ADDIS ABABA UNIVERSITY
SCHOOLS OF GRADUATE STUDIES

Students' Academic Achievements as a Function of Gender, Parents' Educational Background and Learning Strategies in Dessie Town High Schools

Aemero Tadesse

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Abstract

The major concern of this study was to examine how far gender, parents' educational background and learning strategy components predicted students' academic achievement. A total of 380 subjects, (188 males and 192 females) were involved in the study from Dessie Town high schools. A Likert type five point scale self-report measures and a short supplementary questionnaire, which used to obtain demographic data, were administered. The overall academic achievement, Mathematics achievement and Language achievement scores were obtained from school records. Correlation, t-test, analysis of variance and multiple regressions were used for analysis. Results obtained through Correlation analysis portrayed that except gender, both parents' educational background and learning strategy components indicated significant association with academic achievement. The t-test revealed that there existed significant average difference in mathematics achievement in favor of males and language achievement favoring females, but there was no statistically significant difference between male and female students in the overall academic achievement. Moreover, statistically significant gender difference was observed in self- regulating strategy in favor of males but no significant difference was revealed in cognitive strategy use. The ANOVA results indicated significant students' academic achievement differences due to their parents' educational level differences. Students who come form educated Parents perform better in school than their counterparts who come from uneducated parents. Similar students' academic achievement results were also observed with their paternal or male guardian and maternal or female guardian educational levels. The multiple regression analysis displayed that both parents' educational background & learning strategy components had statistically significant contribution on students' academic achievement, explaining 88% of the variation in academic achievement. Of the variables treated in the study, parents' educational background was the best predictor variable in students academic achievement.

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Acronyms used in the Study

PEB: Parents' Educational Background
CS: Cognitive Strategy
SR: Self -Regulation
AA: Academic Achievement

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

The extent of social, economical, political and cultural development of a given society is greatly determined by a well organized educational system. Education is believed to be the basic instrument to develop and cope up with the technological and scientific advancement for any society. Being established an advanced society; a well designed educational program should be necessary and implemented accordingly. As a result of this, the intended teaching-learning process could be effective and thereby students may exhibit good academic achievement.

However, in the teaching learning process, students are not expected to perform equally because of nature and nurture factors (Thomas, 1990). Educators and psychologists have long been concerned with understanding the factors that contribute to the differences among students in their academic achievement. In line with this, different researchers at different times come up with their own factors as to how student's academic achievement could be hindered or facilitated. Among them: gender, parents' educational background and learning strategies are cases in point.

According to Heyneman (1980), gender difference is one of the factors associated with academic performance. Mekasha (2000) found that female students' academic achievement was less than their male counterparts. According to him, factors that affect the academic achievement of female

students could be lack of study time and lack of encouragement both at home and at school. Differently, Marshal *et al.*, (1987) and Stigler *et al.*, (1982) showed that there were no significant gender related differences in academic achievement.

On the other hand, the extensive literature reviews conducted by Garai and Scheinfeld (1968) and Maccoby and Jacklin (1974) suggest the existence of gender differences in mathematics abilities. Evaluation of this statement in recent reviews and meta-analysis indicated that consistent gender difference was found in mathematics skills (Benbow *et al.*, 1980; Hedges and Nowell, 1995; Hyde, Fennema, and Lamon, 1990).

On the 14 main College Board high school achievement tests administered from 1982 through 1985, Stanley *et al.* (1987),it was found that boys had moderately higher scores in mathematics and girls scored a little higher than boys on English composition and literature. Similarly, Macomb (1966) as cited by Sileshi (1995) found that girls do better in verbal and linguistic studies while boys do better in mathematics and visual spatial problems. A similar study was found by Duncan cited in Gennet (1991) in Botswana, Zambia and Kenya that girls performed poorer than boys in mathematics but girls did better in English. Likewise, girls in high school tend to excel boys in language usage (Lupkowski, 1992). Differently, Costello (1991) pointed out that girls in primary school achieve better than boys in mathematics test items.

These controversial findings of gender differences in academic achievement in general and in mathematics and language achievement in particular initiates for further investigation.

Another important variable that hinder or facilitate school achievement is parental level of education. As noted by Maccoby and Jacklin (1974), parents having higher educational level are likely to create an advantageous environment and cognitive atmosphere and also provide their children with special resources and opportunities which enhance their children's academic achievement. Besides, Oakes (1990) noted that the educated parents serve as a role model and mentors in encouraging their children to have high educational aspirations. Parents' education is the most important predictor of participation in mathematics and science (Berryman, 1983).

An effective use of learning strategy has emerged as a critical variable in recent models of human learning. Dembo (1994) suggested that successful learners use a large number of tools to make school work easier and increase the probability of their success, and educational psychologists call those tools 'Learning strategies'.

Knowledge gains are more likely when learners are engaged, active and self-regulating, by using a variety of strategies, such as rehearsal, organization, elaboration and critical thinking (Pintrich, 1989, Schunk and Zimmerman, 1994: Weinstein and Mayer, 1986). Effective learning also depends on metacognitive processes of planning, monitoring and regulation that govern how and when strategies are best used (Paris, Lipson, and

Wixon, 1983). Monitoring is essential to efficient knowledge acquisition, informing learners whether additional effort or alterations in strategies are required to accomplish planned activity (Zimmerman, 1992).

Students at each grade level have their own unique physical, social, emotional and cognitive characteristics which have significant implication for their learning process (Biehler, 1987). Carbo *et al.*, (1991) suggest that every student has his/her own learning strategy which determines their readiness, concentration, and understanding and how they remember new information. In line with this, Weinert (1987) indicated that it is important to examine how learning strategies are linked to individual differences in academic achievement.

Although different investigators indicated that the aforementioned variables are related to school achievement, their contributions among high school students in Ethiopian context have received little or no research attention. For this reason, it is important to study the extent of contributions gender, parents' educational level, and students learning strategies have on students' academic achievement.

1.2. Statement of the problem

The main purpose of this study was to examine the contributions of gender, parents' educational background, and learning strategies on students' academic achievement. Accordingly, this study attempts to answer the following basic questions:

- Do gender, parents' educational background and learning strategies predict students' academic achievement?
- Are there significant differences between male and female students in their mathematics and language achievement?
- Are there significant differences between male and female students in their learning strategies?

1.3 Objective of the Study

General Objective

To investigate how gender, parents' educational background and learning strategy taken together predict students academic achievement.

Specific Objective

- To identify whether there exist significant gender differences in language and mathematics achievement.
- To examine whether there exist significant gender differences in learning strategy variables.

1.4. Significance of the study

As it was mentioned above, little or nothing is known about the contribution of gender, parents' educational background and learning strategies on academic achievement in Ethiopian high school students. This study is, therefore, believed to contribute the following practical and theoretical aspects:

- The study may provide insight into the degree to which gender, parents' educational background and students' learning strategies contribute to students' academic achievement so that teachers and students can identify influential variables and thereby device the necessary mechanisms.
- To provide basic information for further studies in this area.

1.5. Delimitation of the study

This study is delimited to students of grade ten in Dessie Town high schools. Grade nine students were not included in the study because the researcher wanted to see three semester average scores. The main reason why only Dessie town was chosen is to make the study manageable relative to the time constraints and to minimize the problems of some intervening variables.

1.6. Operational Definition of Important Terms

Academic achievement: refers to actual classroom academic performance of student which is indicated by the overall three semester's average.

Parents' educational background: refers to the highest educational level attained by the mother and the father or female and male guardian of the respondent are averaged.

Cognitive strategy: - refers to what students use to learn, remember and understood the material (what is taught by the teacher) which

includes the use of rehearsal strategies, elaborative strategies and organizational strategies.

Self-regulation:- refers to students' metacognitive strategy (planning, monitoring, regulating, etc.) and effort management (showing persistence, attribution to effort, etc.)

Learning strategy: - refers to students' self-regulation and cognitive strategy use taken together.

Gender/sex/:- is used interchangeably to refer to the division between male and female, or boy and girl.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. The Nature and Meaning of Learning Strategies in Academic Achievement

Corno and Rohrkemper (1985) as cited in Pintrich and DeGroot (1990), stated that learning strategy (self-regulating learning) is an important aspect of student learning and academic performance in the classroom context. There are a variety of definitions of learning strategy. But three components seem especially important for classroom academic performance. First, it includes students' metacognitive strategies for planning, monitoring, modifying and evaluating their cognition (Brown, Bransford, Campione, & Ferrara, 1983; Zimmerman and Pons, 1988). Second, students' resource management and control of their effort on classroom academic tasks has been proposed as an important component. For example, capable students who persist at a difficult task or block out destructors (i.e. noisy classmates) maintain their cognitive engagement in the task, enabling them to perform better (Corno, 1986). A third important aspect of learning strategies that some researchers have included in their conceptualization is the actual cognitive strategies that students use to learn, remember, and understand the material (Zimmerman and Pons, 1986; Pintrich and DeGroot, 1990). Different cognitive strategies such as rehearsal, elaboration, and organizational strategies have been found to foster active cognitive engagement in learning and result in higher levels of achievement (Weinstein

and Mayer, 1986). These three components constitute the working definition of learning strategy in the present study.

