this, geography teachers were requested to rate the availability of map reading teaching aids in their respective schools. The answer for the availability of instructional materials was "adequate" for those materials as per the regional standards, "non adequate" for insufficient quantity as compared with the standards and "non existent" for absence of the materials. The levels of availability of instructional materials were presented in Table 4:16.

Table 4:16. Availability of Map Reading Instructional Materials

No	Teaching Materials	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No	%	No	%	No	%	No	%
1	***Chart***								
	• Adequate	9	60.0	12	44.44	1	12.5	22	44
	• Non adequate	5	33.33	11	40.74	4	50.0	20	40
	• Non existent	1	6.67	4	14.81	3	37.5	8	16
2	***Diagram***								
	• Adequate	9	60.0	12	44.44	1	12.5	22	44
	• Non adequate	4	26.67	8	29.63	3	37.5	15	30
	• Non existent	2	13.33	7	25.93	4	50.0	13	26
3	***Maps***								
	• Adequate	13	86.77	18	66.67	2	12.5	33	66
	• Non adequate	1	6.67	7	25.93	5	62.5	13	26
	• Non existent	1	6.67	2	7.40	1	12.5	4	8
4	***Globes***								
	• Adequate	15	100	12	44.44	4	50.0	31	62
	• Non adequate	----	----	1	3.7	1	12.5	2	4
	• Non existent	----	----	14	51.86	3	37.5	17	34
5	***Specimens of real landscape***								
	• Adequate	----	----	----	----	----	----	----	----
	• Non adequate	----	----	----	----	----	----	----	----
	• Non existent	15	100	27	100	8	100	50	100
6	***Slides***								
	• Adequate	2	13.33	2	7.41	----	----	4	8
	• Non adequate	7	46.67	9	33.33	1	12.5	17	34
	• Non existent	6	40.0	16	59.26	7	87.5	29	58
7	***Atlases***								
	• Adequate	----	----	----	----	----	----	----	----
	• Non adequate	13	86.67	16	59.26	1	12.5	30	60
	• Non existent	2	13.33	11	40.74	7	87.5	20	40
8	***Overhead projectors***								
	• Adequate	5	38.46	6	22.22	----	----	11	22
	• Non adequate	8	53.33	9	33.33	----	----	17	34
	• Non existent	2	13.33	12	44.44	8	100	22	44
9	***Pantograph***								
	• Adequate	2	13.33	2	7.41	----	----	4	8
	• Non adequate	2	13.33	4	14.81	1	12.5	7	14
	• Non existent	11	73.34	21	77.78	7	87.5	39	78
10	***Slide projector***								
	• Adequate	----	----	----	----	----	----	----	----
	• Non adequate	----	----	----	----	----	----	----	----
	• Non existent	15	100	27	100	8	100	50	100
11	***Tracing Table***								
	• Adequate	----	----	----	----	----	----	----	
	• Non adequate	----	----	----	----	----	----	----	
	• Non existent	15	100	27	100	8	100	50	100
12	***Seal maps***								
	• Adequate	----	----	----	----	----	----	----	----
	• Non adequate	----	----	----	----	----	----	----	----
	• Non existent	15	100	27	100	8	100	50	100

The most available instructional materials are Maps (92%) followed by Charts (84%); Diagrams (74%); Models (66%); Atlases (60%); Overhead projector (56%); Slides (42%) and pantograph (22%) respectively. Hence, graphic materials dominate in the schools under investigation. On the contrary, specimens of real landscape; slide projector, tracing table and seal map appear to be very scare in the schools.

Moreover, observation of the School Pedagogical Centers was made to asses the adaptability of teaching aids. For the realization of this, SPC coordinators were requested whether geography teachers prepare and borrow teaching aids. It has been found out that most of the teaching aids are industrially made and the participation of teachers in the SPC is weak due to overload of teaching tasks.

4.2.2.2.2.2. Availability of Syllabus, Teachers Guide and Student Text Books

In the absence of at least the minimum essential teaching materials and facilities, the mastery of map reading skill will be questionable. With this regards, the number of syllabus, teachers guide and student textbooks that each school had been collected in the checklist. The results from these instruments are presented in Table 4:17.

Table 4: 17. Distribution of Instructional Materials at Sample Schools

Availability of Instructional materials	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Syllabus to teacher ratio								
• Not available	4	66.67	5	62.5	1	33.33	10	58.82
• One to one	2	33.33	3	37.5	2	66.67	7	41.18
• Two to one	----	----	----	----	----	----	----	----
• Three to one	----	----	----	----	----	----	----	----
• Four or more to one	----	----	----	----	----	----	----	----
Teachers guide to teacher ratio								
• Not available	5	83.33	4	50	----	----	9	52.94
• One to one	1	16.67	4	50	3	100	8	47.06
• One to two	----	----	----	----	----	----	----	----
• One to three	----	----	----	----	----	----	----	----
• One to four or more	----	----	----	----	----	----	----	----
Textbooks to students	----	----	----	----	----	----	----	----
• Not available	----	----	----	----	----	----	----	----
• One to one	----	----	----	----	----	----	----	----
• One to two	----	----	----	----	----	----	----	----
• One to three	----	----	----	----	----	----	----	----
• One to four or more	6	100	8	100	3	100	17	100

The standard for secondary education (Amhara REB, 2005b) stipulates that instructional materials particularly syllabus, teachers guide and student text book must be available with reasonable ratio. The suggested ratio of syllabus to teacher, teachers guide to teachers and textbook to student ratio is one to one.

Accordingly, investigation was made on the availability of these instructional materials and it was found that only 41.18% of the sampled schools had a one to one ratio of syllabuses to teachers. With regards to teachers guide, nearly half of the schools (47.06%) have geography teacher guides. Nearly one quarter of students under investigation possessed textbooks. It is obvious that giving homework and assignment for students on the basis of textbook that are not available in the schools are difficult.

Furthermore, according to checklists and school principals questionnaire who were assessed in the present study, the conditions of textbooks much more worse than the syllabus and teachers guides. In fact, life span of textbooks in the Region for secondary schools is three years. However, due to shortage of budget at Woreda level, reprinting and then replacement of used textbooks has not been carried out. To this effect, textbooks are forced to serve five and more years the adverse effect of which is undoubtly leads to shortage of books. Moreover, it is also difficult to keep the life span of the text book that is indicated in the standard since the quality of the paper as well as the cover page are of poor quality and do not last long.

4.2.2.3. Class Size

Class size was defined as the average number of students in general secondary schools under study. A classroom with an area of 49.5 square meters (6.6 meter x 7.5 meter) is expected to serve 45 students in a single shift. However, class size in the study area may differ considerably. As a result, check list was filled by an investigator to assess the average number of students in each class and the results are indicated in Table 4:18.

Table 4:18. Percentage Distribution of Schools in Class Size

Class size	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Less than 39 students	----	----	----	----	----	----	----	----
40 – 45 students	----	----	----	----	----	----	----	----
46 – 50 students	----	----	----	----	----	----	----	----
51 – 55 students	----	----	----	----	----	----	----	----
56 – 60 students	1	16.66	1	12.5	1	33.33	3	17.65
More than 61 students	5	83.33	7	87.5	2	66.67	14	82.35
Average class size for sample schools	74		79		78		75	

It was found out that among the sampled schools, 17.65% of them had class size of 55 to 60; 82.35% of them had class size of more than 61 students.

The average class size was 74 in schools at Administration Cities, 79 in schools at Municipal Cities and 78 in schools at Emerging Cities. Class size in schools at Administration Cities was comparatively small. On top of this, there was not significant variation among observed schools. Excessive class size as it is evident in the sample schools has characterized all sample schools.

4.2.3. Instructional Time

The overall time allotment and the proper utilization of the whole lesson time in the teaching learning process are assumed to influence the mastery of the map reading skills.

4.2.3.1. Sufficiency of Time Allotted for Map Reading

The total period allotted for map reading topics for grade nine and ten is 14 and 22 periods respectively. Each period has 40 minutes duration. Most geography teachers state that the time allotted for map reading is not adequate. In order to verify this proposition, an interview and focus group discussion with geography teachers and department heads were made. The responses were presented in Table 4: 19.

Table 4:19. Sufficiency of Time Allotment for Map Reading

Geography department heads and teachers responses on the sufficiency of time allotment	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Time allotted to teach map reading are sufficient.								
• Yes	3	20.0	3	11.1	3	37.5	9	18
• No	9	60.0	17	62.96	5	62.5	31	62
• No response	3	20.0	7	25.94	----	----	10	20

Some of the geography teachers and department heads (31%) believed that the length of time allotted by ICDR to cover grade nine and ten geography textbooks was not sufficient. It was felt that the shortage of allotted time may possibly affect the method of teaching and the pace of teachers in delivering map reading.

4.2.3.2. The Level of Utilization of Instructional Time

Wastage of instructional time may attribute for low map reading performance of students. To this end, geography department head had made classroom observation on the level of utilization of instructional time by geography teachers. The results presented in Table 4:20.

Table 4:20. Level of Utilization of Instructional Time of Teachers by Department Heads

Classroom observations made by geography department heads on the level of utilization of instructional time	Schools in City Administration	Schools in Municipal Cities	Schools in Emerging Cities	All sample schools
Number of observed sections	12	16	6	34
Expected instructional time in minutes	480	640	240	1,360
Observed instructional time in minutes	408	552	216	1,176
Percentage of observation against expectations	85	86.25	90	86.47

Classroom observation showed that the rate of wastage of instructional time for schools at Administration Cities, Municipal Cities and Emerging Cities was 15%, 13.75% and 10% respectively. This might be the effect of having visitors.

Similar questions was posed to the school principals to report on the utilization of time allotted for instruction since they always strive that all classroom instruction to start and end on time. To

this effect, each school principal involved in this study was asked to give response on the utilization of time allocated for instruction. The results from this question are presented in table 4:21.

Table 4:21. Teachers Level of Utilization of Instructional Time

Questions related to instructional time and responses of school principals	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Do geography teacher use all the time allotted for teaching purpose								
• Always	5	83.33	8	100	3	100	16	94.12
• Sometimes	1	16.67	----	----	----	----	1	5.88
• Rarely	----	----	----	----	----	----	----	----
• Not at all	----	----	----	----	----	----	----	----

Most of the school principals (94.12%) reported that geography teachers always use the time allotted for teaching and 5.88% replied that teachers sometimes use the time. Across schools significant variations was not reported. Although wastage of instructional time was observed during classroom observation, almost all principals have failed to report in the questionnaire administered to them. Because, they might not want to be perceived as reluctant in checking and taking corrective measures for wastage of instructional time or the principals might have considered teachers attendance as proper utilization of time allotted.

4.2.4. Students Background, Attitude & Behavior

4.2.4.1. Students Academic Background

It is an established fact by scholars in the field of geography that the quality and quantity of map reading education provided to students at primary level increase their performance at secondary level (Blaut, 1971; Grisdale, 1965:31). As a result, structured questionnaire was presented for students with respect to their previous academic background. The results are presented in Table 4:22.

Table 4:22. Students Background in Learning Map Reading

Students Responses	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
I was taught map reading when I was at primary school								
• Yes	202	79.53	311	79.54	148	93.67	661	82.11
• No	52	20.47	80	20.46	10	6.33	142	17.68
• No response	----	----	----	----	----	----	----	----
The map reading related topic that I took at primary school was useful for secondary school								
• Strongly agree	53	20.87	83	21.12	43	27.22	179	22.29
• Agree	121	47.64	149	37.91	60	37.97	330	41.10
• Undecided	32	12.60	54	13.81	20	12.66	106	13.20
• Disagree	43	16.93	92	23.41	33	20.89	168	20.92
• Strongly disagree	5	1.97	13	3.31	2	1.27	20	2.49

Students were asked whether or not they have learned any kind of map reading skill related topic while they were at primary schools. Out of 803 sampled students, 82.32% replied that they have learned map reading and only 17.68% students responded that they have not learned any thing related to map reading.

Further question was posed to students with regards to relevance of the primary school map reading related topic with secondary school map reading topic. Surprisingly, not many of the students (23.41%) in the school under study confirmed that the irrelevance of primary with secondary school map reading topic.

4.2.4.2. Students Attitude towards Map Reading

Student's attitude can be used to explain the variations of performances, thus increase the predictive power of background variable on cognitive outcomes of schooling (Duncan et al, 1989). In the present study, students attitude towards map reading were assessed through students questionnaire. The percentage of students who agreed with each statement are presented in Table 4:23.

Table 4:23. Students Attitude towards Map Reading Learning

S. No	Students observed behavior/students responses	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No	%	No	%	No	%	No	%
1	Learning Map reading is useful for daily life								
	• Strongly agree	104	40.94	169	43.22	92	58.23	365	45.45
	• Agree	107	42.13	168	42.97	55	34.81	330	41.09
	• Undecided	17	6.69	22	5.63	8	5.06	50	5.98
	• Disagree	12	4.72	14	3.58	2	1.27	28	3.49
	• Strongly Disagree	14	5.51	17	4.35	1	0.63	32	3.99
2	Learning map reading is useful to get a good job								
	• Strongly agree	118	46.46	152	38.87	94	59.49	364	45.33
	• Agree	56	22.05	163	41.69	48	30.38	267	33.25
	• Undecided	39	15.35	29	7.42	4	2.53	74	8.97
	• Disagree	32	12.60	34	8.70	11	6.96	77	9.59
	• Strongly Disagree	9	3.54	13	3.32	1	0.63	23	2.86
3	Geography teachers did not take care on my map reading learning								
	• Strongly agree	16	6.30	33	8.44	8	5.06	57	7.10
	• Agree	9	3.54	20	5.12	4	2.53	33	4.11
	• Undecided	47	18.50	46	11.76	11	6.96	106	12.95
	• Disagree	119	46.85	180	46.04	66	41.77	365	45.45
	• Strongly Disagree	63	24.80	112	28.64	69	43.67	244	30.39
4	Learning map reading is mostly memorizing								
	• Strongly agree	63	24.8	120	30.69	51	32.28	234	29.14
	• Agree	54	21.26	94	24.04	49	31.01	197	24.53
	• Undecided	14	5.51	24	6.14	5	3.16	45	5.35
	• Disagree	64	25.20	97	24.81	45	28.48	206	25.65
	• Strongly Disagree	59	23.23	56	14.32	8	5.70	123	15.33

A question was asked with respect to learning map reading for daily life or for getting a good job. About 86.54 percent of students confirmed that learning map reading was useful in solving everyday problems. Moreover, the proportion of students who believed that learning map reading would earn them a good job was 78.39 percent.

Students were asked about the support they obtain from their teachers to learn map reading. Nearly three fourth of the investigated students (78.58%) replied that they got support from their geography teachers.

Regarding perceptions of the nature of map reading learning, almost half (53.67%) of student's considered that map reading learning was mostly memorizing. The results of this question may reflect the teaching method used in the secondary schools.

4.2.4.3. Students Age as a Factor Affecting Map Reading

There should be continuous and gradual progression in learning map reading skill. As a result, students should start learning map reading starting at certain age level since the mastery of the skill demands abstract reasoning (Bailey, 1974; Bale et al, 1973:173; Graves, 1980). The eligible age for general secondary school students in Ethiopia is 15 to 16 years. So, variations in the distribution of students age may attribute to variations in map reading performance of students. Hence, grade nine and ten students were requested to indicate their age in the structured questionnaire. The responses are indicated in Table 4:24.

Table 4:24. Age of Secondary School Students

Students Responses	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Your Age								
• Less than 13 years	----	----	----	----	----	----	----	----
• 13 to 14 years	29	11.42	20	5.12	----	----	49	6.11
• 15 to 16 years	178	70.08	162	41.43	26	16.48	366	45.57
• 17 – 18 years	44	17.32	188	48.08	118	74.68	350	43.59
• 19 – 20 years	3	1.18	18	4.60	12	7.59	33	4.11
• 21 – 22 years	----	----	3	0.77	2	1.27	5	0.62
• More than 22 years	----	----	----	----	----	----	----	----

Students response regarding their age (see table 4:24) indicated that among the students who were included in the study, nearly half (45.47 percent) of them age ranged from 15 to 16 years old. Being too old (above 17 years of old) or being too young (below 15 years) which adversely influence map reading performance was not a serious problem in the sample schools.

4.2.5. The Teaching Learning Process

The teaching learning process has a lot to do with success of students. Through careful planning, implementation and evaluation, students' can achieve better performances. Hence, this part of the discussion is devoted to the analysis of teaching learning process with respect to planning (preparation and utilization of lesson plan), teaching (methods and materials of teaching), and assessment (techniques and frequency) in map reading performance of secondary school students.

To this end, classroom observation as well as questioners were prepared and then administered to students, teachers, department heads and principals.

4.2.5.1. Instructional Planning

Preparation and utilization of instructional planning should be considered for proper implementation of the curriculum. Information on geography teachers instructional planning and implementation was gathered from geography department heads through structured questionnaire. Their responses are summarized in Table 4:25.

Table 4:25. The Level of Preparation and Utilization of Instructional Plans by Geography Teachers

Geography department heads responses	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	No	%	No	%	No	%	No	%
Teachers prepare annual lesson plans								
• Yes	6	100	8	100	3	100	17	100
• No	----	----	----	----	----	----	----	----
• No response	----	----	----	----	----	----	----	----
Teachers prepare weekly instructional plans								
• Always	6	100	8	100	3	100	17	100
• Sometimes	----	----	----	----	----	----	----	----
• Rarely	----	----	----	----	----	----	----	----
• Not at all	----	----	----	----	----	----	----	----
Geography teachers strictly follow annual lesson plans								
• Always	2	33.33	3	37.5	1	33.33	6	35.29
• Sometimes	4	66.67	5	62.5	2	66.67	11	64.71
• Rarely	----	----	----	----	----	----	----	----
• Not at all	----	----	----	----	----	----	----	----

The responses of all Geography department head revealed that all Geography teachers strictly prepare annual as well as weekly lesson plan as per the regional standardized format. In addition to this, as to the level of utilization of annual lesson plan to guide the teaching learning process in the classroom, about 35.29% of them replied always and 64.71% of them replied some times. Besides, significance difference was not observed among schools.

Moreover, a close examination of the matching of annual and weekly lesson plan was made by the student researcher through document review. The investigation clearly revealed that no congruency was found between annual and weekly plan with respect to content coverage.

Weekly plans were lagging behind the annual plan. Insufficiency of the total time allotted to cover each topic is attributed for the mismatching of the intended content coverage with actual content coverage. This has affected the speed of teaching and learning geography including map reading. To put it differently, teachers were rushing to cover the topic since they are short of time.

4.2.5.2. Teaching Methods and materials

4.2.5.2.1. Teaching Methods

This part of the discussion tries to analyze the following issue: Are the suggested teaching methods in the syllabus matched with actual classroom practices? With this regards, data on map reading teaching methods was collected from documents, principals, department heads, teachers and students. Their responses are analyzed hereunder.

The map reading teaching methods proposed in geography syllabus for general secondary schools are explanation, discussion, demonstration and fieldwork. In order to collect some information about the actual teaching practice, head of the geography department has made classroom observation in relation to teacher's activity and student's activity. The results from such observation are presented hereunder.

4.2.5.2.1.1. Teachers Activities

Geography teachers should employ a variety of teaching methods for effective delivery of map reading lesson to students. They establish heterogeneous groups to facilitate active learning and employ active learning by arranging group work, project work, class and homework and by encouraging students to participate in discussion. To this effect, department heads of each school have made systematic classroom observations to assess geography teachers' activities in the classroom. The results of this classroom observation are reported in Table 4:26.

Table 4:26. Teachers Activities in Map Reading Teaching (Classroom Observation)

Teachers activities	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Teachers explain map reading	20	27.61	42	27.63	11	27.5	73	27.65
Teachers give notes	15	20.85	35	23.03	8	20.0	58	21.97
Teachers demonstrate lessons	14	21.13	28	18.42	7	17.5	49	18.56
Teachers facilitate small group discussions	12	16.34	26	17.11	6	15.0	44	16.67
Teachers facilitate field visits	----	----	----	----	----	----	----	----
Teachers give map reading test or quizzes	8	10.71	12	7.89	5	12.5	25	9.47
Teachers assign map reading class work or assignment	3	3.35	9	5.92	3	7.5	15	5.68
Total	72	100	152	100	40	100	264	100

It was found that the dominant teachers activities at map reading topic instruction were explanation (27.65%) followed by giving notes (21.97%); demonstration (18.56%); facilitation of group work (16.67%); giving test or quizzes (9.47%) and assigning class work or assignment (5.68%) respectively.

Similar questions were put to school principals and students. The results obtained from these sources are very much in agreement. In other words, about 86% of the principals and 71.4% of the students reported that the main type of teachers activities was lecturing.

4.2.5.2.1.2. Students Activities

Students active participations in the form of asking, answering, practice of work and group work are highly demanded. Geography department head of each has made classroom observation to examine major activities of students during map reading teaching learning process. The results of the observation are summarized in Table 4:27.

Table 4:27. Students Activities in Map Reading Teaching (Classroom Observation)

Students activities	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		Total sample schools	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Listening to teachers talk	18	25.0	44	28.95	12	30.0	74	28.03
Copying teachers note	16	22.22	36	23.68	8	20.0	60	22.72
Attending demonstrations	15	20.83	24	15.79	6	15.0	45	17.05
Discussing in groups	13	18.06	22	14.47	6	15.0	41	15.53
Visiting the surrounding landscape	----	----	----	----	----	----	----	----
Taking tests or quizzes	8	11.11	14	9.21	5	12.5	27	10.23
Doing class work or assignment	2	2.78	12	7.89	3	7.5	17	6.44
Total	**72**	**100**	**152**	**100**	**40**	**100**	**264**	**100**

The dominant activity of students was listening to teachers (28.03 %), followed by note taking (22.72 %); attending demonstration (17.05%); discussion in groups (15.53%); taking tests or quizzes (10.23%) and doing class work or assignment (6.44%) respectively.

4.2.5.2.2. Teaching Aids

Teaching aids are important in providing information, organizing the presentation of information in terms of scope and sequence, and providing students the opportunity to use what they have learned. Hence, effective implementation of map reading lesson at secondary schools has to consider the availability and quality of essential teaching materials and equipment.

In an endeavor to know the influence of teaching aids on map reading performance of students, the following issues have been raised. Are the recommended teaching aids in the syllabus appropriate to teach map reading at secondary schools? Is there a match between suggested teaching aids in the syllabus with the current classroom practices? Does the utilization of teaching aids influence map reading performance of secondary school students? The data collected from documents and observation has been summarized hereunder.

4.2.5.2.2.1. Matching of Teaching Aids Suggested in the Syllabuses with Actual Utilization in the Classroom

All Geography teachers are advised to use teaching aids available in the school pedagogical centers. When such materials are not available in the school pedagogical centers, they are expected to prepare such materials.

The suggested teaching aids for teaching map reading at secondary schools are maps, globes, sketches, photographs, compass and atlases (MOE, 1998a: 21-22 and MOE, 1998b: 16-17). Hence, the levels of utilization of teaching aids at classroom have to be examined in terms of variety, adaptability and similarity as follows. To this end, classroom observation was made to asses how much time is used when a certain teaching was employing at the classroom. The reports of department head classroom observation presented in Table 4:28.

Table 4:28. Utilization of Teaching Aids in Map Reading Teaching

Teaching Aids	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Chart	12	16.67	24	15.79	6	15.0	42	15.91
Diagrams	10	13.89	22	14.47	6	15.0	38	14.39
Maps	17	23.61	31	20.39	6	15.0	54	20.45
Models and globes	20	27.78	57	37.5	22	55.0	99	37.50
Slides	3	4.17	4	2.63	----	----	7	2.65
Atlases	----	----	----	----	----	----	----	----
Overhead projectors	7	9.72	10	6.58	----	----	17	6.44
Pantograph	3	4.16	4	2.63	----	----	7	2.65
Slide projector	----	----	----	----	----	----	----	----
Tracing table	----	----	----	----	----	----	----	----
Seal maps	----	----	----	----	----	----	----	----
Total	**72**	**100**	**152**	**100**	**40**	**100**	**264**	**100**

Teachers unanimously use variety of teaching materials while teaching map reading at secondary schools. Nevertheless, the most frequently used ones are models and globes (37.5%) followed by maps (20.45%), charts (15.91%); diagrams (14.39%), overhead projectors (2.65%) and pantograph (2.65%) respectively.

4.2.5.3. Assessment Techniques and its Utilization

Once a Geography teacher has a clear goal of what and how to teach, the other concern is to know to what extent students learn from their lessons through assessment. As a result, a question was posed to Geography teachers on the assessment methods, frequency of assessment and time spent for assessment. The responses are summarized as follows.

4.2.5.3.1. Assessment Techniques

Teachers should closely and regularly monitor students map reading performance and then use the feed backs of assessment for improving instruction. Effective and appropriate assessment methods suggested for map reading in geography syllabus for grade nine and ten are review questions, exercises, group work, group report and quiz/test. The types of assessment techniques frequently used by Geography teachers are indicated in Table 4:29.

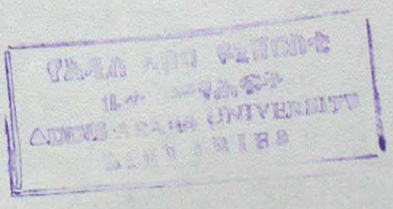
Table 4:29. Map Reading Assessment Techniques Used by Geography Teachers

S.N	Assessment techniques	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No	%	No	%	No	%	No	%
1	**Oral question**								
	• A Lot	9	60	11	40.47	----	----	20	40
	• Some	4	26.67	6	22.22	1	12.5	11	22
	• Not at all	2	13.33	10	37.04	7	87.5	19	38
2	**Assignment**								
	• A Lot	----	----	1	3.7	1	12.5	2	4
	• Some	15	100	26	96.3	7	87.5	48	96
	• Not at all	----	----	----	----	----	----	----	----
3	**Exercises**								
	• A Lot	8	53.33	14	51.85	4	50	26	52
	• Some	7	46.67	13	48.15	4	50	24	48
	• Not at all	----	----	----	----	----	----	----	----
4	**Quizzes/Test**								
	• A Lot	2	13.33	5	18.52	2	25	9	18
	• Some	13	86.67	22	81.48	6	75	41	82
	• Not at all	----	----	----	----	----	----	----	----
5	**Group work/Project work**								
	• A Lot	2	13.33	5	18.52	2	25	9	18
	• Some	12	80.0	21	77.78	6	75	39	78
	• Not at all	1	6.67	1	3.70	----	----	2	4
6	**Map drawing**								
	• A Lot	----	----	----	----	----	----	----	----
	• Some	6	40	7	25.93	----	----	13	26
	• Not at all	9	60	20	74.07	8	100	37	74

Nearly half of the geography teachers (52%) use exercise to assess students map reading learning, identify those with learning difficulties and take appropriate remedial measures on time. The percentage of teachers that often apply oral question, assignment, exercises, quizzes/test, group work and map drawing methods for measuring the students performances accounted 22%, 96%,48% 82% 78% and 26% respectively. A little less than three fourth of the teachers (74.0%) reported that they did not use map drawing. Lastly, oral questioning, group work and map drawing are given little importance in assessment of map reading performance of students.

4.2.5.3.2. Frequency of Assessment

There are two forms of assessment: continuous and summative. Summative assessment is carried out at the end or completion of a semester teaching while continuous assessment is mainly concerned with measuring the progress of students continuously in a given period of time. Each of these forms of assessment has their own advantages and disadvantages. Hence, a combined use of the two formats could allow off setting the limitation of each of them.