The cognitive or metacognitive domain, focused on three variables defined & validated by Entwistle and his colleagues in their factor-analytics work: deep processing, surface processing, and disorganization (Entwistle, 1983). Deep processing (also labeled elaboration or critical thinking; by Weinstein and Mayer, 1986) involves challenging the veracity of information encountered and attempting to integrate new information with prior knowledge and experience. Whereas surface processing (also labeled rehearsal or memorization; by Zimmerman and Pons, 1986) involves the repetitive rehearsal and rote memorization of information. Disorganization refers to the learner's difficulty in establishing or maintaining a structured & organized approach to studying (Entwistle. 1988).

Zimmerman (1989) proposed a formulation to explain learning strategies based on Bandura's (1986) triadic theory of social cognition. Zimmerman suggested that students' effort to regulate their learning involves three classes of determinants: their personal processes, the environment, and their behavior. Strategies enable student learners to personally (self) regulate their behavior and environment as well as their covert functioning. On the other hand, Corno and Mandinach (1983) describe how learning strategy (self-regulated learning) arises, is sustained, and yields achievement over the course of instructional experiences. They characterized learning strategies at two levels: as a number of distinct,

relatively small-grained cognitive components, i.e., acquisition and transformation processes (See Table 2 for the details).

Dembo (1994) also summarized a number of important learning strategies which include: cognitive strategies that help students learn, remember, and understand course material; metacognitive strategies which enable students to plan, monitor, and regulate their cognition (thinking); resource management strategies which help students persist at difficult tasks, seek help from others (See Table 1 for the details).

Table 1: A Taxonomy of Learning Strategies

No	Strategies	Basic Tasks	Complex Tasks
1	Cognitive strategies	E.g. memory for lists	E.g. text learning
	1.1. Rehearsal strategies	Reciting lists	• Copying material • Verbatim note taking • Underling text
	1.2. Elaboration strategies	Mnemonics imagery	• Paraphrasing • Summarizing • Note taking • Creating analogies • Answering questions
	1.3. organization strategies	Clustering mnemonics	• Selecting main idea • Outlining • Mapping
2	Metacognitive strategies		All Tasks
	2.1. Planning strategies		• Setting goals • Skimming • Generating questions
	2.2. Monitoring strategies		• Self testing • Focusing attention • Monitoring comprehension • Using test taking strategies
	2.3. Regulating strategies		• Adjusting reading rate • Rereading • Reviewing • Using test taking strategies
3	Resource management strategies		All tasks
	3.1. Time management		• Scheduling • Setting goals
	3.2. Study environment management		• Finding defined area • Finding organized area
	3.3. Effort management		• Attribution to effort • Dealing with mood • Using self-talk • Using self-reinforcement • Showing persistence
	3.4. Support of others		• Seeking help from teachers • Seeking help from peers • Using peer or group learning

Source: Dembo (1994, p.158)

Table 2: Classification of Cognitive Processes in Corno and Mandinach 1983'S Learning Strategies Model as Adapted by Howard Rose Winne (1993, p. 604)

Acquisition Processes	**Transformation Processes**
• Attending - Receiving or tracking stimuli - Attending • Rehearsing - Repeating information to one-self • Monitoring - Self-checking general level of understanding continuous tracking of stimuli and transformations - Self-checking specific information such as inferences within task material, relationships among items of information • Strategic planning - overviewing task - Assessing goals, constraints, and resources needed to complete a task - Representing information systematically - Seeking outside resource as needed	• Selecting - Discriminating among stimuli - Distinguishing relevant from irrelevant information • Connecting - Searching for familiar knowledge - Linking prior knowledge to incoming information - Making connections or drawing inferences within task material • Tactical planning - Organizing a task or performance routing

Pintrich and DeGroot (1990) showed that students' metacognitive strategies and effort management were labeled as self-regulating strategies. Self-regulated learners are generally characterized as active learners who efficiently manage their own learning experiences in many different ways (Schunk and Zimmerman, 1994).

When faced with an academic task, self-regulated learners engage in a recursive cycle of cognitive activities and then set task-specific goals, which they use as a basis for selecting, adapting, or even inventing appropriate strategies to accomplish their objectives. After implementing strategies, self-regulated learners monitor their progress toward goals, thereby generating internal feedback about the success of their efforts, and then adjust learning approaches on the basis of their perceptions of ongoing progress (Butler & Winne, 1995).

Zimmerman and Martinez-Pons (1986) developed a structured procedure, termed the self-regulated learning interview schedule, to measure students' use of these self-regulated learning strategies. Students were asked to describe the methods they used in a series of common learning contexts, and measures of strategy use were derived from their answers. These measures of strategy use were found to be highly correlated with the students' academic achievement. Pintrich and De Groot, for example, found that students who reported greater self-regulating strategy use also reported higher levels of achievement. Supporting this, self-regulation was the best predictor of academic achievement on all the outcome measures that

suggested the use of self-regulating strategies, such as comprehension, monitoring, goal setting, planning, effort management and persistence (Corno, 1986).

Several studies sought to examine and identify the major strategies that significantly affect students' learning outcomes. For instance, Schunk (1991) in dealing with strategies proposed that much classroom learning depends up on being able to effectively apply cognitive strategies.

Supporting this, students who are more cognitively engaged in trying to learn by memorizing, organizing, rehearsing and elaborating, perform better than students who tend not to use these strategies (Corno and Mandinach, 1983; Weinstien and Mayer, 1986). Similarly, (Corno,1986; Zimmerman and Pons, 1990) suggested that the more frequent use of self-regulated strategies such as comprehension, monitoring, goal setting, planning and effort management showed significant relationship with higher academic achievement. In line with this, (Pintrich and DeGroot, 1990; Pokay and Blumenfeld, 1990) concluded that cognitive strategy use and self-regulation were positively correlated with students academic achievement. Tola (1996) & Dereje (1997) also described that learning strategies were significantly related with high level of academic achievement across grade levels

Many techniques have been used to improve students' learning strategies in advanced countries (Dembo, 1994). Some of them may have practical implications to the teaching-learning process. For instance,i, telling

students the important points in a lesson ii, encouraging students to take notes and underline important ideas. iii, having students summarize teachers lecture iv, encouraging students to plan and outline the tasks they are supposed to accomplish v, having the learners list the important new terms in the subject they learn. vi, providing time at the end of each class for asking and answering questions etc.

In general, effective use of learning strategies has emerged as a critical variable in recent models of human learning. Because it can tell us about achievement differences (Schunk, 1996); it is related to mastery goals that facilitate effort (pintrich and DeGroot, 1990); involves active learning, which can facilitate achievement (Paris and Oka, 1986); and yields important information about how students engage in the learning processes and why students at similar achievement levels may display future differences in their achievement.

2.1.1. Gender Difference in Students' Learning Strategy Use

There is a limited knowledge whether or not there are differences between boys and girls in their use of learning strategies. Therefore, the issue of gender difference in learning strategy has received attention (Mandinach and Corno, 1983).

In the study conducted by Pintrich and DeGroot (1990) by using the samples of 173 seven graders reported that boys and girls did not differ on the two learning strategy variables i.e., cognitive strategy use and self-regulation. In contrast to this, Pokay and Blumenfeld (1990) indicated that

girls make more use of cognitive strategies and self-regulation than boys do. Similarly, analysis of gender differences in use of self-regulated learning strategies revealed that girls reported significantly more record keeping and monitoring, environmental structuring, and goal setting and planning than did boys (Zimmerman and Martinez-Pons, 1990).

On the other hand, it is well established that men and women differ in their patterns of cognitive strengths, with men, for example, excelling at certain spatial, and at math reasoning tests, for convenience designated as 'masculine' tasks. Women, in contrast, excel at certain verbal fluency, verbal memory and perceptual scanning 'feminine' tests (Kimura and Clarke, 2001). Likewise, Byrnes and Takahira (1993) reporting on the existence of gender differences in specific mathematics contents, they found that male students carried out certain cognitive operations more successfully than female students at each successive grade levels.

Therefore, review and research findings related to gender differences in learning strategy seem to be inconclusive. Thus, there is a need for further investigation in this area (Finn, 1988).

2.2. Gender Differences in Academic Achievement

The difference in levels of academic achievement between boys and girls is an issue that has generated a great deal of concern and debate over the previous years. This has invariably led to a wave of research which has attempted to establish the extent of gender gaps in performance.

Different researchers (e.g. Smith, 1995; Heyneman, 1980; Stumpf *et al.*, 1994) stated that gender difference is one of the factors associated with academic performance.