A question was posed to geography teachers on how often they monitor students map reading learning progress in their respective schools. Table 4:30 presents the frequency of map reading assessment.

Table 4:30. The Degree of Assessments of Geography Teachers

S.N	Questions related to frequency of assessments	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No	%	No	%	No	%	No	%
1	**How often do you make assessment to your students while you have taught ma reading unit?**								
	• Each period	4	26.67	7	25.93	2	25	13	26
	• End of each sub units	2	13.33	3	11.11	1	12.5	6	12
	• End of the unit	9	60.0	17	62.96	5	62.5	31	62
2	**Major reasons for the non- application of continuous assessment at schools.**								
	• Big class size with crowded students	4	26.67	10	37.04	3	37.5	17	34
	• Lack of educational facilities and materials like type writers, stationery, libraries, etc	3	20.0	7	25.93	2	25	12	24
	• High teachers workload	3	20.0	7	25.93	2	25	12	24
	• Lack of refresher training and guideline for continuous assessment	5	33.33	3	11.10	1	12.5	9	18
	• Unwillingness of students for regular and rigorous working habits	----	----	----	----	----	----	----	----

The percentage of teachers who stated that they made assessments at the end of the units was 62 percent, at the end of each sub unit were 12 percent and in each period were 26 percent. Across schools, the frequencies of assessment were almost the same except in schools at Administration Cities where assessment is relatively frequent.

Geography teachers were also asked on major reasons that impede the application of continuous assessment for monitoring map reading performance of students in secondary schools. About 34% of the teachers reported that big class size with overcrowded students is the major problem followed by lack of educational facilities (24%), high teachers workload (24%), and lack of refresher training (18%) respectively.

4.2.5.3.3. Time devoted for Assessment

Teachers were asked on how much time is spent for correcting students assignments on a daily basis? Their responses are summarized in Table 4:31.

Table 4:31. Time spent for Map Reading Assessments

S.N	Questions related to assessments	Schools in City Administration		Schools in Municipal Cities		Schools in Emerging Cities		All sample schools	
		No	%	No	%	No	%	No	%
1	**Average time spent for correcting students assignment on weekly basis**								
	• Less than one hour	----	----	----	----	----	----	----	----
	• 1 to 2 hours	2	13.33	2	7.41	----	----	4	8
	• 3 to 4 hours	----	----	----	----	----	----	----	----
	• 5 to 6 hours	9	60.0	20	74.07	8	100	37	74
	• More than 7 hours	4	26.67	5	18.53	----	----	9	18

The responses of Geography teachers indicated that on average five to six hours a day was spent by teachers for assessment of students, though the amount of time being slightly less in schools at Administration Cities (86.67%) and schools at Municipal Cities (92.59%) than schools in Emerging Cities.

CHAPTER FOUR SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

4.1. SUMMARY AND CONCLUSIONS

Aware of the fact that maps are central for the study of geography, all school curricula have emphasized the importance of map reading skills. As a result of this, the geography curriculum materials that were prepared with the intents of meeting the objectives of the Education and Training Policy of Ethiopia, have given due attention to map reading topic.

However, test results and discussions made with geography teachers revealed that map reading performance of students is low. Concerted efforts were not made to understand major determinants of low performance of map reading in Ethiopia. Although, the researches on quality of education in developing countries have generally indicated that school related variables are major determinants for variations in students achievements, studies on specific factors are inconclusive, inconsistent and even contradictory at times. Therefore, these conditions initiated the investigator to study the school related factors that may affect the map reading performance of students.

Accordingly, this study attempted to investigate the school related factors that influence map reading performance in some secondary schools of Amhara NRS. Key and leading questions that had been entertained in the study are the following.

1. Do the factors explaining the quality of the teaching force have influence on pupils map reading performance at secondary schools?
2. Do the factors describing availability and quality of school physical facilities have influence in pupils' map reading performance at secondary schools?
3. Do the factors related to the effective utilization of instructional time have influence on map reading performance at secondary schools?
4. Do the factors defining students characteristics have influence map reading performance at secondary schools?
5. Do the factors related to effectiveness of teaching learning process in the classroom have influence in pupils map reading performance at secondary schools?

So as to find answers to the above basic questions the investigator selected 17 sample general secondary schools in Bahir Dar, West Gojjam, East Gojjam, Awi Administrative zones. These schools were selected on the basis of level of categorization of Cities of Amhara NRS. Data was collected from principals, students, teachers, and department heads through various instruments: questionnaires, interview and focus group discussions, classroom observations, school inventories and teacher made map reading performance tests. The data collected was analyzed by the percentages, means and standard deviations.

Findings from the study revealed that schools had wide variations in the effectiveness of their teaching learning process that eventually lead to the variations in map reading performance of students. The school related factors (teachers' qualification, availability of physical facilities, wastage of instructional time, pupils' characteristics) showed differential effect on effectiveness of the teaching learning process. Some of the most important findings are the following.

Map Reading performance of students is generally low with significant variations across gender and city categorization level: On average, all schools have scored low (below 50%) in map reading performances. Gender wise, in all schools male students out performed female students. Across level of city categorization in grade ten, students in schools at Municipal Cities perform higher than Emerging Cities and Administration Cities respectively. In Grade nine Municipal Cities showed highest score followed by Administration Cities and Emerging Cities respectively.

Except to geography teachers area of specialization, the level of teachers' qualification and teaching experience were not adequate to map reading teaching at secondary schools: Most teachers in the sampled schools had college diploma with geography discipline and a little more than one third of the college diploma graduate are taking in-service training for bachelor degree program in the summer courses. Most of them graduated from Bahir Dar University. The map reading courses that teachers obtained in the university were insufficient. Personal reading is the most important channel of continuous professional development followed by meeting to geography teachers and supervision support of geography department head and school principals respectively. Nearly all geography teachers worked for less than ten years. Almost all teachers

had positive attitude toward map reading teaching though there are considerable variations among schools. Therefore, major findings with respect to quality of the teaching force are: (i) Low performance of students in map reading performance could partly be attributed to lack of geography teachers with appropriate qualification as per the regionally set standard. (ii) the conventional method of training of teachers which is practiced for long time in the country did not solve the chronic shortage of teachers in secondary schools. (iii) Continuous professional development of teachers was not given to geography teachers. (iv) Experienced teachers with BA qualification are found to be deficient in the mastery of map reading. Hence, the low competency of teachers in map reading skills could act as a limiting factor to teachers interest towards teaching map reading.

The suggested map reading teaching methods, teaching aids and assessment methods in the syllabus are appropriate for secondary schools although the contents are difficult to understand due to problems related to presentation of map reading: The map reading unit in both grade nine and ten highly emphasized theoretical explanation and little attention has been given to illustrations, examples and practical exercises which are much recommended to teach map reading. The map reading units in both grade nine and ten are found at the end of the text book. Therefore, the major conclusions are: (i) Geography teachers and students have faced difficulties in clearly understanding the core ideas of map reading. (ii) There are not systematic arrangements of the topic between grade nine and ten.

Availability of school physical facilities (services rendered by the school library, availability of instructional materials and class size) were inadequate to teach map reading at sampled secondary schools: All sampled secondary schools had functioning library though its size is identical (720 students) for all school sizes in terms of number of students. Most of the schools had a collection of less than 200 geography reference books. The most abundantly available instructional materials at schools were maps followed by charts, diagram and globes in that order. Other minimum essential instructional materials recommended by the regional standards like atlases, slides and slide projector, over head projector, pantograph, tracing table, and seal maps are either few in quantity or non existent. Syllabus, teachers guide and text books are not sufficiently available in the schools. The average class size in all the sample schools was beyond

the regionally set standard (45 students). Therefore, major findings in relation to school physical facilities are the following: (i) if the size of the school library is constant, school size negatively influence the rate of utilization of the school library by the students. Therefore, the size of the school library in relation to the size of the school is more important in influencing map reading performance than its mere availability. (ii) Neither teaching aids (graphs, maps, slides, atlases etc) nor instructional materials (text books, teachers guide and syllabus) are adequately available in the schools. (iii) All geography teachers did not prepare teaching aids from locally available materials due to shortage of time, inadequate training and shortage of materials. (iv) all sample schools were overcrowded with students.

Geography teachers did not effectively utilize the limited instructional time that is allotted to teach Map Reading: The total periods allocated for teaching map reading are 560 minutes for grade nine and 880 minutes for grade ten. The unit that deals with map reading is found at the end of the text book. Geography teachers use about 85% of the map reading time allotted to them. So, the main findings are: (i) the overall shortage of allotted time for geography have affected the pace of teachers in delivering map reading teaching properly. In other words, attempts made to cover the intended curriculum in a short period of time will inevitably result in shallow treatments of map reading. (ii) Geography teachers did not use class hours effectively for instruction.

Student's readiness for learning map reading which is explained through students academic background, attitude towards map reading and age were appropriate: Almost all of the students involved in this study confirmed that they learn map reading related topic while they were at primary schools. Most of students liked map reading because they perceived that it is useful for daily life and getting a good job. Most of students considered learning map reading are mostly memorizing. Teachers were not worried about the map reading learning of their students. All students are in the age of fifteen to eighteen. The main findings are: (i) there is a systematic and progressive development of the skill from primary to secondary levels of education. (ii) learning map reading is characterized by memorizing and teachers were not bothered about students map reading learning which might be related to teachers method of teaching and attitude towards students learning. (iii) Students' age has not shown discernible variations in the sampled schools.

The teaching learning process related variables (Quality of instructional planning, effectiveness of implementation and effectiveness of assessment) had differential effect on Map Reading performance of students: It has been found out that almost all geography teachers prepare and utilize annual and weekly lesson plans though mismatch between the weekly and annual lesson plan is a common problem. Explanation, discussions, demonstrations and field trip are appropriate teaching methods for map reading. However, the activities of teachers and students clearly revealed that the two most dominant methods that are practiced in the schools are lecturing and giving notes. The suggested teaching aids for map reading are maps, globes, sketches, photograph, compass and atlases. The most frequently used teaching aids are globes, maps, chart, diagrams, overhead projector, pantograph, and slides. Review questions, exercises, group work, group report and quiz/test are the suggested assessment techniques for map reading. However, the vast majority of geography teachers employ review questions and exercises to measure the map reading performance of their students. Assessment at geography is carried out at the end of the unit and teachers devote five to six hours for conducting assessment. The major findings in connection to the teaching learning process are: (i) less attention has been given to the congruency of the content coverage of weekly with annual plans due to shortage of overall allotted instructional time. (ii) The suggested general secondary school map reading teaching methods has not matched with what is actually practiced at the classroom with respect to their variety, similarity and practicality. (iii) The variety and similarity of teaching aids suggested for map reading topic in secondary schools have matched with what is actually practiced in the classroom. (iv) there is a difference in the variety and practicality of suggested assessment techniques between the suggested and what is actually practiced.

4.2. RECOMMENDATIONS

Finally, based on the findings and conclusions drawn, the following recommendations are forwarded to meet the problem under study.

1. So as to equalize the performance of male student with females, as well as among schools that are located at various levels of Cities, it would be important to identify the major causes behind this variation by further research works.

2. Map reading teaching at secondary schools should be taught by teachers with bachelor degree qualification in geography. Thus, training of teachers at pre-service and in-service program should be emphasized. Thus the Federal Ministry of Education should devise mechanisms to increase the availability of BA qualified teachers in geography through the initiation and introduction of different modalities of teacher training programs other than the conventional methods that has been practiced in the country.

3. Having passed through several years of teaching experience in geography at secondary schools, experienced teachers are found to be deficient in the mastery of map reading. Therefore, continuous professional development of teachers through school clusters, discussions among geography teachers at school level, experience sharing among schools and supervision and support service at school level should be conducted.

4. Map reading is central in understanding of geography at various levels of education. However, students and teachers have faced difficulty in understanding map reading. Therefore, the ICDR in the Ministry of Education has to develop work book or self learning materials which give more room for practical exercises.

5. The standard for secondary school of ANRS set the same size of school library for all schools. The size of the each school under investigation with respect to number of students is different. Hence, the Amhara REB should revise the regional standard for secondary schools libraries so as to accommodate the school size variations.

6. Secondary schools in the study area suffer from lack of minimum essential map reading teaching materials due to scarce resources allocated to schools. Therefore, geography teachers should be encouraged to produce and utilize low cost teaching aids from locally available materials. Furthermore, additional funds have to be allocated for the purchase of those instructional materials that could not be produced at local level.

7. Instructional time for map reading is not only scarce; but the allotted time has not been effectively utilized. Therefore, geography experts at ICDR should substantively review

the overall instructional time allotment for geography curriculum to make the necessary arrangement. On top of this, the school principals and unit leaders should pay due attention towards the consistent presence of geography teachers in the school as well as efficient utilization of instructional time in the classroom. In case where there is wastage of time, compensation program has to be carried out.

8. Learning map reading is characterized by memorizing and teachers' were not bothered about students map reading learning which might be related to method of teaching and attitude of teachers towards students learning. Therefore, geography teachers should have to play a supportive role in raising the less positive and negative attitude of students.

9. Aware of the fact that increasing the lesson time will avoid the lagging behind of the weekly lesson with annual lesson, the school should work towards increasing the current instructional time of schools through the gradual transformation of the schools from double shift into single shift. The problems related to conducting field trip for teaching map reading can be solved by replacing the actual reality into models, specimens and simulations. Therefore, all the schools should collect specimens of all kinds and keep them for demonstration at the School Pedagogical Centers. On top of this, geography curriculum at secondary schools should be broadcasted through plasma TV. Concerning assessment, geography teachers should be trained on methodology of continuous assessment.

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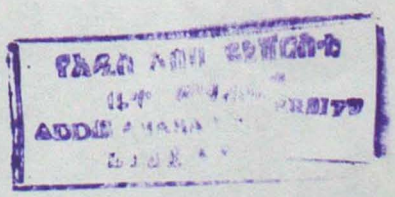
Appendices

APPENDIX-A

Zonal Distribution of General Secondary schools and pupils in Amhara Region in June 2005.

Administrative Zone	Location	Total schools	School Distribution by locality		School Distribution by ownership	
			Urban	Rural	Government	Non government
West Gojjam	West Amhara	9	8	1	9	0
East Gojjam	West Amhara	13	13	0	13	0
South Gondor	West Amhara	10	10	0	10	0
North Gondor	West Amhara	18	15	3	18	0
North Shewa	East Amhara	14	10	4	14	0
South Wollo	East Amhara	18	15	3	15	3
North Wollo	East Amhara	8	8	0	8	0
Awi	West Amhara	5	5	0	5	0
Oromiya	East Amhara	3	2	1	3	0
Wag Himera	East Amhara	1	1	0	1	0
Bahir Dar	West Amhara	4	4	0	3	1
Total for Amhara Region		103	91	12	99	4

Source:- Amhara N.R.S. Education Bureau Annual Education Statistics Abstract in 1997 E.C.(2004/05)



APPENDIX-B

SECTIONS AND ENROLLMENT IN TARGET POPULATION GENERAL SECONDARY SCHOOLS IN JUNE 2005.

Name of the school	Sections			Grade 9 Enrollment			Grade 10 Enrollment		
	Grade Nine	Grade Ten	Total	Male	Female	Total	Male	Female	Total
Yismala	20	16	36	726	484	1,210	610	348	958
Yimana Densa	24	12	36	1,351	664	2,015	790	180	970
Shikudad	36	16	52	1,520	810	2,330	788	246	1,034
Feres Bet	7	7	14	899	353	1,252	428	143	571
Dembecha	14	8	22	724	321	1,045	466	180	646
Merawi	11	8	19	1,283	589	1,872	696	237	933
Gebeze Mariam	10	8	18	450	171	621	383	117	500
Damot	21	14	35	1,369	717	2,086	780	378	1,158
Gunbot 20	10	10	20	596	295	891	347	75	422
Gojjam Ber	15	7	22	619	388	1,007	296	117	413
Bahir Giorgis	12	12	24	758	222	980	661	180	841
Motta	26	10	36	1,740	1,014	2,754	742	195	937
Debre Work	10	10	20	527	202	729	462	221	683
Belay Zeleke	28	12	40	1,447	1,015	2,462	714	297	1,011
Amanuel	16	12	28	818	349	1,167	722	296	1,018
Abraha W/Atsebha	12	12	24	599	217	816	601	196	797
Debre Markos	28	12	40	1,261	858	2,119	490	367	857
Menkorer	12	12	24	564	396	960	695	283	978
Leyew Asres & his family	12	10	22	667	275	942	519	160	679
Dangila	46	26	72	1,688	1,037	2,725	1,003	532	1,535
Ankesha	16	6	22	921	253	1,174	326	48	374
Chagni	22	13	35	855	441	1,296	564	215	779
Tilele	7	9	16	282	138	420	437	98	535
Injibara	10	20	30	901	372	1,273	446	162	608
Tana Haik	21	15	36	825	665	1,490	537	494	1,031
Ghion	16	14	30	694	446	1,140	619	410	1,029
Fasilo	11	9	20	391	352	743	339	313	652
Catholic	1	1	2	30	35	65	27	30	57
Total	**474**	**321**	**795**	**24,505**	**13,079**	**37,584**	**15,488**	**6518**	**22,006**

Source:- Amhara N.R.S. Education Bureau Annual Education Statistics Abstract in 1997 E.C.(2004/05) .

APPENDIX-C

TOTAL TEACHERS AND GEOGRAPHY TEACHERS IN TARGET POPULATION GENERAL SECONDARY SCHOOLS IN WEST AMHARA REGION IN JUNE 2005.

Name of the school	Total Teachers			Geography Teachers		
	Male	Female	Total	Male	Female	Total
Yismala	36	4	40	3	0	3
Yimana Densa	42	7	49	3	0	3
Shikudad	43	6	49	3	1	4
Feres Bet	29	5	34	2	1	3
Dembecha	23	4	27	2	0	2
Merawi	27	4	31	2	0	2
Gebeze Mariam	20	3	23	3	0	3
Damot	35	6	41	3	2	5
Gunbot 20	20	4	24	2	0	2
Gojjam Ber	27	1	28	3	0	3
Bahir Giorgis	23	5	28	1	1	2
Motta	37	3	44	5	1	6
Debre Work	31	3	34	2	1	3
Belay Zeleke	37	6	43	2	0	2
Amanuel	29	3	32	3	0	3
Abraha W/Atsebha	25	9	34	2	0	2
Debre Markos	56	1	57	3	1	4
Menkorer	32	4	36	2	0	2
Leyew Asres & his family	19	6	25	2	0	2
Dangila	67	4	71	5	0	5
Ankesha	27	5	32	3	0	3
Chagni	35	4	39	3	0	3
Tilele	18	3	21	2	0	2
Injibara	27	5	32	2	0	2
Tana Haik	41	2	43	2	1	3
Ghion	29	4	33	2	0	2
Fasilo	25	3	28	2	0	2
Catholic	8	0	8	2	0	2
Total	**868**	**114**	**986**	**71**	**9**	**80**

Source:- Amhara N.R.S. Education Bureau Annual report of the Amhara N.R.S. in 1997 E.C.(2004/05)

APPENDIX-D

TABLE OF SPECIFICATION FOR GENERAL SECONDARY SCHOOLS.

Subject: Geography Grade Level: Grade 9

Part II
Topic: Map Reading Chapter: IV Map Reading.

Contents		Period Allotted	Behavioral Outcomes						Content Dimensions	
			Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Total	%
1. Introduction 1.1.Definition of a map 1.2. Use of maps 1.3. Marginal information on map 1.4. Conventional signs and symbols		2	3						3	15
2. Types of Maps 2.1. Classification of maps ▪ Purpose of the maps ▪ Types of information they convey ▪ The scale of maps		4		5					5	25
3. Scales 3.1. Definition of scale 3.2. Methods of stating scale 3.3. Scale Conversion 3.4. How to find scales when it is not given 3.5. How to find scales foe enlarged and reduced maps		2		1	2				3	15
4. Scale Conversion 4.1. Scale Conversion 4.2. How to find scales not given 4.3. How to find scales for enlarged and reduced maps		2		2	1				3	15
5. Statistical Diagrams 5.1. Simple graphs 5.2. Compound graphs 5.3. Pie chart 5.4. Pictorial diagram		4	2		4				6	30
Behavioral Dimension	**Total**	**14**	**5**	**8**	**7**				**20**	**100**
	%		**25**	**40**	**35**				**100**	

Source:- Geography for Ethiopian Secondary Schools: Syllabi for Grade 9.

No of questions for each topic can be obtained by the formula = $\frac{\text{No. of allotted period X total no. of test items needed}}{\text{Total no. of periods allotted to teach the whole content}}$

APPENDIX-E

TABLE OF SPECIFICATION FOR GENERAL SECONDARY SCHOOLS

Subject: Geography. Grade Level: Grade 10

Topic: Map Use and Map work Chapter: IV: Map Use and map Work.

Contents	Period Allotted	Behavioral Outcomes						Content Dimensions	
		Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Total	%
1. Map Enlargement and Reduction 1.1. Map enlargement 1.2. Map reduction	3			2				2	10
2. Measurement of Distance and areas on maps 2Measurement of distance on maps 2.2. Measurement of areas on maps	4		4					4	20
3. Directions and Bearings on maps 3.1.Units of directions 3.2. Kinds of North Direction 3.3.How to measure direction of one plane/feature from another? 3.4. How to measure directions direction (trend) of linear feature?	2	2						2	10
4. Positions on maps 4.1. Methods of indicating location on maps ▪ Geographic names ▪ Direction and Distance from reference place ▪ Geographical Grid reference ▪ National Grid reference	4	2	2					4	20
5. The Relief on maps 5.1. Methods of representing relief on maps 5.2. Properties of contour lines 5.3. Methods of showing altitudes on maps 5.4. Slopes and Gradients on maps	9	7	1					8	40
Behavioral Dimensions **Total**	**22**	**11**	**7**	**2**				**20**	**100**
%		**55**	**35**	**10**				**100**	

Source:- Geography for Ethiopian Secondary Schools: Syllabi for Grade 10

No of questions for each topic can be obtained by the formula = $\frac{\text{No. of allotted period X total no. of test items needed}}{\text{Total no. of periods allotted to teach the whole content}}$

APPENDIX-F

MAP READING PERFORMANCE TEST FOR GRADE NINE

Name of the school: _____

Sex: _____ Age: _____

Part One:- Choose the correct answer for the following and circle the correct response.

1. Which of the following marginal information on a map indicates the purpose of the map?

   A) Title B) Date C) Key D) Scale

2. Which of the following colors is used to represent relief features on a map? A) Red B) Brown C) Yellow D) Green

3. Except one all the following are represented by blue colors on maps. Which one?

   A) Roads B) Sea C) Rivers D) irrigation channels

4. Which one of the following map scales is relatively greater than others? A) 1:20,000 B)1:30,000 C) 1:40,000 D)1:50,000

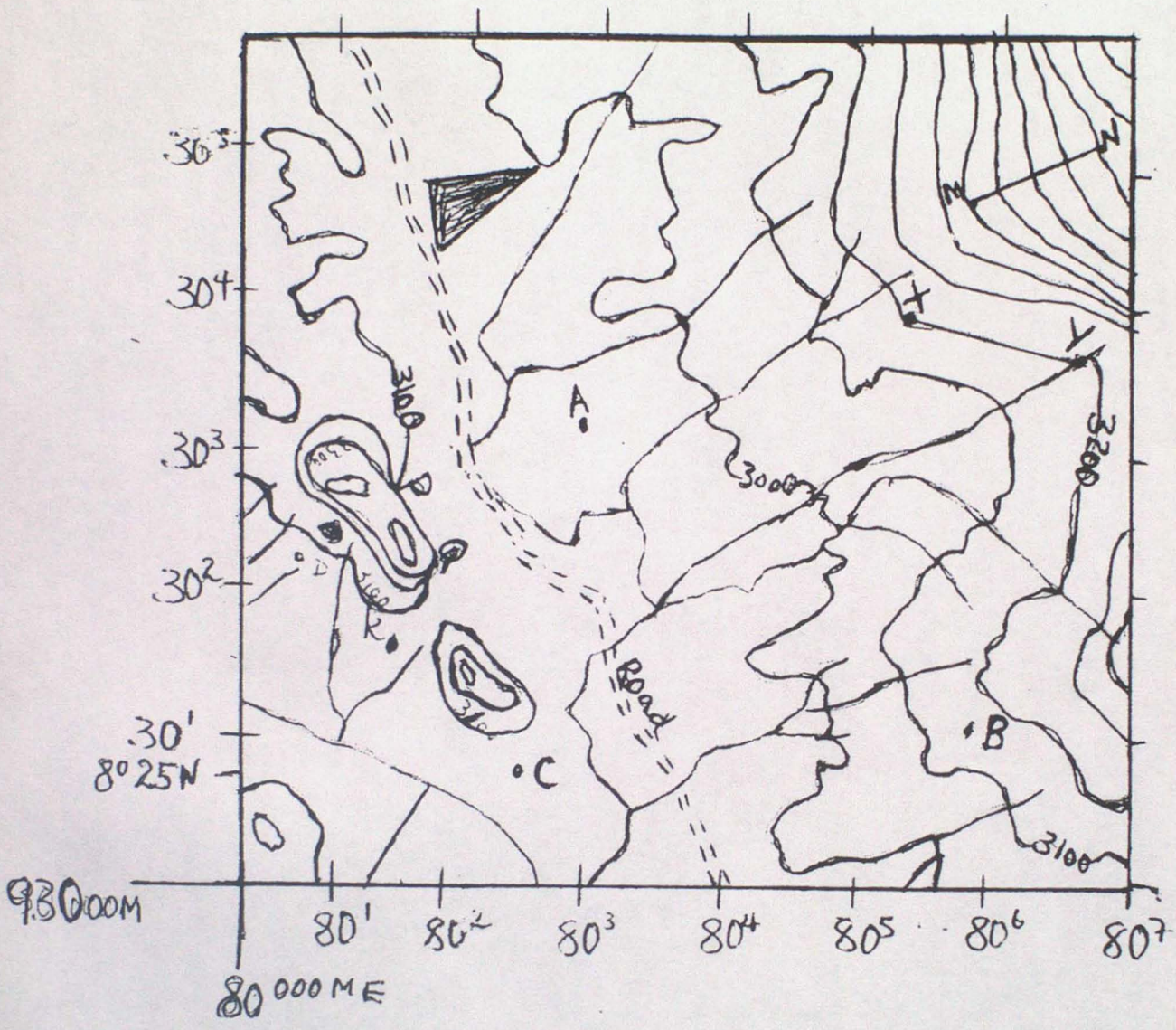
Part II:- The following 6 questions (5 to 9) refer to types of maps. Maps can be classified into the following five types.

A. Physical maps
B. Cultural maps
C. Reference (topographic) maps
D. Thematic (topical) maps

Based on the above four given alternatives (A, B, C, and D) select the correct answer that best fits with the concepts mentioned 5 to 9 and write the letter of your answer on the space provided in front of each question.

5. Geological or soil maps _____
6. Isopleths maps _____
7. Linguistic maps _____
8. Climatic maps _____
9. Political maps _____

Part Three:- Questions 10 to 17 refer to the map 1 given below. Read the questions carefully. Choose and circle the letter that contains best answer among the given alternatives based on the map.