The disparities between academic achievement of girls and boys have been attributed to biological and sociological factors. In line with this, Klein (2004) studied achievement scores of 3446 pupils in the 5th through 11th grades, half girls and half boys, were sampled. The study controlled for teacher gender, teacher seniority, teachers' tendency to assign high or low grades, ratings of pupils' behavior, pupil age, class size, areas of discipline (humanities or sciences), and test type and school size. The finding indicated that most of the variance in achievement was due to teacher gender, where as the influences of pupils gender was small. This result supports sociological theories about gender and cast doubt on biological explanations. Similarly, the difference in academic performance between males and females seems more of social than biological (Brimer and Pauli, 1971; Fennema, 1980). They further stated that the value attached to the education of boys and girls by parents and the society at large is the source of the difference at the classroom level.

Society still fails to treat male and female students equally in their academic performance. Such societal outlook yields unequal achievement between male and female students, particularly in the time they reach high schools, girls have fallen behind Scott and Macollum cited in (Webb, 1991). Supporting this, Smith (1995) reported that adolescent girls began to take on

their female role in society and as a result, they give less attention for their academic work.

Some other studies revealed that males' academic achievement were higher than females (Lummis and Stevenson, 1990; Felson and Trudeau, 1991). On the contrary, recent research on gender differences in achievement has mainly concentrated on the underperformance of boys in comparison with girls. In relation to this, Van Houtte (2004) used the data of 3760 pupils in the third and the fourth year of secondary education in a sample of 34 schools in Flanders. The purpose of the study was to quantitatively test the explanatory value of academic culture with respect to the stated gender differences in achievement. The finding demonstrated that boys' culture is less study oriented than girls' culture, and that this difference can be held responsible for the gender differences in achievement.

Different researchs have been made between male and female students academic achievement at various levels of schooling. For instance, Gullo and Clements (1984) reported that no gender difference was revealed in the first grade samples. Another study conducted on junior schools noted that significant gender differences revealed in achievement favoring males (Murray, 1977).

On the contrary, Benbow and Minor (1986) showed that no gender difference in science achievement exhibited among math talented junior school samples. Similarly, no significant differences are found in other studies (Hilton & Berglund, 1974). Somewhat Similarly, Webb (1991) noted

that no achievement differences noted between males and females in their early schooling but the difference appeared in secondary schools. Gender differences in test performance tend to increase with age (Hyde, Fennema and Lamon, 1990) and, in general, average difference in standardized test performance are fairly small, but as ability levels increased, so do the size of achievement differences (Feingold, 1988). Still another study made at higher education level lack consistency. While Hogrebe, *et al.*, (1985), for example, reported that there is a significant gender differences in achievement favoring males among samples of pre-college developmental studies, Krichner (1993) found that gender is a less important moderator variable in predicting academic success in graduate work.

Few local studies, in relation to students' academic achievement (Mathewos, 2000; Yalew, 1996) revealed that females are low in academic achievement as compared to male counterparts in general perspective. There are also researchers who identified different factors that explain as to why female students' academic achievement is consistently inferior to that of male students in Ethiopia. It was underlined by (Almaz and Barbara, 1990; Wana and Tsion, 1994) that educating females has not been traditionally valued by the society in Ethiopia. As pointed out in a study by Almaz and Barbara (1990), parents, teachers and the society have labeled females as shy, timid, fond of jewelry , feeling inferior, absent from school while they have labeled males as adventurous, zealous and strong. As a result, males are encouraged in ways that enable them to achieve, compete and win while

females are discouraged to develop such traits. Such encouragement helps the males to develop the sense of competitiveness in their educational endeavors.

2.2.1. Gender Difference in Mathematics Achievement

Although much has been done in the field of gender difference, some controversies remain unresolved. One of the controversies raised by different researchers is gender difference in mathematics achievement.

Early finding showed that children did not differ in their math achievement during elementary school but that difference began to appear in middle school and increased with age and schooling (Fennema and Sherman, 1978).

Fennema (1980) reviewed thirty-six studies and concluded that there were no gender differences in elementary school children's mathematics achievement. A similar finding was also obtained by Stigler (1982)who found that scores for boys and girls did not differ significantly from each other in a number of countries (e.g. USA and Japan) at either grade one or grade five.

Different from the aforementioned findings, Lumis and Stevenson (1990) in a cross-cultural study, assessed gender differences on tests of achievement in reading and mathematics in elementary school in Taiwan, Japan and United States. They reported gender difference in mathematics test in favor of boys at 5th grade level in all the three cultures. Similarly, a sample of academically talented students in grade two through six was given

a test of mathematics reasoning ability (Mills *et al.*, 1993). They confirmed that boys performed better than girls.

Gender difference in mathematics achievement using data on 388, 5th and 8th graders, Felson and Trudeau (1991) concluded that boys performed better than girls. On top of this, in case of junior schools Murray (1977) revealed significant gender differences in mathematics achievement favoring males.

According to Bridge *et al.* (1979) mathematics achievement of boys were better than that of the girls in elementary grades. These differences in achievement between boys and girls tend to widen when they reach secondary schools. Similarly, Maccoby and Jacklin (1974) & Hyde (1981) stated that gender differences in mathematics achievement become more pronounced between the upper elementary school and the last year of high school, and the size of differences manifested a significant increase during this interval.

Benbow and Stanely (1980) reported substantial gender differences in mathematics reasoning ability in favor of boys in intellectually gifted 9927 junior high school students. They further reported that large gender difference in mathematics reasoning ability are observed between boys and girls with essentially similar formal education experience in mathematics.

On the contrary, Marshal and Smith (1987) by using a longitudinal study from grade three to six confirmed that girls performed substantially better than boys in grade 3 and grade six as well. Different studies reporting

differences in mathematics achievement of grade four, six, eight and ten indicated that girls had higher mathematics achievement levels than boys (Brandon, Newton and Hammod, 1987).

In another longitudinal study, Hilton and Berglund (1974) used data from Educational Testing Service on 1859 grade five, seven, nine, and eleven students. The study revealed no gender difference in mathematics achievement at grade five levels and the study disclosed significant gender differences in favor of males at the subsequent grade levels (i.e., seven, nine, and eleven). Sherman (1980) also found that, although girls and boys were not different in mathematics background in grade eight, there were significant differences favoring males in grade eleven. Supporting this, (Lamb, 1997; Halpern, 2000) confirmed that males frequently outperform females in mathematics at high school levels.

In local studies, Gennet (1991) after examining the scores in grade six and eight National Examination, concluded that girls in grade six and eight performed poorly compared with boys over the last ten years (1978-1987) in mathematics. Similarly, a study, which included students in grade six to eight in Arsi zone, (Yosph, 1997) has found significant gender difference in mathematics achievement in favor of boys.

Another study, Nema and Wagner (1993) which included 208 students in grade two, three, four and five in Western Shoa and Eastern Gojam, indicated that in all the sample grades the male students achievement level in mathematics is better than that of the female students. Supporting this,

Sewenet (1995) examined the influence of gender and other factors up on maths, reading and writing achievement test score of 5th grade pupil. Sewenet found out that the average math score was significantly better for boys than for girls. Somewhat different finding, Derese *et al.* (1990) made a study to assess factors affecting scholastic achievement of lower primary schools of 2134 students of grade two, three and four in Harar-Zuria, Wolaita Sodo, Motcha and Kola Dega Damot. The analysis of the data indicated gender difference in mathematics achievement in favor of boys only in grade three.

On the other hand, a study by Seleshi (1995) examined gender differences in mathematics among high school students. It revealed statistically significant differences in favor of boys in grades eight through eleven. In relation to this, Dereje (1995) showed significant differences in maths achievement in favor of males except one high school in Addis Ababa. Besides, Gennet (1991) stated that girls have performed very unsatisfactory in mathematics in ESLCE.

Many researches attributed gender differences in mathematics achievement to different factors, such as biological, sociological, cultural etc. Fennema and Sherman (1978) and Backer (1981) suggested that the stereotyping of mathematics as a male domain is due to differences in treatments of parents and teachers between boys and girls.

Hanna, Kundiger and Larouche (1990) as cited in Burton (1990) reported that an analysis of math achievement of 12th grade girls in 15

countries showed that girls were less successful than boys. This decline of female achievement is the result of a strong pattern of socialization to mathematics success or failure rather to innate ability (Callan and Clements, 1984).

2.2.2. Gender Differences in Language Achievement

Language is an instrument through which one conveys his or her idea to others in order to create common understanding. Unless appropriate means of communication is created, there would be a misunderstanding (Stewart and Stewart, 1982).