10. The ground distance between point P and Q is 2.5 km. The corresponding distance on the map is 5 cm. What is the linear scale of the map? A) 5 cm to 1 km B) 1:250,000 C) 1cm to 12.5 km D) 1:50,000

11. The above map (map 1) measures 10 cm by 12 cm. Based on this information, what is the approximate total area of the region shown by the map is:

A) 120 km^2 B) 30 km^2 C) 60 km^2 D) 12 km^2

12. What is the areal scale for map 1? A) 1cm^2 to 12 km^2 B) 1cm^2 to 30 km^2 C) 1cm^2 to 0.25 km^2 D) 1cm^2 to 60 km^2

13. What is the representative fraction (RF) scale on map one? A) 1:50,000 B) 1:500,000 C) 1:200,000 D) 1:20,000

14. If map 1 is enlarged twice, then what will be the scale of the enlarged map? A) 1:25,000 B) 1:100,000 C) 1:400,000 D) 1:10,000

Part Four:- The following 6 questions (15 to 20) refers to drawing of statistical diagrams. The following table indicates the distribution of temperature and rainfall in Ethiopia.

Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Temp in °C	27	28	28	28	27	27	26	27	27	27	26	26
Rainfall in mm	0	0	108	36	29	0	0	0	8	130	17	0

15. Construct line graph for the distribution of temperature and a bar graph for the distribution of rainfall.
16. Compute the mean annual temperature for the place
17. Calculate the annual range of temperature in °C
18. What is the hottest and coldest seasons?
19. What is the total annual rainfall for the place?
20. Mention the season that receives relatively heavy rainfall?

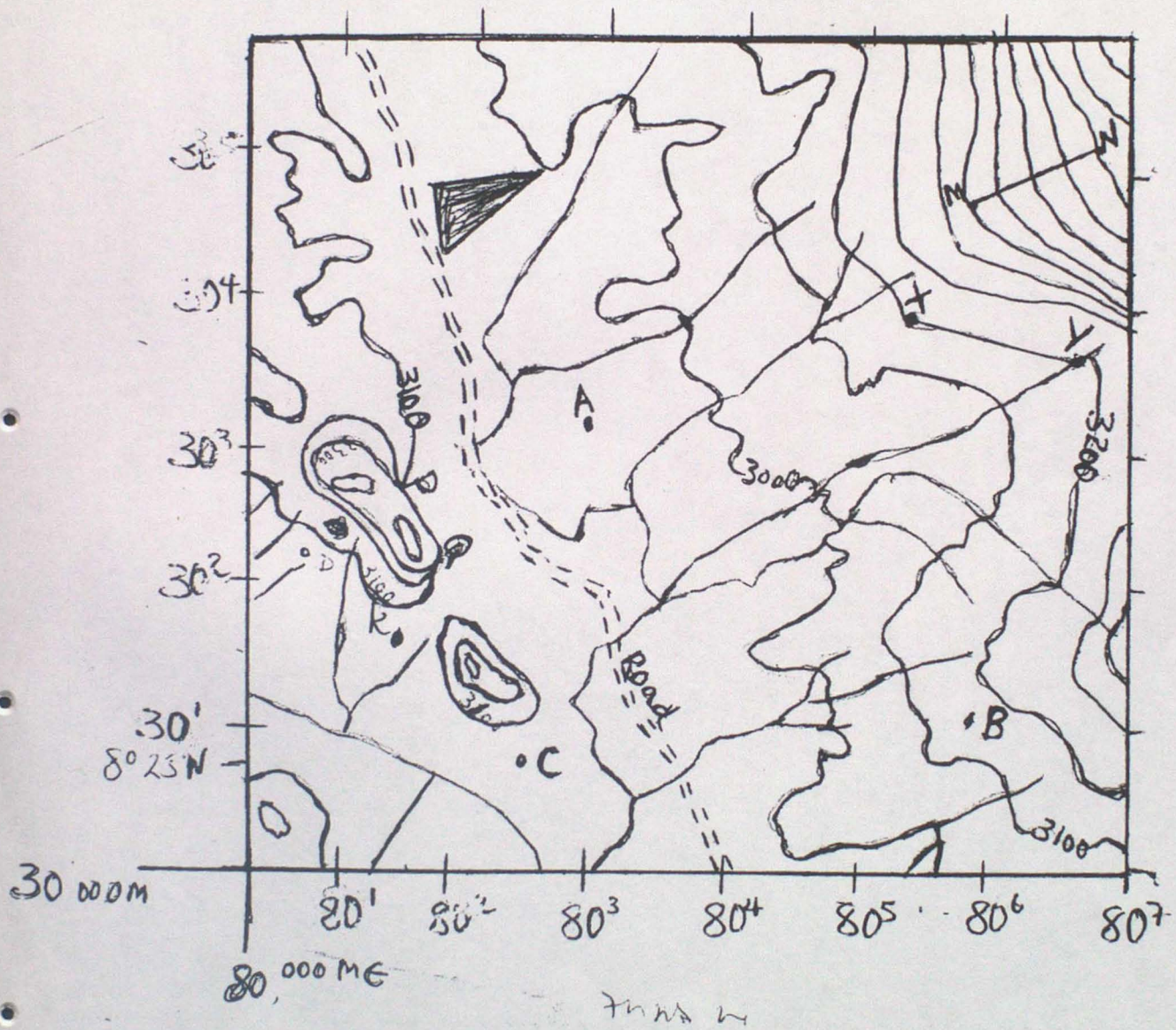
APPENDIX-G

MAP READING PERFORMANCE TEST FOR GRADE TEN

Name of the school: _____

Sex: _____ Age: _____

Direction. Study the map given below carefully and choose the best answer among the provided alternatives and circle letter of your the correct response.



1. The ground distance between X and Y is 5,000 meter. What is the scale of the map? A) 1:50,000 B) 1:100,000 C) 1:75,000 D) 1:200,000
2. The crow fly distance between point A and X on the map is 5 cm. What is the corresponding distance on the ground? A) 20 km B) 15 km C) 10 km D) 5 km
3. What is the approximate actual distance of the road on the ground? A) 7 km B) 27 km C) 47 km D) 50 km
4. What is the approximate total area covered by the map? A) 84 km^2 B)144 km^2 C) 104 km^2 D) 264 km^2
5. Which of the following is the approximate area covered by shaded region on the map? A) 3 km^2 B) 5 km^2 C) 7 km^2 D) 19 km^2
6. What is the direction of A from B? A) North West B) North East C) South West
7. Which of the following is situated in North East direction? A) A from B B) N from M C) A from X D) B from A
8. Which of the following bearings best describes the North West direction? A) 315^0 B) 45^0 C) 225^0 D) 135^0
9. Which of the following presents the highest point on the map? A) North West B) South West C) South East D) North East
10. Which of the following most likely indicates the approximate altitude of the road? A) Between 2900 m - 3000 m B) Between 3000m to 3100 m C) Between 3100 m,to 3200 m D) between 3200 m to 3300 m
11. What is the six-digit grid reference for point A on the map? A) 330830 B) 825844 C) 330825 D) 830330
12. Which of the following points are not intervisible? A) M and N B) A and X C) D and A D) A and B
13. What is the gradient of the slope along line XY? A) 0 degrees B) 6.5 degrees C) 11.5 degrees D) 16.5 degrees
14. Which of these landforms presents by the line PQ? A) A cliff B) A volcanic plug C) Volcanic neck D) plain

15. What is the vertical interval of contours shown on the map? A) 40 B) 20 m C) 200 m D) 100 m
16. What is the approximate highest point in the map? A) 3100 m B) 4100 m C) 2800 m D) 2100 m
17. Which of these presents the approximate lowest point in the map? A) 3000 m B) 3200 m C) 1500 m D) 2000 m
18. Which of these indicate by the line M-N on the map? A) Convex slope B) gorge C) Terraced or stepped slope D) Concave slope
19. A 9 cm^2 area on the map represents a corresponding ground area of: A) 30 km^2 B) 36 km^2 C) 45 km^2 D) 50 km^2
20. Suppose the map distance between X and Y has been reduced to 1.25 cm then what will be the scale of the new map? A) 1 cm to 4 km B) 1 cm to 8 km C) 1 cm to 16 km D) 1 cm to 14 km

APPENDIX H:- Map Reading Performance Test Score for Grade 9 at Schools in Emerging Cities

Yismala		
Code No	sex	Score 100%
1	M	65
2	M	50
3	M	50
4	F	45
5	F	40
6	F	55
7	F	20
8	F	45
9	F	50
10	F	35
11	M	50
12	M	20
13	M	30
14	M	35
15	M	20
16	M	35
17	M	70
18	M	30

Leyew Asres & Sons		
Code No	sex	Score 100%
19	M	65
20	M	65
21	M	50
22	F	15
23	F	45
24	F	20
25	M	45
26	M	30
27	M	25
28	M	20
29	M	40
30	M	50
31	F	45
32	M	75
33	M	25
34	M	25
35	M	20
36	M	65
37	M	35
38	F	20
39	F	10
40	F	45
41	M	40
42	M	50

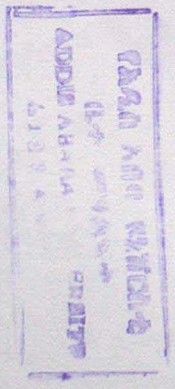
Feres Bet		
Code No	sex	Score 100%
43	M	35
44	F	30
45	F	65
46	F	70
47	F	40
48	F	30
49	F	35
50	M	50
51	M	25
52	M	40
53	M	40
54	M	45
55	M	30
56	M	55
57	F	10
58	M	55
59	M	40
60	M	70
61	M	50
62	F	10
63	F	30
64	F	20
65	F	30
66	M	45
67	M	75
68	F	50
69	F	45
70	M	50
71	M	40
72	F	45
73	M	70
74	M	40
75	M	50
76	M	50
77	M	35
78	M	35
79	M	45
80	M	55
81	M	25
82	M	75
83	M	25
84	M	65
85	M	30
86	M	40
87	F	65
88	M	25
89	M	25
90	M	40
91	M	20
92	M	65
93	M	55
94	M	15
95	M	35
96	M	40

APPENDIX I:- Map Reading Performance Test Score for Grade 9 at Schools in Muncipal Cities.

Shikudad			Dembecha			Merawi			Gojjam Ber			Motta			Belay Zeleke			Dangila			Ankesha		
Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%
159	M	40	178	M	45	200	M	50	251	M	50	271	M	45	303	M	40	329	M	45	347	F	35
160	M	45	179	M	55	201	M	35	252	M	30	272	M	35	304	M	50	330	M	45	348	M	55
161	M	55	180	M	40	202	M	40	253	F	40	273	M	45	305	M	50	331	M	45	349	M	55
162	M	55	181	M	45	203	M	45	254	M	50	274	M	45	306	M	45	332	M	45	350	M	50
163	M	45	182	M	45	204	M	45	255	M	45	275	M	45	307	F	45	333	M	55	351	M	35
164	M	45	183	M	45	205	M	45	256	M	45	276	M	45	308	F	35	334	M	45	352	M	40
165	M	40	184	M	45	206	M	55	257	F	45	277	M	45	309	F	40	335	M	55	353	M	45
166	M	45	185	M	55	207	M	45	258	F	50	278	M	35	310	F	45	336	M	40	354	M	45
167	M	45	186	M	45	208	M	50	259	M	50	279	M	45	311	M	50	337	M	45	355	M	45
168	F	50	187	M	45	209	M	45	260	M	50	280	M	40	312	M	50	338	M	45	356	M	55
169	M	45	188	M	45	210	M	50	261	F	35	281	M	45	313	M	45	339	M	45	357	M	45
170	M	40	189	F	45	211	M	45	262	M	40	282	M	45	314	M	45	340	F	40	358	M	50
171	F	30	190	F	45	212	F	40	263	M	45	283	F	40	315	M	40	341	F	60	359	M	45
172	F	35	191	F	45	213	F	45	264	F	45	284	M	45	316	M	45	342	F	45	360	M	50
173	F	50	192	F	45	214	F	45	265	M	40	285	F	45	317	M	45	343	F	40	361	M	45
174	F	55	193	M	45	215	F	45	266	M	40	286	F	40	318	F	50	344	F	45	362	F	40
175	F	45	194	M	45	216	M	50	267	F	45	287	F	40	319	M	45	345	F	40	363	F	45
176	F	45	195	F	55	217	M	45	268	F	45	288	M	45	320	M	40	346	F	40	364	F	45
177	M	45	196	F	45	218	M	50	269	F	45	289	F	45	321	F	30				365	F	45
			197	F	35	219	M	45	270	M	50	290	M	45	322	F	35				366	M	50
			198	M	55	220	M	45				291	M	45	323	F	50				367	M	45
			199	M	55	221	M	45				292	F	40	324	F	50				368	M	50
						222	M	45				293	M	45	325	F	45						
						223	M	45				294	F	35	326	F	45						
						224	F	35				295	F	40	327	M	45						
						225	F	40				296	F	50	328	M	45						
						226	F	45				297	M	40									
						227	M	55				298	F	40									
						228	M	45				299	M	45									
						229	M	50				300	M	50									
						230	M	45				301	F	30									
						231	M	45				302	F	45									
						232	F	30															
						233	F	30															
						234	M	45															
						235	F	55															
						236	F	55															
						237	M	40															
						238	M	50															
						239	M	50															
						240	M	45															
						241	M	45															
						242	M	45															
						243	F	40															
						244	M	45															
						245	M	45															
						246	M	50															
						247	F	55															
						248	F	30															
						249	F	40															
						250	F	45															

APPENDIX J:- Map Reading Performance Test Score for Grade 9 at Schools in Muncipal Cities.