In education too, without proper medium of instruction, whatever school plants are built, teaching materials are prepared, and it becomes difficult to carry out the teaching-learning process. In this regard, a great deal of research has demonstrated that females outperform males in language achievement (e.g. Tyler, 1965; Halpern, 2000). Anastasis (1958) stated that gender differences in language achievement are claimed superior for females throughout the life cycle. Similarly, females also outperform males on measures of vocabulary and reading comprehensions through high school (Hogrebe *et al.,* 1985). Besides, Finn *et al.,* (1982) stated that in all parts of the world, girl's education is encouraged and guided toward language and liberal arts. On the other hand, although Maccoby and Jacklin (1974) differed from these prior assertions (i.e., no gender difference in language ability in the early ages), they noted that there was a divergence in language abilities approximately at age eleven, with female superiority and

increasing throughout high school and perhaps beyond. Hyde and Linn (1988) examined the analysis of 165 studies on gender difference in language achievement. They concluded that females did show a small advantage over males in their language achievement. Besides, Hyde, Fennema and Lamon (1990) also supported these conclusions.

2.3. Parents' Educational level in Students' Academic Achievement

Epstein *et al.*, (1997) noted that parents and the family in general make considerable contribution to the child's achievement from early childhood through high school. They further disclosed that the education level of parents is positively related to the child's achievement. In this regard, Taylor *et al.* (1993) pointed out that the educational level of parents influences children's school performance more than other family related variables such as income, family size and occupation. Similarly, Stevenson and Baker (1987) indicated that the educational level predicts more of the variance in students' achievement than do other family background variables, particularly for young children.

Simmon (1980) found that although, study habit, attitudes and behavior patterns may be set by students, students' success is influenced by his or her family's education level. Similarly, Bridge, *et al.*, (1979) pointed out that parents' education directly or indirectly affect the performance of their children. In relation to this, Lockheed and Verspoor (1991) assured

that educational level of the parents has shaped the school attainment of children with the same level of magnitude.

The role of parental education has tremendous effect on the over all activities of the school. Regarding this, Craft (1972) stated that parents own educational experience may well affect their understanding of what the schools are trying to achieve and may limit the extent to which they are able to follow what their children are doing irrespective of how interested they are or how anxious to encourage their children in their school work. Craft further elaborated that the type of education which parents themselves have had is likely color their attitudes in one way or another towards the value of education in general and to affect their aspirations for their children. Similarly, Fine (1967) revealed that the educational background of parents highly contribute for the success or failure of students (i.e., poor educational background of parents adversely affects students academic performance).

Literate or well-educated parents can be involved in school matters and understand the value of education. They can encourage their children better than the illiterate parents (Brimer and Pauli, 1971). In support of this idea, Morton (1968) noted that students whose parents are well-educated get important material that help in facilitating their education. However, most illiterate parents lack the ability to initiate and support their children in education as that of the literate ones. Similarly, if parents are illiterate, it is difficult to secure the attendance of children in school until they complete.

Students who come from educated parents are better able to cope up with the challenges of the learning process as they have enough orientation and preparation at home. In relation to this, Laosa (1982) elaborated that children from more educated families excel at school because the teaching-learning and assessment processes in schools are like those they have learned to master at home; whereas, children from lower educated families fail in school because the form, the content of teaching- learning and assessment processes in school are different from those they have learned to master at home. Regarding this, in Cote d'ivoire, a girl with a university educated father is thirty-five times more likely to enter and attain in secondary school than the daughter of a man with no education (King & Hill, 1993). Grissmer (1994) indicated that students with parents who were both college educated tended to attain better at the college education.

There are some studies that tried to differentiate the degree of parental education influence by gender. Among them, for example, Jabre (1988) & Sadik (1991) have ascertained that the education of mothers is more closely associated with the schooling of daughters; where as the education of father's is more closely associated with schooling of sons. Besides, Ramberger (1983) found that parents did not have the same effect on boys and girls in different ethnic groups. Ramberger further stated that the higher the mother educational level, the more likely girls achieve at school;. On the other hand, Chervichovsky and Meesook (1985) specifically argued that mothers' literacy does not matter as much as the fathers' to decide whether

or not their daughters are provided with the necessary material and psychological support.

Another study by Bown (1990) explained that mothers are expected to play a great role as teachers. They are the primary sources of knowledge, language, value and social relationship to the child. Therefore, the higher educational level of the mother, the more effective she is to transmit the knowledge required by her children. Similarly, Turner (1977) emphasized that maternal importance in the child's scholastic performance is given greater place. Baker and Stevenson (1987) found that more educated mothers know more about their child's school performance have more contact with teachers and were more likely to have taken action, when necessary to manage their child's academic achievement.

In local studies, Sewenet (1995) revealed that parents are supposed to have great effects on the overall development of personality trait of education and they can play important roles in shaping the future career of their childern. Sewent further stated that well educated parents give more value to education and expect their children to become well educated too.

Gennet (1998) reported that most parents treat their sons and daughters differently in regard to their future roles, expectations and education. Another study, Merga (1999) has pointed out that parents who are themselves educated may have a more enlightened attitude about their daughters' education, or provide a more stimulating environment for the education of their daughters than uneducated parents. Yelfign (1995)

depicted that the more the levels of mothers' education, the more the girls' academic performance. Moreover, Wanna and Tsion (1994) indicated that grade repetition and low academic achievement for female students are higher for those whose parents are illiterate than literate.

2.4. Summary of the Review of Related Literature

From the aforementioned reviews and research findings, one may conclude the following points in relation to the basic questions initially raised:

- Gender differences in academic achievement seem negligible in elementary school levels but the difference tends to increase in high school levels relatively in favor of males. In relation to mathematics and language achievement, females score higher on average than males on language achievement, and males score higher on average than females on mathematics achievement.
- Students' academic achievements are positively related to cognitive strategy use and self-regulation. Besides, gender difference in learning strategy use is somewhat in favor of females.
- Parents' educational background influences students' academic achievement. Thus, students who come from educated parents revealed better academic achievement than those from uneducated parents. Moreover, literate mothers play a vital role for the success of their children.

- In general, parents' educational level, students' gender and their learning strategies are positively associated with classroom academic achievement.

In addition, some of the above research findings seem to be inconsistent and controversial. These problems, therefore, indicate the need for further investigation in this area.

CHAPTER THREE

3. METHOD OF RESEARCH

This section describes the subjects included in the study, sampling procedures, the instrument used, the procedure employed for data collection and data analysis.

3.1. Subjects

The subjects of this study were grade ten students in Dessie town high schools. Dessie is located in North East part of Ethiopia; the town is the capital of south Wollo Administrative Zone in Amhara National Regional State. The reason Dessie was selected as an area of this study was becouse it has been the researcher's place of work and this helped him to make the study manageable. Grade ten was also chosen purposefully because the researcher wanted to see the three semester average scores.

3.2. Sampling

In Dessie Town there are only two high schools. The high schools are 'Hotie' and 'Kidame-Gebeya'. From the total of 2782 10th grade student population (i.e., 1992 students in Hotie & 790 students in Kidame-Gebeya), 400 samples (200 males & 200 females) were selected by stratified sampling. Samples from each school were chosen proportionally (i.e., 286 samples were taken from 'Hotie' high school and 114 samples were taken from 'Kidame-Gebeya' high school). Out of these samples, 380 (188 males and 192

females) were used in the main study because 12 males and 8 females failed to provide a complete data.

3.3. Instrument

To investigate students' learning strategy, a Likert type five point scale ranging from "Not at all true of me" (1) to "Very true of me" (5), which was developed by Pintrich and DeGroot (1990) for junior secondary school students, was adopted and used. The scale has twenty-two items (Nine items for cognitive strategy use and thirteen items for self-regulation). The scale was chosen for different reasons:

First, most of the statements in each subscale do not seem to be culture bound. Second, the subscales of the instrument are reliable in their original forms (with coefficient alphas 0.83 and 0.74 for cognitive strategy use and self-regulation, respectively). Third, as the instrument was designed for junior secondary school students, it is believed to be easy to understand for high school students.

For the purpose of the present study, some of the statements of the scale were slightly modified and commented by senior graduates from the departments of psychology. The items were then put in a random order to minimize response bias and translated into Amharic version so that they could be easily understood by the subjects.

In addition to learning strategy scale, a short supplementary questionnaire was also used to obtain demographic data (including: sex, parents' educational level,).

Students' academic achievement scores were collected from each school record office.

3.4. Data Collection Procedure

3.4.1. Pilot Study

The purpose of the pilot study was to see each of the items working as intended or not and retain high internal consistency reliability of the subscales by improving inappropriate wordings.

The subjects of the pilot study were selected from grade ten students of 'Kutaber' high school. From this school 40 samples (20 males and 20 females) were selected using random sampling.

Before administering the instrument, the researcher told the purpose of the instrument to the pilot samples and gave illustrations on how to fill it. The result of the internal consistency reliability was found to be reliable (i.e. 0.849 and 0.797 for cognitive strategy use and self-regulation respectively). On the basis of pilot testing, the instrument became ready for the main study.

In the main study, the instrument was administered by the researcher. During administration, the subjects were told to read the instruction carefully before starting responding to the items. Subjects who needed explanations about the questions, instructions, or the way they

should mark their answers were given clarifications but such requests were few in each school.

Data on students academic achievement which was obtained from record offices converted into standard scores (Z-score).

3.5. Data Analysis

3.5.1. Variables Included in the Study

1. Gender (Z_1)
2. Parents' educational background (Z_2)
3. Cognitive strategy use (Z_3)
4. Self- regulation (Z_4)
5. Academic achievement (Y)

Learning strategy Components (Cognitive strategy use & Self- regulation) were used as both dependent and independent variables; but gender and parents' educational level were used as independent variables while student's academic achievement score was used as dependent variable.

3.5.2. Methods of Data Analysis

After assigning scores for each sampled subjects on variables,

1. Mean and standard deviation were computed for general comparison.
2. Inter-correlation was calculated to determine the extent of relationships among variables.
3. T-test was computed to determine whether there is a significant mean difference between male and female students in their Mathematics

achievement, Language achievement, overall achievement and learning strategy use.

4. Analysis of variance (one way ANOVA) was employed to determine whether there exist academic achievement differences or not, due to parental education level differences. Moreover, post-hoc multiple comparisons of means was also carried out in order to identify pair of means that differed one from the other.
5. Multiple regression analysis was conducted to see the relationship between academic achievement and the independent variables.
6. Stepwise regression analysis was carried out in order to select the variable that best explain the variation in students' academic achievement.

The assumptions underlying the use of multiple regression (Linearity, normality, homoscedasticity) were scanned.

Such statistical analysis was computed by Statistical Package for Social Sciences (SPSS), and tests of significance used for the study was alpha 0.05.

CHAPTER FOUR

4. RESULTS

This section presents the results of statistical analysis carried out to answer the basic questions raised in the present study. Thus, the results are presented in the following sequences: first, descriptive statistics is presented; second, correlation analysis of the variables; third, gender difference on students' academic achievement in general, language and mathematics achievement in particular; fourth, parents' educational background on students academic achievement; fifth, learning strategy variables on academic achievement and gender differences in learning strategies; and finally, the overall relation of academic achievement with the independent variables treated in the study.

4.1. Descriptive Statistics of the Variables Treated in the Study

Table 3: Means, Standard Deviations, Maximum and Minimum Scores of the Variables Treated in the Study (n=380)

Variable	Statistics			
	Mean	Std. Deviation	Minimum Score	Maximum Score
CS (Z3)	0.0121	0.99794	-2.65	1.63
SR (Z4)	0.0003	0.9990	-2.00	1.58
AA (Y)	-0.0076	0.9983	-1.99	3.44

[Gender codes were 0=Female, 1= male and parental education codes were 2= Illiterate, 3= Primary, 4=Secondary, 5= Tertiary]

Note: - PEB – Parental Education Background

CS - Cognitive Strategies use

SR - Self- Regulated Strategy

AA - Academic Achievement

4.2. Correlation Analysis of the Variables in the Study

The main interest of this study was to examine the contribution of gender, parental education and learning strategy components on students' academic achievement. To this end, the relationships between these variables were first explored.

Table 4: Intercorrelation between the Variables Treated in the Study (n=380)

Variable	Z1	Z2	Z3	Z4	Y
Gender (Z1)	-				
PEB (Z2)	-0.023	-			
CS (Z3)	-0.088	0.732*	-		
SR (Z4)	0.331*	0.737*	0.707*	-	
AA (Y)	0.070	0.889*	0.814*	0.828*	-

* P<0.05

As shown in Table 4, there was no statistically significant relationship between gender and parental educational background (r=-0.023); gender and cognitive strategy use (r=-0.088); gender and academic achievement (r=0.070); but gender and self-regulated strategy was found to be statistically significantly related(r=0.331, p<0.05). Similarly, parental educational

background had statistically significant relationship with self- regulated strategy, cognitive strategy use and academic achievement ($r=0.737$, $p<0.05$; $r=0.732$, $p<0.05$; $r=0.889$, $p<0.05$) respectively. Conversely, academic achievement except gender had statistically significant relationship with the remaining variables treated in the study.

4.3. Gender Differences on Academic Achievement

The other intent of this study was to compare the mean scores of male and female students' academic achievement in general and language and mathematics achievement in particular. To attain this end, t-test was computed and results were presented in the following tables:

Table 5: t-test Comparison on Academic Achievement of Male and Female Students

Variable	Group	n	Mean	Std.devi	Std. Error	t	df
AA	Male	188	0.0628	1.03988	0.07584	-1.362	378
	Female	192	-0.0765	0.95346	0.06881		

P>0.05

As indicated in Table 5, despite the academic achievement mean score of male students to be slightly higher than that of female students; the t-test revealed that no statistically significant difference was observed between male and female students in academic achievement.

4.3.1. Gender Differences in Language and Mathematics Achievement

Table 6: t-test on Language and Mathematics Achievement of Male and Female Students

Variable	Group	N	Mean	Std.devi	Std. Error	t	d.f
Language A.	Male	188	-0.2278	0.93528	0.06821	4.447*	378
	Female	192	0.2296	1.06426	0.07681		
Mathematics A.	Male	188	0.2806	0.94589	0.06899	-6. 124*	378
	Female	192	-0.3518	1.06272	0.07670		

* P<0.05

As could be seen in Table 6, there was statistically significant difference between male and female students in language achievement in favor of females ($t_{(378)} = 4.447$, $P<0.05$). On the other way round, statistically significant difference was observed between male and female students in mathematics achievement in favor of males ($t_{(378)} = 6.124$, $P<0.05$).

4.4. Parents' Educational Background on Students Academic Achievement

This section deals with the results concerning the contribution of parental education to their children's academic achievement. To see whether or not there exists academic achievement difference due to parental education level, one-way ANOVA was employed.

Table 7: Number of Cases, Means and Standard Deviation for Students Academic Achievement by their Parents Education Level

Variable	Group	N	Students' Academic Achievement	
			Mean	Std. Deviation
PEB	Illiterate	51	-1.499	0.405
	Primary	181	-0.3420	0.478
	Secondary	104	0.5769	0.398
	Tertiary	44	1.7155	0.544

As shown in Table 7, students whose parents are at Tertiary level had shown higher mean achievement score whereas students whose parents are at illiterate level had shown lower mean achievement score.

Table 8: Results of ANOVA Summary Table for Parental Education Differences in their Academic Achievement

Sources	Sum of Squares	df	Mean Square	f
Between	299.852	3	99.951	482.802*
With in	77.840	376	0.207	
Total	**377.692**	**379**		

*P< 0.05

As can be seen in Table 8, there is a statistical significant difference in academic achievement [$F_{(3,376)} = 482.802$, $P<0.05$] between the groups of students whose parents are at different education levels.

After finding overall statistically significant differences among mean values, it is necessary to conduct a post-hoc multiple comparison analysis (Scheffe's method). This is done in order to identify pair of means that differed one from another.

Table 9: Multiple Comparisons of Means for Students Academic Achievement by their Parents Education Level

PEB		Mean diff. I-J	Std. Error
I	J		
Illiterate	Primary	-1.15698*	0.07213
	Secondary	-2.07594*	0.07778
	Tertiary	-3.21447*	0.09362
Primary	Illiterate	1.15698*	0.07213
	Secondary	-0.91897*	0.05599
	Tertiary	-2.05750*	0.07648
Secondary	Illiterate	2.07594*	0.07778
	Primary	0.91897*	0.05599
	Tertiary	-1,13853*	0.08183
Tertiary	Illiterate	3.21447*	0.09362
	Primary	2.05750*	0.07648
	Secondary	1.13853*	0.08183

* The mean difference is significant at the 0.05

As Table 9 shows statistically significant difference exist between the four groups with respect to their means achievement score. The maximum mean achievement score difference was between those students who come from illiterate parents and those who come from tertiary level parents (3.21447). The minimum mean achievement score difference was between those students who come from primary educational level parents' and secondary educational level parents' (0.91897). Therefore, the result suggests that the higher parental education level was more likely to show the higher the students' academic achievement.

Following the comparison of means, the next issue was to identify the relative contribution of maternal education and paternal education in relation with their students' academic achievement

Table 10: Number of Cases, Means and Standard Deviation for Students Academic Achievement by their Paternal or Male Guardian and Maternal or Female Guardian Education Level.

Variable	Group	N	Students academic achievement	
			Mean	Std. deviation
Maternal edu.	Illiterate	81	-0.9886	0.7863
	Primary	157	-0.2723	0.5706
	Secondary	94	0.4920	0.4861
	Tertiary	48	1.5900	0.6498
Paternal Edu.	Illiterate	61	-1.2767	0.5998
	Primary	141	-0.2851	0.4892
	Secondary	87	0.2572	0.6142
	Tertiary	91	1.1347	0.7306

As could be seen in Table 10, students' academic achievement with their maternal or female guardian education levels seem to have higher mean score than students' academic achievement mean score with their paternal or male guardian education levels.