Debre Markos			Menkorer			Tana Haik			Ghion			Fasilo			Catholic		
Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%
555	M	30	578	F	20	602	M	35	623	M	25	644	M	65	664	M	40
556	M	30	579	F	30	603	F	25	624	F	25	645	M	55	665	F	40
557	M	55	580	F	35	604	F	40	625	M	55	646	F	30	666	F	40
558	M	25	581	F	20	605	F	80	626	M	30	647	F	25	667	M	85
559	M	25	582	F	30	606	F	20	627	M	20	648	F	25	668	M	85
560	M	25	583	M	85	607	F	55	628	F	45	649	F	20	669	F	55
561	M	85	584	M	30	608	F	40	629	F	30	650	F	15	670	M	35
562	M	25	585	M	50	609	M	35	630	M	15	651	F	20	671	F	60
563	M	25	586	F	20	610	M	30	631	M	35	652	M	35	672	F	50
564	F	35	587	M	25	611	M	39	632	M	20	653	M	65	673	M	70
565	F	30	588	F	40	612	F	25	633	F	20	654	F	25	674	F	50
566	M	15	589	F	30	613	F	30	634	F	40	655	F	25	675	M	45
567	F	55	590	M	40	614	F	25	635	F	30	656	M	20	676	F	50
568	M	30	591	F	40	615	F	25	636	F	20	657	M	35	677	M	50
569	F	25	592	M	35	616	M	45	637	F	30	658	M	25	678	M	35
570	M	25	593	M	20	617	M	50	638	M	25	659	F	85	679	M	95
571	F	30	594	F	20	618	M	50	639	M	35	660	F	25	680	M	45
572	M	15	595	M	95	619	M	50	640	M	65	661	M	25	681	M	90
573	M	30	596	M	35	620	M	45	641	M	30	662	M	30	682	F	60
574	F	15	597	M	35	621	M	30	642	M	25	663	M	5	683	F	45
575	F	30	598	M	25	622	M	55	643	M	65						
576	F	25	599	M	25												
577	F	25	600	M	40												
			601	M	20												



APPENDIX K:- Map Reading Performance Test Score for Grade 10 at Schools in Emerging Cities.

Yismala		
Code No	sex	Score 100%
97	F	25
98	M	80
99	F	55
100	F	25
101	M	20
102	F	40
103	F	45
104	F	70
105	F	40
106	M	60
107	M	50
108	M	50
109	M	30
110	M	30
111	M	25
112	M	55
113	M	50
114	M	45

Leyew Asres & Sons		
Code No	sex	Score 100%
115	F	20
116	M	75
117	F	50
118	F	15
119	M	20
120	F	30
121	F	35
122	M	65
123	M	35
124	M	55
125	M	45
126	M	45
127	M	30
128	M	25
129	M	30
130	M	50
131	M	45
132	M	40
133	M	40
134	M	55

Feres Bet		
Code No	sex	Score 100%
135	M	40
136	M	65
137	M	40
138	M	30
139	M	45
140	M	45
141	F	25
142	F	20
143	F	35
144	F	60
145	F	60
146	F	35
147	M	70
148	M	45
149	M	45
150	M	40
151	M	35
152	M	35
153	M	50
154	M	50
155	M	45
156	M	50
157	M	55
158	M	30

APPENDIX L:- Map Reading Performance Test Score for Grade 10 at Schools in Muncipal Cities.

Roll	Shikudad		Dembecha			Merawi			Gojjam Ber			Motta			Belay Zeleke			Dangila			Ankesha		
No	sex	Total	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%
369	M	45	388	M	50	412	M	45	447	M	45	465	M	45	493	F	45	518	F	45	536	F	50
370	M	50	389	M	55	413	M	50	448	M	45	466	M	45	494	M	50	519	F	45	537	M	50
371	M	55	390	M	45	414	M	50	449	M	45	467	F	45	495	F	50	520	F	50	538	M	50
372	M	55	391	M	50	415	M	50	450	M	50	468	F	50	496	F	45	521	M	55	539	M	50
373	M	50	392	M	50	416	M	55	451	M	45	469	M	45	497	F	45	522	M	40	540	M	50
374	M	50	393	M	45	417	M	50	452	M	50	470	M	50	498	M	45	523	M	50	541	M	50
375	M	45	394	M	50	418	M	45	453	F	45	471	F	35	499	F	50	524	M	50	542	M	50
376	M	50	395	M	55	419	M	45	454	M	50	472	M	45	500	M	45	525	M	45	543	M	45
377	M	50	396	M	50	420	M	50	455	M	50	473	M	50	501	M	45	526	M	50	544	M	50
378	F	50	397	M	50	421	M	45	456	M	45	474	F	45	502	F	45	527	M	50	545	M	45
379	M	50	398	M	45	422	F	45	457	F	40	475	M	45	503	M	50	528	F	45	546	M	45
380	M	45	399	F	45	423	F	50	458	F	35	476	M	45	504	F	40	529	M	50	547	M	50
381	F	35	400	F	50	424	F	50	459	F	45	477	F	45	505	M	45	530	M	45	548	M	50
382	F	40	401	F	50	425	F	50	460	F	50	478	F	45	506	M	50	531	F	45	549	M	50
383	F	50	402	F	50	426	M	45	461	M	55	479	M	45	507	M	45	532	F	40	550	F	45
384	F	55	403	M	45	427	M	50	462	M	35	480	M	50	508	M	45	533	M	55	551	M	55
385	M	50	404	M	50	428	M	55	463	M	45	481	M	50	509	M	50	534	M	40	552	M	50
386	M	50	405	F	55	429	M	50	464	M	55	482	M	40	510	M	50	535	M	50	553	M	45
387	M	50	406	F	50	430	M	50				483	M	50	511	M	35				554	M	50
			407	F	40	431	M	50				484	M	50	512	M	50						
			408	M	55	432	M	45				485	M	50	513	M	45						
			409	M	50	433	M	50				486	M	50	514	M	50						
			410	M	55	434	F	40				487	M	50	515	M	55						
			411	M	40	435	F	45				488	M	40	516	M	50						
						436	F	50				489	M	50	517	M	50						
						437	M	55				490	M	45									
						438	M	50				491	M	50									
						439	M	45				492	M	50									
						440	M	50															
						441	M	50															
						442	F	35															
						443	F	35															
						444	M	50															
						445	M	55															
						446	M	45															

APPENDIX M:- Map Reading Performance Test Score for Grade 10 at Schools in Muncipal Cities.

Debre Markos			Menkorer			Tana Haik			Ghion			Fasilo			Catholic		
Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%	Code No	sex	Score 100%
684	M	30	705	M	20	729	M	55	750	M	30	772	F	35	794	F	50
685	F	40	706	F	35	730	M	45	751	F	55	773	M	20	795	F	50
686	F	40	707	M	35	731	M	55	752	M	20	774	F	20	796	F	60
687	M	30	708	F	20	732	M	55	753	M	35	775	M	95	797	F	65
688	F	25	709	M	40	733	M	45	754	F	20	776	M	40	798	F	65
689	F	35	710	M	75	734	M	55	755	F	45	777	M	40	799	F	65
690	M	25	711	M	35	735	M	35	756	F	30	778	M	25	800	M	75
691	F	55	712	M	35	736	F	35	757	F	30	779	M	25	801	M	70
692	M	60	713	M	30	737	F	60	758	F	25	780	M	50	802	M	80
693	M	65	714	M	40	738	F	30	759	F	40	781	M	20	803	M	50
694	M	45	715	M	25	739	F	30	760	F	50	782	M	45	804	F	50
695	M	35	716	M	20	740	F	30	761	F	25	783	F	25	805	M	80
696	M	20	717	M	40	741	F	90	762	M	35	784	F	40	806	M	60
697	F	15	718	F	25	742	F	30	763	M	90	785	F	80	807	M	55
698	F	40	719	F	25	743	F	30	764	M	35	786	F	20	808	F	60
699	F	30	720	M	25	744	M	40	765	M	55	787	F	55	809	F	55
700	F	35	721	F	30	745	M	35	766	M	25	788	F	40	810	M	50
701	M	25	722	M	25	746	F	20	767	M	30	789	M	45			
702	M	40	723	M	20	747	M	60	768	M	45	790	M	40			
703	M	40	724	M	50	748	F	35	769	M	35	791	M	39			
704	M	25	725	M	35	749	M	30	770	M	45	792	F	25			
			726	M	30				771	M	45	793	F	30			
			727	F	35												
			728	F	40												

APPENDIX-N

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTION

A QUESTIONNAIRE TO BE FILLED BY GENERAL SECONDARY SCHOOL PRINCIPALS

Objectives:- The purpose of this questionnaire is to collect information on school related factors which may have influence on pupils performance on map reading in grade 9 and 10, and to suggest solutions for improvement. Hence, you are kindly requested to provide appropriate information.

Thank you.

General Direction:-

- Writing name of the respondent is not necessary. All the information provided will be confidential.
- Please mark (X) in the appropriate box that corresponds to your choice or write the information needed in brief when ever necessary.
- Please make it short and clear in responding to the open-ended question.

Part One: - Personal Information

1) Name of your school _____.
2) Location a) Zone _____ b) Woreda_____ C) Kebele_____.
3) Sex: Male_____ Female _____
4) Age: _____ years of old.
5) Level of Education.
   a) M.A/MSc _____ b) BA/BSc _____ c) Diploma _____
   d) other (specify)_____
6) Work Experiences
   A) Total service years_____
   B) Total service years in teaching profession_____
   C) Service years as secondary school principal_____
   D) Years of service as secondary school principal in the school you are now _____

Part Two: - Teacher continuous professional support related Questions

Indicate your responses for the following questions by marking "X" in the space provided. For open ended questions, put your answer clearly & precisely.

7) How often do you spend your time in making classroom supervision of geography teachers while they are teaching in the classrooms?
   A) Once in a month_____
   B) Once in a semester_____
   C) Twice in a semester_____
   D) Never_____
   E) If other, specify _____.
8) If you did not make classroom observation, state the major reasons behind for not doing so?
   A) Over load with other responsibilities_____
   B) Lack of sufficient skills in pedagogical support mechanism_____
   C) Unwilling to do such tasks_____
   D) Teachers unwillingness to be observed_____
   E) Other reasons_____

   _____

9) If you make classroom observation, which of these issues take most of the teacher's time? Put them in priority starting first with the activity that took most of teacher's time.

A) Lecturing _____

B) Giving notes _____

C) Asking questions_____

D) Answering to students' questions _____

E) Facilitating discussions and group work _____

F) Demonstrating _____

G) Giving class work, homework, etc _____

H) Other (if any specify)_____

Part Three: - Physical School Facilities related Questions

Indicate your responses for the following questions by marking "X" at the correct choice. Put clear & precise answers for open ended questions.

10) Is there a library in the school?

A) Yes _____

B) No _____

11) For how many days is the library open in a week and for how many hours? _____

12) For how may hours do classes have access to the library every week? _____

13) If the library does not work regularly, what are the major reasons for it?

A) The school does not have a librarian_____

B) Engagement of the librarian in other activities_____

C) Lack of minimum essential facilities like Tables, chairs, books_____

14) Does your school have adequate geography curricular materials (Syllabus, teacher's guide and student's textbook) ?

A) Yes_____

B) No_____

15) If no, why is that? _____

_____

_____

Part Four:- Efficient use of Instructional Time related Questions

Give your response in the provided blank space to the questions posed.

16) Do geography teachers use all the time allotted for teaching purposes?

A) Always _____

B) Sometimes _____

C) Rarely _____

D) Not at all _____

17) If your response to question 15 is C or D, describe the major reasons for it.

A) overload with administrative activities _____

B) Personal or family problems _____

C) Low commitment for teaching _____

D) unprepared plan and preparation of Instruction _____

E) Others (specify) _____

APPENDIX-OA

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTION

A QUESTIONNAIRE TO BE FILLED BY GENERAL SECONDARY SCHOOL STUDENTS

The purpose of this questionnaire is to gather information on school related factors, which influences pupils' performance in map reading at general secondary schools. Therefore, you are kindly requested to provide appropriate information with respect to your school. Any information that you provide will be kept confidential.

Thank you.

General Direction:-

- For questions having alternatives please mark **(X)** in the appropriate space that corresponds to your choice or write the information needed in brief when ever necessary.
- For the questions that request your free response please write your answer on the space provided on the space provided.

Part One: - Pupils Personal Information

1. Name of your school_____.
2. Your Grade and section _____.
3. Sex: Male _____ Female _____
4. Age: _____ years of old.

Part Two:-Teaching learning process related questions

Mark your answers in the question paper. Fill in only one option for each question.

5. I was taught map reading skills when I was at primary school.

   A) Yes _____

   B) B) No_____

6. If you were taught map reading in primary school, how do you rate its usefulness for learning map reading in secondary school?

   A) Very high _____

   B) High _____

   C) Undecided _____

   D) Low _____

   E) Very low _____

7. My geography teacher gives emphasis to map reading like other geography contents

   A) Strongly agree _____

   B) Agree _____

   C) Undecided _____

   D) Disagree _____

   E) Strongly disagree _____

8. My geography teacher has sufficient skill in map reading

   A) Strongly agree _____

   B) Agree _____

   C) Undecided _____

   D) Disagree _____

   E) Strongly disagree _____

9. My geography teacher uses teaching aids while teaching map reading.

   A) Always _____

   B) Sometimes _____

   C) Rarely _____

   D) Not at all _____

10. My geography teacher gives me sufficient practical exercise on map reading

A) Always _____

B) Sometimes _____

C) Rarely _____

D) Not at all _____

11. We conduct fieldwork in relation to map reading lesson.

A) Always _____

B) Sometimes _____

C) Rarely _____

D) Not at all _____

12. Which of these activities take most of your time while your geography teacher is teaching map reading in the classroom? Put them in priority starting first with your major activity that took most of your time.

A) Listening _____

B) Asking questions _____

C) Answering to questions _____

D) Practical work _____

E) Group work _____

F) Note taking _____

13. How often do you take test or quiz?

A) Always _____

B) Sometimes _____

C) Rarely _____

D) Not at all _____

14. About how much time do you usually spend each week on homework?

A) None _____

B) 1 hour or less _____

C) 2 hours _____

D) 3 hours _____

E) 4 hours _____

F) 5 hours _____

G) 6 hours and more _____

Part Three: - Students attitude and academic background related questions.

How much do you agree or disagree with each of the following statements about map reading

15. Map reading is useful in everyday life.

A) Strongly agree _____

B) Agree _____

C) Undecided _____

D) Disagree _____

E) Strongly disagree _____

16. It is important to know some map reading skills in order to get a good job.

A) Strongly agree _____

B) Agree _____

C) Undecided _____

D) Disagree _____

E) Strongly disagree _____

17. My geography teacher does not care whether I show progress or not in learning map reading?

A) Strongly agree _____

B) Agree _____

C) Undecided _____

D) Disagree _____

E) Strongly disagree _____

18. Learning map reading skills requires memorizing.

A) Strongly agree _____

B) Agree _____

C) Undecided _____

D) Disagree _____

E) Strongly disagree _____

19. Facts and ideas about map reading cannot be questioned or changed.

A) Strongly agree _____

B) Agree _____

C) Undecided _____

D) Disagree _____

E) Strongly disagree _____

20. With which of the following statements about map reading do you agree?

A) Map reading is more appropriate for boys than for girls._____

B) Map reading is more appropriate for girls than boys. _____

C) Map reading is equally useful for boys and girls. _____

Part Four: - General comments

21. What should your school principal/your geography teacher/your school do in order to improve the existing condition of teaching and learning of map reading?

21.1. The school.

_____

_____

_____

_____

_____

_____

21.2. Your Geography teacher.

_____

_____

_____

_____

_____

_____

APPENDIX_OB

አዲስ አበባ ዩኒቨርስቲ
የድህረ ምረቃ ት/ቤት
የስነ ትምህርት ኮሌጅ
የካሪኩለምና ኢንስትራክሽን ትምህርት ክፍል

በአጠቃላይ ሁለተኛ ደረጃ ት/ቤት (9-10ኛ ክፍል) ተማሪዎች የሚሞላ ቃለመጠይቅ የዚህ ቃለ መጠይቅ ዓላማ ከአጠቃላይ ሁለተኛ ደረጃ ት/ቤቶች ጋር የተያያዘ የተማሪዎችን የማኛ ሪድንግ ውጤት የሚወስኑ ጉዳዮችን የሚመለከቱ መረጃዎችን ለመሰብሰብ ነው፡፡ ስለዚህ ት/ቤትህን (ሽን) የሚመለከቱ መረጃዎችን በተገቢው እንድትሞላ (ሞይ) እየጠየኩ ለትብብርህ (ሽ) በቅድሚያ አመሰግናለሁ፡፡

አጠቃላይ መመሪያ

- አማራጮች በቀረቡበት ቦታ ሁሉ ምርጫህን (ሽን) (X) ምልክት በመፃፍ አመልክት (ች) ወይንም ተጨማሪ ማብራሪያ የሚያስፈልግ ከሆነ በጽሁፍ ግለጽ (ጭ)
- በጽሁፍ መልስ መስጠት ካስፈለገ ጽሁፍህ (ሽ) አጠር ያለና ግልጽ ቢሆን መልካም ነው፡፡

ክፍል አንድ፡- የተማሪው ግላዊ መረጃ

1. የት/ቤቱ ስም ----------
2. የምትማርበት ክፍልና ሴክሽን ----------
3. ጾታ ወንድ --------- ሴት----------
4. እድሜ ----------

ክፍል ሁለት፡- ከመማር ማስተማር ሂደት ጋር የተያያዙ ጥያቄዎች

ትክክለኛውን መልስ በጥያቄ ወረቀትህ (ሽ) ላይ አስፍር (ሪ) ለእያንዳንዱ ጥያቄ አንድ ብቻና ትክክለኛ ምርጫ ምረጥ (ጭ)

5. በመጀመሪያ ደረጃ ት/ቤት እያለሁኝ ከማኘ ሪድንግ ክህሎት ጋር የተዛመደ ትምህርት ተምሪያለሁ

ሀ/ አዎ ----------

ለ/ አይደለም ----------

6. በመጀመሪያ ደረጃ ትምህርት ቤት ከማኘሪዲንግ ጋር የተዛመደ ትምህርት ተምረህ (ሽ) ከሆነ ሁለተኛ ደረጃ ት/ቤት ለሚሰጠው ማኘሪዲንግ ትምህርት ጋር ያለው ተዛምዶ ምን ይመስላል

ሀ/ በጣም ከፍተኛ ----------

ለ/ ከፍተኛ ----------

ሐ/ አልወሰንኩም ----------

መ/ ዝቅተኛ ----------

ሠ/ በጣም ዝቅተኛ ----------

7. የጂኦግራፊ መምህሬ እንደሌሎች የጂኦግራፊ ትምህርት ይዘቶች ሁሉ ለማኘሪዲንግ ትምህርት ትኩረት ይሰጣሉ፡፡

ሀ/ በጥብቅ እስማማለሁ ----------

ለ/ እስማማለሁ ----------

ሐ/ አልወሰንኩም ----------

መ/ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

8. የጂኦግራፊ መምህሬ በማኘሪዲንግ በቂ ክህሎት አላቸው፡፡

ሀ/ በጥብቅ እስማማለሁ ----------

ለ/ እስማማለሁ ----------

ሐ/ አልወሰንኩም ----------

መ/ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

9. የጂኦግራፊ መምህሬ ማኘሪዲንግ ሲያስተምሩ የትምህርት መርጃ መሣሪያዎችን ይጠቀማሉ፡፡

ሀ/ ሁል ጊዜ----------

ለ/ አንዳንድ ጊዜ ----------

ሐ/ አልፎ አልፎ ----------

መ/ በጭራሽ አይጠቀሙም ----------

10. የጂኦግራፊ መምህሬ የማኘሪዲንግ በቂ ተግባራዊ ልምምድ ሥራ ይሰጡኛል

ሀ/ ሁል ጊዜ ----------

ለ/ አንዳንድ ጊዜ ----------

ሐ/ አልፎ አልፎ ----------

መ/ በጭራሽ አይጠቀሙም ----------

11. ከማኘሪዲንግ ጋር የተዛመደ የመስክ ሥራ እናከናውናለን፡፡

ሀ/ ሁል ጊዜ----------

ለ/ አንዳንድ ጊዜ ----------

ሐ/ አልፎ አልፎ ----------

መ/ በጭራሽ አይጠቀሙም ----------

12. የጂኦግራፊ መምህራችሁ በክፍል ውስጥ ማኘሪዲንግ ሲያስተምሩ ከሚከተሉት ተግባራት አብዛኛውን ጊዜያችሁን የሚወስዱባችሁ የትኞቹ ናቸው? በርካታ ጊዜ ከሚወስዱባችሁ ጀምራችሁ ቅድሚያ በመስጠት ሌሎችን በቅደም ተከተል አስቀምጧቸው

ሀ/ ማዳመጥ ----------

ለ/ ጥያቄ መጠየቅ ----------

ሐ/ ለጥያቄዎች መልስ መስጠት ----------

መ/ ተግባራዊ ሥራ ----------

ሠ/ የቡድን ሥራ ----------

ረ/ ማስታወሻ መጻፍ ----------

13. የመካራ ፊተና (ቴስት) ለምን ያህል ጊዜ ትወስዳላችሁ?

ሀ/ ሁል ጊዜ----------

ለ/ አንዳንድ ጊዜ ----------

ሐ/ አልፎ አልፎ ----------

መ/ በጭራሽ አይጠቀምም ----------

14. የቤት ሥራ ለመሥራት በሣምንት ምን ያህል ጊዜ ታውላለህ (ሽ)

ሀ/ ምንም ----------

ለ/ አንድ ስዓት ወይም ያነሰ ----------

ሐ/ ሁለት ስዓት ----------

መ/ ሦስት ስዓት ----------

ሠ/ አራት ስዓት ----------

ረ/ አምስት ስዓት ----------

ሰ/ ስድስት ስዓትና በላይ ----------

ክፍል ሦስት፡- የተማሪዎችን አመለካከትና ትምህርታዊ ዳራ የሚያመለክቱ ጥያቄዎች

ከሚከተሉት ሃሳቦች ጋር ምን ያህል ትስማማለህ (ሽ)? ወይም አትስማማም (ሚም)?

15. ማኘ ሪዲንግ ለእለት ተእለት ኑሮ ጠቃሚ ነው፡፡

ሀ/ በጥብቅ እስማማለሁ----------

ለ/ እስማማለሁ----------

ሐ/ አልወስንኩም ----------

መ፣ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

16. ደህና ሥራ ለማግኘት የማኘ ሪዲንግ ክህሎት አስፈላጊ ነው፡፡

ሀ/ በጥብቅ እስማማለሁ ----------

ለ/ እስማማለሁ ----------

ሐ/ አልወስንኩም ----------

መ/ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

17. በማኘ ሪዲንግ ትምህርት መሻሻል ቢያሳይም ባያሳይም የጂኦግራፊ ትምህርት መምህር ግድ የለውም፡፡

ሀ/ በጥብቅ እስማማለሁ ----------

ለ/ እስማማለሁ ----------

ሐ/ አልወስንኩም ----------

መ/ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

18. የማኘ ሪዲንግ ክህሎት የቃል ጥናት (ሽምደዳ) ክህሎትን ይጠይቃል፡፡

ሀ/ በጥብቅ እስማማለሁ ----------

ለ/ እስማማለሁ ----------

ሐ/ አልወስንኩም ----------

መ/ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

19. የኘማ ሪዲንግ እውነታዎችና ሀሳቦች ሊቀየሩም ጥያቄ ሊነሳባቸውም አይችሉም

ሀ/ በጥብቅ እስማማለሁ ----------

ለ/ እስማማለሁ ----------

ሐ/ አልወስንኩም ----------

መ/ አልስማማም ----------

ሠ/ በጥብቅ አልስማማም ----------

20. ማኛ ሪዲንግን በተመለከተ ከሚከተሉት ዐረፍተ ነገሮች ከየትኛው ጋር ትስማማለህ (ሽ)?

ሀ/ ማኛ ሪዲንግ ከሴቶች ይልቅ ለወንዶች ይበልጥ ተገቢ ነው ---------

ለ/ ማኛ ሪድንግ ከወንዶች ይልቅ ለሴቶች ይበልጥ ተገቢ ነው --------

ሐ/ ማኛ ሪዲንግ ለወንዶችም ለሴቶችም እኩል ጠቀሜታ አለው -------

ክፍል አራት፡- አጠቃላይ አስተያየት

21. አሁን ያለውን የማኛ ሪዲንግ ትምህርት መማር ማስተማር ሁኔታ ለማሻሻል የት/ቤቱ ርዕሠ መምህር (የጂኦግራፊ መምህራችሁን)ና ትምህርት ቤቱ ምን ማድረግ ይገባቸዋል?

21.1. ትምህርት ቤቱ ----------

21.2. የጂኦግራፊ መምህሩ ----------

APPENDIX-P

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTION

A QUESTIONNAIRE TO BE FILLED IN BY GEOGRAPHY TEACHERS OF NINTH AND TENTH GRADE STUDENTS

Objectives:- This questionnaire is designed to gather relevant information on school related factors, which may influence the Map Reading performance of students in grad 9 and 10, and to suggest solutions for improvement. Hence, your genuine response will undoubtly contribute to the success of the study. Thus, you are kindly requested to complete the questionnaire carefully. Any information that you give will be kept confidential.

Thank you.

General Direction:-

- Writing your name is not necessary.
- Please mark (X) in the appropriate box that corresponds to your choice or write the information needed in brief whenever necessary.
- Please make it short and clear in responding the open-ended questions.

Part One: - Personal Information of Teachers.

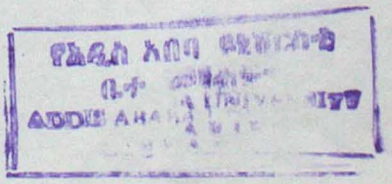
For questions 1 through 9, fill in the blank space provided for the questions.

1. Name of your school _____.
2. Grade level and section you teach _____.
3. Sex: Male_____ Female_____
4. Age: _____ years.
5. Total service years in Teaching_____
6. Service years of teaching geography in grade 9 and 10_____
7. Service years in the school you are now_____
8. your teaching load per week at present is _____

Part Two:- Teachers Educational qualification, attitude and Teaching Assignment related questions.

Choose the best alternative and put "X" in the space provided at the end of each choice or circle the letter of the correct choice.

9. What is your level of Education?
   a)M.A/MSc_____
   b) BA/BSc _____
   c)Diploma_____
   d) Other specify_____
10. What is your major area of specialization?
   a)Geography_____
   b) History _____
   c)Pedagogy _____
   d) Other (specify) _____
11. Where did you graduated from?
   a)Addis Ababa University_____
   b) Bahir Dar University _____
   c)Mekele University _____
   d) Jimma University_____
   e)Kotebe Teachers Education College_____
   f) Other (specify) _____



12. Did you take map reading or related courses while you were studying for your graduate studies?
    a) Yes _____
    b) No_____
13. The map reading courses provided when I was at college or university were sufficient for teaching in secondary schools.
    a) Strongly agree_____.
    b) Agree_____.
    c) Undecided _____.
    d) Disagree_____
    e) Strongly disagree_____
14. The map reading course provided when I was at college or university were appropriate.
    a) Strongly agree_____.
    b) Agree_____.
    c) Undecided _____.
    d) Disagree_____
    e) Strongly disagree_____
15. To what extent were the following channels of professional development of teachers including supervision services used? Circle the letter A for a lot, B for some and C for not at all.

	Channels of professional development	**Lot**	**Some**	**Not at all**
1	Personal reading	A	B	C
2	Discussion with other geography teachers in the meeting	A	B	C
3	Supervision support of school principals	A	B	C
4	Supervision support of geography department head	A	B	C
5	Training of newly deployed teachers by senior geography department members	A	B	C

16. Indicate your attitude towards map reading in the following level of agreement by putting an "X" under the level of agreement of choice.