Table- 11: ANOVA Summary for Students' Academic Achievement in relation with their Maternal or Female Guardian Education Level.

Source	Ss	df	Ms	F
Between groups	234.916	3	78.305	204.419*
With in groups	144.031	376	0.383	
Total	378.947	379		

*P<.05

As denoted in Table 11, there is a statistical significant difference in academic achievement ($F_{(3,376)} = 204.419$, $P<0.05$) between the groups of students with their maternal or female guardian educational levels.

Table- 12: Multiple Comparisons of Means for Students Academic Achievement in relation with their Maternal (Female guardian) Education level.

Maternal edu. Level		Mean diff. I-J	Std. Error
I	J		
Illiterate	Primary	-0.71635*	0.08467
	Secondary	-1.48066*	0.09383
	Tertiary	-2.57864*	0.11274
Primary	Illiterate	0.71635*	0.08467
	Secondary	-0.76431*	0.08072
	Tertiary	-1.86229*	0.10208
Secondary	Illiterate	1.48066*	0.09383
	Primary	0.76431*	0.08072
	Tertiary	-1.09798*	0.10980
Tertiary	Illiterate	2.57864*	0.11274
	Primary	1.86229*	0.10208
	Secondary	1.09798*	0.10980

*The mean difference is significant at the 0.05 level

The above results indicated that statistically significant mean achievement differences exist between the four groups of students with their maternal education levels. The maximum mean difference is observed between Illiterate and Tertiary level whereas the minimum difference is revealed between Illiterate and primary level. This suggests that students' academic performance and their maternal (female guardian) education level go with the same magnitude.

Table- 13: ANOVA Summary for Students Academic Achievement in relation with their Paternal (Male guardian) Education Level.

Source	SS	df	Ms	F
Between groups	233.672	3	77.890	211.508*
Within groups	138.466	376	0.368	
Total	372.137	379		

*P<0.05

As shown in Table 13, there is a statistically significant difference in students academic achievement [$F_{(3,376)} = 211.508$, $P<0.05$] between the groups of students with their parental (male guardian) education levels.

Table 14:- Multiple Comparison of Means for Students Academic Achievement in relation with their Paternal (Male guardian) Education Level.

Paternal edu. level		Mean diff	Std. Error
I	J	I-J	
Illiterate	Primary	-0.99161*	0.09300
	Secondary	-1.53396*	0.10124
	Tertiary	-2.41145*	0.10042
Primary	Illiterate	0.99161*	0.09300
	Secondary	-0.54235*	0.08273
	Tertiary	-1.41983*	0.08160
Secondary	Illiterate	1.53396*	0.10134
	Primary	0.54235*	0.08273
	Tertiary	-0.87748*	0.09099
Tertiary	Illiterate	2.41145*	0.10042
	Primary	1.41983*	0.08160
	Secondary	0.87748*	0.09099

* The mean difference is significant at the 0.05 level.

As depicted in Table 14, significant mean achievement differences were observed between the four groups of students with their paternal (male guardian) education levels. The maximum mean difference was seen between Tertiary and Illiterate (i.e. 2.41145). This disclosed as the paternal education level increases, their children's academic achievement also increases.

4.5. Learning Strategy Variables

4.5.1. Learning Strategy Variables on Academic Achievement

As could be see in Table 4, cognitive strategy use and self-regulation are significantly associated with academic achievement ($r= 0.814$, $p< 0.05$ and $r= 0.828$, $p<0.05$ respectively.)

4.5.2. Gender Difference in Learning Strategy Components

In this part, cognitive strategy use and self-regulation mean scores were compared in relation with male and female students. To attain this end, t-test was computed. Here, learning strategy variables were used as dependent variables.

Table 15: t-test Comparison between Male and Female Students in Cognitive Strategy and Self-regulation Mean Scores

Variable	Sex	N	Mean	Std. Devi	Std. error	t	df
Cognitive Strategy	Male	188	-0.0769	0.93636	0.06829	1.725	378
	Female	192	0.0993	1.04990	0.07577		
Self-Regulation	Male	188	0.3337	0. 94763	0.06911	-6.810*	378
	Female	192	-0.3260	0.94065	0.06789		

*P<0.05

The above results indicate that there was no statistically significant difference between male and female students in cognitive strategy use at the predetermined level of significance whereas in relation to self-regulation there was a statistically significance difference between male and female students in favor of males ($t_{(378)}= 6.810$, $p<0\ 05$).

4.6. The Overall Relation of Academic Achievements with the Independent Variables

In this section, the proportion of academic achievement variance accounted for by the predictor variables (parental education and learning strategy components) taken together were examined by employing multiple regression analysis. The result of multiple regression analysis was given below.

Table 16: The Proportion of Academic Achievement Variance Accounted for by Independent Variables

Source of Variance	Sum of Square	df	Mean square	F
Regression	332.470	3	110.823	921.437*
Residual	45.222	376	0.120	
Total	377.692	379		

*P<0.05

Table 17: Summary of Multiple Regression Results

Variable	Regression coefficient (bi)	Std. Error (SE)	Beta Coef (B)	t	R	R^2	R^2 adj.
PEB (Z_2)	0.579	0.034	0.497	-16.893*	0.938	0.88	0.879
SR (Z_4)	0.286	0.028	0.287	10.113*			
CS (Z_3)	0.247	0.028	0.247	8.784*			

*P<0.05

Constant= -1.961

Note: The Regression equation is

$$Y = 0.497Z_2 + 0.247Z_3 + 0.287Z_4 - 1.961$$

As depicted in Tables 16 and 17 above, when academic achievement was regressed on the predictor variables (parents educational background, cognitive strategy use and self-regulation), the obtained multiple coefficient of determination was 0.88 (i.e.$R^2y.234$= 0.88). This implies that the proportion of academic achievement variance accounted for by the independent variables (parents' educational background, cognitive strategy use and self-regulation), taken together, was 88%. The adjusted R^2 which represents the unbiased estimate of R^2 was 0.879, which indicates that there was overall strong relationship. F-test also revealed that this proportion of variance is statistically significant [$F_{(3,376)}$ = 110.823, P<0.05]

4.6.1. Predictor Variables Prioritized in Explaining Differences in Academic Achievement

The results of stepwise multiple regression analysis in which the predictor variables were weighed in terms of the order of their importance in explaining the variation in academic achievement are presented in Table 18.

Table 18: Stepwise Multiple Regression Analysis of the Independent Variables in Explaining the Variation in Academic Achievement

Step No	Variables Entered	Regress. Coeff. (bi)	Std. Error (SE)	Beta Coeff. (B)	t	R	R^2	Increase in R^2	Adju. R^2	F
1	PEB	1.035	0.45737	0.889	37.783*	0.889	0.791	-	0.790	1427.535
2	SR	0.377	0.38022	0.377	13.037*	0.925	0.856	0.065	0.855	1117.771
3	CS	0.247	0.34680	0.247	8.784*	0.938	0.880	0.024	0.879	921.437

*P<0.05

As shown in Table 18, the variable which has been first entered in the regression model is parental educational background. This predictor variable alone explaining 79% of the total variation in academic achievement hence it has the highest correlation with achievement,. The second independent variable which entered in the second step is self-regulation. This variable added in the regression equation increased in coefficient of determination by 6.5%. The third independent variable which entered in the third step is cognitive strategy use. Cognitive strategy use added 2.4 % to the prediction of academic achievement.

In general, the results of multiple regression and stepwise multiple regression analysis revealed that the independent variables: parents' educational background and learning strategy variables jointly accounted for by 88% of the total variance in academic achievement of high school students in Dessie Town. The remaining 12% of the variation in academic achievement could be explained by other predictor variables which were not explored in this study. The stepwise multiple regression analysis further indicated that parents' educational background was found to be the best predictor variable on academic achievement.

CHAPTER FIVE

5. DISCUSSION

This chapter deals with the discussion of results pertaining to gender, parental educational background and learning strategy components on students' academic achievement.

5.1. Gender Differences in Academic Achievement

One of the main concerns of this study was to investigate gender differences in students' academic achievement. In this regard, the present study revealed that there was no statistically significant relationship (Table 4, r=0.070) between gender and academic achievement at the predetermined level of significance. Besides, t-statistical test [Table 5, $t_{(378)} = 1.362$, $p>0.05$] also indicated that no significant mean differences observed between male and female students in their academic achievement. This result goes in line with the findings of some researchers (for example, Hilton and Berglund, 1974; Gullo and Clements, 1984; Benbow and Minor, 1986) reported that there was no significant gender difference between male and female students in their academic achievement. Furthermore, this was confirmed by Stigler (1982) & Marshal *et al.*, (1987).

However, it should be noted that there are other research reports that are inconsistent with the results of the present study. For example, research findings by Murray, (1977) reported that there was a significant gender difference in academic achievement in favor of males. On top of this, local

research findings (Mathewas, 2000; Mekasha, 2000; Yalew, 1996) also revealed that females are low in academic achievement as compared to male counterparts in general perspectives.