Teachers attitude towards map reading teaching	Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
Teaching map reading at secondary school is not important for the life of the pupils.					
Teaching map reading at secondary schools require teachers competency in mathematics, art and drawing.					
There is mismatch between map reading topics that I have learned in the university with the curricula of secondary schools.					
Teaching map reading is relatively difficult to deal and requires more planning and preparation.					

Part Three: - Educational media related questions

17. Indicate the adequacy of map reading teaching aids in your school by putting an "X" under your choice.

S.N	Description of teaching aids	Extent of availability of teaching aids		
		Adequate	Non-adequate	Non-existent
1	**Graphics**			
	Charts			
	Diagrams			
	Maps			
2	**Model**			
	Model of earth orbit			
	Globes			
3	**Specimens**			
	Real landscape			
4	**Objects**			
5	**Slides**			
6	**Books and Atlases**			
7	**Overhead projectors**			
8	**Pantographs**			
9	**Slide Projector**			
10	**Tracing table**			
11	**Seal maps**			

Part Four:- Students related questions

18. This question is intended to identify the degree of student behavior that affect map reading topic. Hence, please circle "A", "B", "C" or "D", representing four degrees ranging from A for "Serious", B for "Moderate", C for "Minor" and D for "Not a problem" respectively.

1	Student Absenteeism	A	B	C	D
2	Disciplinary problem	A	B	C	D

Part Five:- Teaching learning process related questions

19. Do you give support for low performing students?
    a) Yes _____
    b) No _____
20. If you do not provide support to low performing students, what are the major reasons behind? Put your response by marking "X" in the space provided.
    a) High total teaching load per week _____
    b) High average number of students in classrooms _____
    c) Full time engagement on teaching and non teaching activities __
21. To what extent have you applied the following teachings methods in map reading classes? Circle the letter of your choice.

Methods of teaching of map reading	A lot	Some time	Not at all
Lecture	A	B	C
Note giving	A	B	C
Question and answer.	A	B	C
Discussion.	A	B	C
Project (individual)	A	B	C
Group work	A	B	C
Demonstration	A	B	C
Invited guests	A	B	C
Debate (Dialogue)	A	B	C
Dramatizing	A	B	C
Song	A	B	C
Role playing	A	B	C

22. Indicate the extent to which you have emphasized the following teaching aids in map reading classes. Circle the letter of your choice.

S. No	Description of teaching aids	A lot	Some	Not at all
1	**Graphics**	A	B	C
	Charts	A	B	C
	Diagrams	A	B	C
	Maps	A	B	C
2	**Model**	A	B	C
	Model of earth orbit	A	B	C
	Globes	A	B	C
3	**Specimens**	A	B	C
	Real landscape	A	B	C
4	**Objects**	A	B	C
5	**Slides**	A	B	C
6	**Books and Atlases**	A	B	C
7	**Overhead projectors**	A	B	C
8	**Pantographs**	A	B	C
9	**Slide Projector**	A	B	C
10	**Tracing table**	A	B	C
11	**Seal maps**	A	B	C

23. How often do you make assessments (class work, homework, group work etc) to your students while you have taught map-reading unit?
    a) Each period _____
    b) End of each sub unit _____
    c) end of the unit_____
24. If you do not make continuous assessment to gauge the performance of your students, what are the major reasons behind it? Put your response by marking "X" on the space provided.
    a) Big class size with crowded students _____
    b) Lack of educational facilities and materials like type writers, stationery, libraries, etc _____
    c) High teachers workload _____
    d) Lack of refresher training and guideline for continuous assessment _____
    e) Unwillingness of students for regular and rigorous working habits _____
25. How many hours per week do you spend in correcting your students assignments? _____

26. This question is intended to identify the assessment technique used for map reading topic. Hence, please insert "X" on the respective space in the column.

S. No	Assessment techniques	A lot	Some	Not at all
1	Review questions			
2	Assignments			
3	Exercise			
4	Quizzes/Tests			
3	Group work/ project work			
4	Map drawing			
6	Any Other (Indicate)			

Part Five:- General Comments

27. What should your Regional Education Bureau/Zone Education Department/ Woreda Education Office/your School do in order to improve the existing condition of teaching and learning of map work?

27.1. Woreda Education Office

_____

_____

_____

27.2. Your School _____

_____

_____

27.3. Zone Education Department

_____

_____

_____

27.4. Regional Education Bureau

_____

_____

_____

APPENDIX-Q

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTION

A QUESTIONNAIRE TO BE FILLED IN BY GEOGRAPHY DEPARTMENT HEAD OF THE SCHOOL.

The purpose of this questionnaire is to collect information on school related factors, which may have influence on pupils' map reading achievement. Therefore, you are kindly requested to provide appropriate information. Any information that you provide will be kept confidential.

Thank you,

General Direction:-

- Writing name of respondent is not necessary.
- Please mark (X) in the appropriate box that corresponds to your choice or write the information needed in brief when ever necessary.
- Please make it short and clear in responding the open-ended question.

Part One: - Personal Information.

1. Name of your school _____.
2. Grade level and section you teach _____.
3. Sex: Male_____ Female_____.
4. Age: _____ years of old.
5. Level of Education_____.
6. Your area of specialization Major _____ Minor_____
7. College or University you graduated from is_____
8. Teaching Experiences.
    A) Total service years in teaching_____
    B) Years of service in teaching geography in any grade _____
    C) Service years of teaching geography in grade 9 and/or 10_____
    D) Service years as head of geography department_____
9. Total teaching load per week at present_____

Part Two: - Questions related to mechanism of teachers professional development.

10. Have you conducted classroom supervision to support geography teachers in map reading teaching- learning process?
    A) Yes_____ B) No _____
11. If you conduct classroom supervision, then how often do you carry out?
    A) Once in a week_____
    B) Once in a month_____
    C) Once in a semester_____
    D) Twice in a semester_____
    E) As necessity arises _____
12. How frequently do you conduct meetings with geography teachers?
    A) Once in a week_____
    B) Once in a month _____
    C) Once in a semester_____
    D) Twice in a semester_____
    E) Other _____

13. Which issue took most of the time in the meeting with geography teachers? Put your answer in rank order. Give first rank for the issue that took most of teachers time.

A) Discussion of difficult ideas that teachers have faced while teaching in classroom _____

B) Implementation of innovative teaching methods_____

C) Application of appropriate teaching aids_____

D) Efficient use of instructional time_____

E) Collection of student performance and suggest solutions for improving low performing students results _____

F) Other (if any specify)_____

Part Three:- Information related to the teaching learning process.

14. Do geography teachers prepare annual and weekly lesson plans?

14.1. Preparation of annual instructional plans

A) Yes_____

B) No_____

14.2. Preparation of weekly instructional plans

A) Always_____

B) Sometimes_____

C) Rarely _____

D) Not at all _____

15. Geography teachers strictly follow annual lesson plans

A) Always_____

B) Sometimes_____

C) Rarely _____

D) Not at all _____

16. Which of these activities took most of the geography teachers time in the classroom?

A) Lecturing _____

B) Giving notes _____

C) Asking questions_____

D) Answering to the questions _____

E) Facilitating discussions and group work _____

F) Demonstrating _____

G) Giving class work, homework, etc _____

H) Other (if any specify)_____

17. Do geography teachers conduct periodic curriculum review and research to evaluate the curriculum?

A) Always_____

B) Sometimes_____

C) Rarely _____

D) Not at all _____

Part Four:- General Comments

18. What should the geography teachers do to improve map reading performance of students?_____

_____

_____

_____

APPENDIX-R

Interview guides prepared for Geography teachers and Department heads

1. General information on the school

1.1. Date_____

1.2. School Name_____

1.3. Position: Teacher _____Department Head_____

2. Specific interview questions

2.1. Has map reading topic been given due attention in the overall geography education of secondary schools?

2.2. Do you think that the contents of secondary school map reading topic vast?

2.3. Do you believe that the contents of secondary school map reading topic are difficult to understand?

2.4. Do you think that the time allotted to teach map reading are sufficient?

2.5. Are the suggested teaching aids in the syllabus and teachers guide appropriate to teach map reading at secondary schools?

2.6. Do you believe that the intended methods of assessment are appropriate to teach map reading?

2.7. Are the suggested teaching methods in the syllabus and teachers guide appropriate to teach map reading?

2.8. Do you have interest in teaching map reading? Why?

2.9. How do you comment on the interest of the students towards learning map reading?

APPENDIX-S

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTION

CHECK LIST FOR SCHOOL AND CLASSROOM RELATED VARIABLES

(to be filled by the Investigator).

General Direction: - Complete this checklist for each school and for only those grade nine and grade ten sections selected for the study.

1. General information on the school.

1.1. Name of the school_____

1.2. Total number of students registered at beginning of the year_____.

1.3. Total number of teachers_____.

1.4. Total Number of classrooms_____.

1.5. Total number of sections_____.

1.6. Total number of grade nine students_____.

1.7. Total number of grade ten students_____.

1.8. Total number of sections for grade nine_____.

1.9. Total number of sections for grade ten_____.

1.10. The average area (square meter) of the classroom _____.

1.11. The total number of periods per week _____

1.12. Duration of time for each period is _____ minutes.

1.13. Allotted academic days in a year_____

1.14. Allotted periods for geography_____

1.15. Allotted periods for map reading unit_____

2. Teachers related questions

Write the answer for the following questions in the space provided.

2.1. Total number of geography teacher's for grade nine_____.

2.2. Total number of geography teacher's for grade ten_____.

2.3. Average grade nine weekly geography teacher's load_____

2.4. Average grade ten weekly geography teacher's load_____

3. Physical facilities related questions

Circle the best alternative letter that best answers each question.

3.1. Does the school have a library?

A. Yes

B. No

3.2. If yes, approximately how many geography books does the library have? _____ books.

3.3. If the school has a library, how do you rate the adequacy of the library (both in terms of its size and availability of books) for providing services to students?

A. Adequate

B. Non-adequate

4. Availability of Instructional materials related questions

Write the answer for the following questions in numbers in the space provided.

4.1. Total number of geography syllabus available in the school are _____ (put numbers)

4.2. Total number of teacher's guide available in the school_____ (put numbers)

4.3. Total number of geography textbooks available for grade nine _____ (put numbers).

4.4. Total number of geography textbooks for grade ten_____ (put numbers).

4.5. How many years has the textbook served in the school? _____ years

4.6. How many years has the Teachers guide served in the school? _____ years

4.7. How many years has the syllabus served in the school? _____ years

5. Availability of Teaching materials related questions.

The following table is proposed to collect information on the availability of materials against quantity proposed as per the standard. Put numbers with the respective space on the table.

S.N	List of teaching materials	Unit	Quantity proposed as per the standard	Available quantity in the school		
				Industrial made	Locally made by SPC	Total
1	**Graphics**					
1.1	Charts					
1.2	Diagrams					
1.3	Maps					
	• 62" X 52" relief map of the world scale: 1: 25,000,000.	each	1			
	• 52" X 76" physical & political map of Africa Scale 1:7,000,000.	each	1			
	• 52" X 76" black board map of Africa scale 1: 7,000,000.	each	1			
	• 62" X 52" black board map of the world.	each	1			
	• 62" X 52" natural vegetation map of the world.	each	1			
	• 62" X 52" world population map.	each	1			
	• 62" X 52" world political map.	each	1			
	• Atlases of Ethiopia.	each	50			
	• Set of 10 maps produced by EMPDA.	each	10			
	• 17 wall map of the world roller mounting 62" X 52" cradles of world civilization.	each	1			
	• 2 or 3 sets of 10 sheets of topographic maps relevant to the particular locality. Scale 1:250,000.	each	30			
	• African map (both physical and political)	each	1			
	• Map of Ethiopia (both physical and political)	each	1			
	• Other maps	each				
2	**Model**					
2.1	Model of earth orbit					
2.2	Globes					
	• 12" relief globe, semi-meridian mounting.	each	1			
	• Globe (Beginners globe with cradle base, place names, color, laminated myler surface, size 30 cm.)	each	1			
3	**Specimens**					
3.1	Real landscape					
4	**Slides (Complete transparency)**					
5	**Books and Atlases**					
6	**Overhead projectors**	each	1			
7	**Pantograph** (Wooden or metal with metric unit system.)	each	1			
8	**Slide Projector**	each	1			
9	**Tracing Table** (standardized size, with glass cover and fitted with electric lamp)	each	1			
10	**Seal maps** (Continent both physical and political)	each	1			

If there are other materials (Specify)_____

APPENDIX-T

CLASSROOM OBSERVATION CHECKLIST

(to be filled by the Investigator).

- Name of the school _____ Grade and section _____
- Observer_____ Date of observation _____
- Topic _____ Number of students Male____ Female ____
- Lesson start at _____ lesson end at _____

Direction:- This observation checklist consists of five major instructional dimensions. Under each dimension, possible indicators of it are listed. Hence, put a mark (X) in the boxes that corresponds to the indicator you observed during the firs, second, third and fourth 10 minutes of a period.

No	Teaching methods and aids	First 10 minutes	Second 10 minutes	Third 10 minutes	Fourth 10 minutes
1	**TEACHERS ACTIVITIES** Discussions Lecturing Demonstration Peer teaching Micro teaching Role playing Class work or assignment work Group work Film show Note Giving Questions and answers				
2	**STUDENTS ACTIVITIES** Doing class work or assignment Taking tests Microteaching Listening to teacher talk Role playing Watching film Discussions in groups Attending demonstrations Peer teaching Copying teacher notes Asking questions Answering to questions				
3	**INSTRUCTIONAL MATERIALS** Charts Diagrams Maps Models Specimen of real landscape Slides (complete transparency) Books and atlases Overhead projectors Pantograph Slide projector Tracing table Seal map Blackboards				