The above controversial gender related differences in academic achievement may not be surprising when one examines the very nature of the investigation. One possible explanation for the discrepancy between the present and the previous studies might be the condition under which studies were conducted (for instance, one may investigate in a specifics subject area; the other may examine different grade levels taken together, still another may use different sample size and instrument; and so on). All these should be taken into account for the inconsist of the present result with the previous findings.

5.1.1. Gender Differences in Mathematics Achievement

With respect to gender differences in mathematics achievement, the finding of the present study denoted that there was a statistically significant difference between male and female students in mathematics achievement in favor of males (Table 6, $t_{378} = 6.124$, $p<0.05$).

The result of the present study is not strange. Consistent research finings were found in local studies as well as in other countries.

Local research findings such as Seleshi (1995); reported that there was a statistically significant difference between males and female high school students in mathematics achievement in favor of males. In relation to this, (Yoseph, 1997) have found significant gender differences in mathematics

achievement in favor of boys. Besides, Gennet (1991) after examining the scores in grade six and eight National Examination, she concluded that girls in grade six and eight performed poorly compared with boys over the last ten years (1978-1987) in mathematics.

Study findings in other countries, for example, Sherman (1980), found that although girls and boys were not different in mathematics background in grade eight, there were significant differences favoring males in grade eleven. Supporting this, Lumis and Stevenson, (1990), Felson and Trudeau, (1991) and Lamb, (1997) confirmed that males frequently outperform females in mathematics achievement. Similarly, Maccoby and Jacklin (1974) and Hyde (1981) stated that gender differences in mathematics achievement become more pronounced between the upper elementary school and the last year of high school, and the size of differences manifested a significant increase during this interval.

Different researchers attributed this difference to different factors, such as biological, sociological, cultural and so on. Fennema and Sherman (1978) and Becker (1981) suggested that the stereotyping of mathematics as a male domain is due to differences in treatments of parents and teachers between boys and girls.

There are also researchers who identified different factors explain as to why female students' academic achievement is consistently inferior to that of male students in Ethiopia. Almaz and Barbara (1990) & Wana and Tsion (1994) reported that educating females has not been traditionally valued by

the society in Ethiopia. As pointed out in a study by Almaz and Barbara, parents, teachers and the society have labeled females as shy, timid, fond of jewelery, feeling inferior while males as adventurous, zealous, and strong. As a result, males are encouraged in ways that will enable them to achieve, compete, win and develop the sense of competitiveness in their educational endeavors while females are discouraged to develop such traits. Therefore, these explanations might bring the differences between male and female students in mathematics achievement, in favor of males.

5.1.2. Gender Differences in Language Achievement

As was indicated in Table 6, there was a statistically significant difference between male and female students ($t_{378}=4.447$, $p<0.05$) in Language achievement in favor of females. The result of the present study agreed with the previous research findings. In this aspect, a number of research finings have demonstrated that females make more progress for language achievement than males. (E.g. Tyler, 1965; Stumpf *et al.*, 1994). In a similar manner, Anastasis, (1958) & Halpern (2000) also confirmed that gender differences in Language achievement are claimed superior for females throughout the life cycle.

Maccoby and Jacklin (1974) noted that there was a divergence in language achievement approximately at age eleven, with female superiority and increasing throughout high school and perhaps beyond. Hyde (1981) also supported this conclusion.

The reason for the above differences between male and female students in language achievement in favor of females, Finn *et al.*, (1982) stated that in all parts of the world, girls' education is encouraged and guided toward language and liberal arts. Kimura and Clarke (2001) also assured that females were excelling at verbal fluency and verbal memory.

5.2. Parents Educational Background on Academic Achievement

Another main concern of this study was to examine parents' educational background on students' academic achievement. Regarding this, the present research finding indicates that the relationship between parental education and academic achievement is statistically significant (Table 4, $r=0.889$, $p<0.05$). Besides, the proportion of academic achievement variance accounted for by parental education alone is 79%. These results suggest that parental education is an important variable for predicting academic achievement. In relation to this, one way ANOVA and multiple comparisons of means were also computed in order to detect which parental education level significantly contributed to students' academic achievement. The result revealed that all the mean differences in all parental education levels were significant and the magnitude of differences tends to increase from illiterate to tertiary level. This implies that students whose parents are more educated exhibited more academic achievement than those who have uneducated parents.

The result of the present study was consistent with the prior studies Epstein et *al.*, (1997) noted that educational level of parents is positively

related to the child's achievement from early childhood through high school. In this regarded, Taylor *et al.*, (1993) pointed out that the educational level of parents influences children's school performance more than other family related variables such as income, family size and occupation. Similarly, Stevenson and Baker (1987) indicated that educational level predicts more of the variance in students' achievement than do other family background variables.

In relation to this, Lockheed and Verspoor (1991) assured that education level of parents has shaped the school attainment of children with the same level of magnitude. In support of this idea, Morton (1968) noted that students whose parents are well educated get important material that help in facilitating their education while illiterate parents lack the ability to initiate and support their children in education as that of the literate ones. Grissmer (1994) has also confirmed tnat students with parents who were both college educated tended to achieve at the high levels.

Moreover, students academic achievement differences in relation with their maternal and paternal education levels are concerned analysis of variance and multiple comparison of means revealed that significant differences in academic achievement were observed [$F_{(3,376)}$= 204.419, $p<0.05$ and $F_{(3,376)}$= 211.508, $P<.05$) between the groups of students with their maternal and paternal education levels, respectively. Multiple comparison of means further showed that there were statistically significant mean achievement differences between the four groups of students with their

maternal and paternal education levels. The maximum mean differences in both the maternal and paternal education levels were between illiterate and Tertiary levels. This disclosed that the better the paternal and the maternal education level, increase, the more the students' academic achievement. The result of the present study is consistent with the previous studies. Bown (1990) explained that mothers are expected to play a great role as educators. They are the primary sources of knowledge, language, value and social relationship to the child Therefore, the higher educational level of the mother, the more effective she is to transmit the knowledge required by her children. Likewise, children of literate mothers are likely to have better educational success (Yelfign 1995).

5.3. Learning Strategy Components

5.3.1 Learning Strategy Components on Academic Achievement

In the present study, cognitive strategy use and self-regulation are statistically significantly correlated with students academic achievement ($r=0.814$, $p<0.05$ and $r= 0.828$, $p<0.05$, respectively), in the expected direction. That is, students who relied on elaborative strategy (e.g. paraphrasing, summarizing, note taking), organizational strategies (e.g., selecting main idea, outlining), rehearsal strategies (e.g. underlining important ideas, repeating, copying), metacognitive strategies (e.g. planning, reviewing, setting goals), effort management strategies (e.g. persistence at difficult or uninteresting tasks) were likely to receive higher scores in their academic work.

The present research finding is consistent with the findings of the previous studies. For example, Pintrich and DeGroot (1990) and Pokay and Blumenfeld (1990) concluded that cognitive strategy use and self-regulation were positively correlated with academic achievement. Students, who were more cognitively engaged in trying to learn by memorizing, organizing, rehearsing and elaborating, performed better than students who tend not to use these strategies (Corno and Mandinach, 1983; Weinstein and Mayer, 1986). Similarly, Corno (1986); Zimmerman and Martinez-Pons (1988) suggested that the more the use of self-regulation strategies such as monitoring; goal setting, planning and effort management, the better the academic achievement.

5.3.2. Gender Difference in Learning Strategy Components

In this study, the difference between male and female students in self-regulating strategy use shows a statistically significant difference in favor of males (Table 15, $t_{378}= 6.81$, $p<0.05$). This result is inconsistent with the findings of the previous studies. Pokay and Blumenfeld (1990); Zimmerman and Martinet Pons (1990) indicated that girls showed more self-regulated strategy use than boys did. One possible explanation for these mismatching might be the condition under which this study and the previous studies were conducted. With respect to cognitive strategy use, the present study showed that no statistically significant difference was observed between male and female students at the predetermined level of significance. This result is consistent with what have been suggested by Pintrich and DeGroot (1990)

who reported that boys and girls did not differ on the two learning strategy variables i.e., cognitive strategy use and self-regulation.

5.4. The Overall Relationship of Academic Achievement with the Predictor Variables

In relation with this, the findings of the present study indicated that academic achievement had statistically significant correlation with parents educational background, cognitive strategy use and self-regulation ($r=0.889$, $p< 0.05$, $r=0.814$, $p<0.05$ and $r= 0.828$, $p<0.05$ respectively). On the other hand, the correlation between gender and academic achievement was not significant.

According to the results of multiple regression analysis in this study, the proportion of academic achievement variance accounted for by the independent variables (parents' educational background and learning strategy components) taken together was 88% of the total variance. Of this proportion of variance explained by parental education was very high (i.e.79%). This suggests that parents' educational background has more contribution to the differences in students' academic achievement. The other 9% of the variance was explained by self-regulation, and cognitive strategy use. The remaining 12% of the total variance in academic achievement could be explained by other predictor variables which were not explored in this study.

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CHAPTER SIX

6. SUMMARY AND CONCLUSION

This section attempts to summarize and conclude the study and makes some recommendations based on the results of the study.

6.1 Summary

The main objective of the present study was to investigate how gender, parents' educational background and learning strategy predict students' academic achievement in Dissie Town high schools.

The study was designed to answer the following basic questions:

1. Do gender, parents' educational background and learning strategy predict students' academic achievement?
2. Do male and female students significantly differ in their mathematics and language achievement?
3. Do male and female students significantly differ in their learning strategy?

There are two high schools in Dessie Town. From these schools, 380 respondents (Male= 188 and Female= 192) were randomly selected from grade 10 students. The instrument used in this study was learning strategy scale, which was adapted from the instrument reported by Pintrich and DeGroot (1990) that was used on junior high-school students. In addition to learning strategy scale, a short supplementary questionnaire was also used to obtain demographic data. Student's academic achievement scores (three

semester average scores) were collected from school record offices of the two schools involved in the study. Initially, the instrument was administered on the pilot samples (n= 40) and the instrument was improved.

Data were analyzed by using simple correlation, analysis of variance, t-test, multiple regression and stepwise multiple regression. The following results were found in the study. The Linear simple correlation result revealed that each independent variable, except gender, had significant relation with the dependent variable (academic achievement).

T-test results showed that there was no statistically significant difference between male and female students in academic achievement. But there were statistically significant difference between male and female students in Mathematics and Language achievement. Mathematics achievement was in favor of males whereas Language achievement was in favor of females.

With respect to learning strategy variables, there was a statistically significant difference between male and female students in self-regulation in favor of males but no significant difference was observed in cognitive strategy use.

Concerning the relationship between parental education and students' academic achievement, one way ANOVA depicted that there was a statistically significant difference in students' academic achievement due to the variation of parental education level. The post-hoc comparison test that followed this result showed that all the pair of means differed significantly.

According to the result, as parental education level increases, students' academic achievement also increases.

Besides, both the maternal and the paternal education level separately were statistically significantly associated with students' academic achievement. This result disclosed that as the maternal or the paternal educational level increases, the students' academic achievement also increases.

Finally, the results of multiple regression analysis showed that, when academic achievement was regressed on the independent variables (parents' educational background & learning strategy components), taken together, the obtained multiple coefficient of determination (R^2) was 0.88. This result suggested that the independent variables combined together had a significant relation with academic achievement. The proportion of academic achievement variance accounted for by these independent variables jointly was 88%. The remaining 12% of the variation was unexplained.

The stepwise multiple regression analysis further disclosed that parents educational background was the first variable in explaining the highest variation in students' academic achievement.

From the above findings, one may arrive at the following conclusions:

1. There was no statistically significant difference observed between male and female students in their academic achievement. But, there was a statistically significant difference between male and female students in

their Mathematics achievement in favor of males and Language achievement in favor of females.

2. Parents' educational background was strongly related to their students' academic achievement. That is, students whose parents were more educated exhibited more academic achievement. Moreover, the maternal and the paternal educational background separately were also significantly associated with their students' academic achievement.

3. Statistically significant difference was observed between male and female students in self-regulating strategy in favor of males, but no significant difference was observed in cognitive strategy use.

4. Parents' educational background and learning strategy components, taken together, strongly predicted academic achievement. From these predictor variables, parental educational background was found to be the highest predictor variable.

6.2. Recommendations

Based on the results of this study, the following recommendations are made:

1. Males surpassed females in Mathematics achievement. On the other side, females surpassed males in Language achievement. This may suggest that school authorities and teachers should provide appropriate device (by using guidance & counseling services, role models, and so on) for females in Mathematics and for males in Language that would enable them to improve their performance accordingly.

2. Teachers and the school should give attention to students specially those who come from uneducated parents in classroom activities and encourage them to actively participate in classroom instruction.

3. Teachers should provide different techniques in order to improve students in their learning strategies as suggested by (Dembo, 1994).

- ❖ Telling students the important points in a lesson
- ❖ Encouraging students to take notes and underline important ideas.
- ❖ Having students summarize teachers lecture
- ❖ Encouraging students to plan and outline the tasks they are supposed to accomplish
- ❖ Having the learners list the important new terms in the subject they learn.
- ❖ Providing time at the end of each class for asking and answering questions etc.

4. The observed significant contribution of the independent variables upon the dependent variable in this study call for repeating research on a wider population by including some other variables which possibly contribute to academic achievement.

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c. With father only

d. With father and step mother

e. With mother and step father

f. With other relatives

g. With foster parents who are not relatives

h. Other (specify) _____

6. Are your parents alive?

a. Yes, both mother and father

b. Yes, only mother

c. Yes, only father

d. No, none of them

7. What is your parents' or guardians educational level

7.1. Educational level of your father or male guardian_____

a. Illiterate (unable to read and write)
b. Primary level (from grade 1 to 8 and able to read and write)
c. Secondary level (from grade 9 to 12)
d. Tertiary level (college and above)
e. Other (specify) _____

7.2. Educational level of your mother or female guardian_____

a. Illiterate (unable to read and write)
b. Primary level (from grade 1 to 8 and able to read and write)
c. Secondary level (from grade 9 to 12)
d. Tertiary level (college and above)
e. Other (specify) _____

c. With father only

d. With father and step mother

e. With mother and step father

f. With other relatives

g. With foster parents who are not relatives

h. Other (specify) _____

6. Are your parents alive?

a. Yes, both mother and father

b. Yes, only mother

c. Yes, only father

d. No, none of them

7. What is your parents' or guardians educational level

7.1. Educational level of your father or male guardian_____

a. Illiterate (unable to read and write)
b. Primary level (from grade 1 to 8 and able to read and write)
c. Secondary level (from grade 9 to 12)
d. Tertiary level (college and above)
e. Other (specify) _____

7.2. Educational level of your mother or female guardian_____

a. Illiterate (unable to read and write)
b. Primary level (from grade 1 to 8 and able to read and write)
c. Secondary level (from grade 9 to 12)
d. Tertiary level (college and above)
e. Other (specify) _____

Part II

Student's Learning Strategy Scale (to be rated by Students)

The purpose of this scale is to examine students' learning strategies. The responses obtained from the items will be used for educational purposes. The responses will be kept confidential. There is no right or wrong answers. After reading each items, please answer it based on your general experiences. Since the success of this study highly depends on your honesty in rating the scale, you are kindly requested to respond accordingly.

Thank you!

Direction: Following is a list of statements about students learning strategies. Put (✓) in the in the appropriate box given after each statement to indicate the degree to which what the statement expresses is true of you. There is no right or wrong answer.

No	Items	Not at all true of me	Somewhat true of me	Moderately true of me	True of me	Very true of me
1	When I do homework, I try to remember what the teacher said in class. So I can answer the questions correctly					
2	I take time to plan my study schedule					
3	I work hard to get a good grade even when I don't like class					
4	I always try to understand what the teacher is saying even if it doesn't make sense					
5	When I study I set goals to myself					
6	When I study for a test, I practice saying the important facts over and over to my self					
7	I don't give up easily when I don't understand an assignment					

8	It is hard for me to decide what the main ideas are in what I read					
9	I work on practice exercises and answer end of chapter questions even I don't have to					
10	When I read, I try to connect the thing I am reading about with I already know					
11	I outline the chapter in my book to help me study					
12	I try to learn more about something that I don't understand right away so that I will understand it					
13	Even when study materials are dull and uninteresting, I keep working until I finish					
14	When I study, I copy my notes over to help me remember material					
15	I ask myself questions to make sure I know the material I have been studying					
16	When I study for a test, I try to put together the information from class and from the book					
17	Before I begin studying, I think about the things I will need to do learn					
18	When I am reading, I stop once in a while and go over what I have read					
19	I want to read more when I know I have learned something new					
20	When studying, I try to decide what I am supposed to learn rather than just read over the material					
21	When work is hard, I either give up or study only the easy one					
22	I find that when the teacher is talking I think of other things and don't really listen to what is being said					

Appendix-2

1. Distribution of Learning Strategy items in the Scale to minimize response bias.

Learning Strategy Components

- Cognitive Strategy use items

1, 4,6,8,10,11,14,16,20

- Self-regulating items

2,3,5,7,9,12,13,15,17,18,19,21,22

2. Distribution of Students in Dessie Town high schools and the sample size included in the study.

School	Sex	Population		Sample	
Hotie	M	1165	42%	143	36%
	F	827	30%	143	36%
Kidamie Gebeya	M	427	15%	57	14%
	F	363	13%	57	14%
Total		**2782**	**100%**	**400**	**100%**

Note:- From the total sample who did not appropriately respond the questionnaire was 20.