

**ACADEMIC MOTIVATION AND SELF-REGULATED LEARNING AS
PREDICTORS OF ACADEMIC ACHIEVEMENT OF STUDENTS IN
PUBLIC SECONDARY SCHOOLS IN NAIROBI COUNTY, KENYA**

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MAY 2014

DECLARATION

I confirm that this research thesis is my original work and has not been presented in any other university/ institution. The thesis has been complemented by referenced works duly acknowledged. Where text, data, graphics, pictures or tables have been borrowed from other works- including the internet, the sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

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DEDICATION

This thesis is dedicated to my parents; William and Martha, for taking me to school and my wife; Elizabeth and son; Evans for their patience.

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ABBREVIATIONS AND ACRONYMS

AMS	Academic Motivation Scale
A-SRL-S	Academic Self-Regulated Learning Scale
GPA	Grade Point Average
HSD	Honestly Significant Difference
K.C.P.E	Kenya Certificate of Primary Education
K.C.S.E	Kenya Certificate of Secondary Education
MSLQ	Motivated Strategies Learning Questionnaire
OIT	Organismic Intergration Theory
SDT	Self-Determination Theory

ABSTRACT

Nationally, the distribution of secondary school students' performance in public examinations has been skewed towards the lower grades. This poor performance has been majorly attributed to school environmental factors and little has been done on individual psychological factors which may contribute towards students' academic achievement. This study was therefore designed to determine students' academic motivation and self-regulated learning as predictors of academic achievement. The main aim was to determine a prediction model of secondary school students' academic achievement given academic motivation and self-regulated learning. More specifically, the relationship among academic motivation, self-regulated learning and academic achievement was established. Further, sex differences in both academic motivation and self-regulated learning were studied. The self-determination theory and the social cognitive theory of self-regulation formed the theoretical framework. The study adopted an ex post facto research design and was located in Nairobi County, Kenya. The target population was all the year 2012 form three students in public secondary schools in Nairobi County. The sample consisted of 938 form three students selected from 10 public secondary schools. Purposive, stratified and simple random sampling procedures were used in the selection of schools and participants. The study used a questionnaire developed to seek information on participants' biographical data. The Academic Motivation and Academic Self-regulated Learning Scales were adapted to measure academic motivation and academic self-regulated learning respectively. Student's academic achievement was measured by use of examination records obtained from school. Pilot study was conducted on 30 form three students selected from a mixed day public secondary school in Nairobi County. Both descriptive and inferential statistical procedures were used to analyze the data. The results provided evidence that there was a significant relationship among academic motivation, self-regulated learning and academic achievement. Further, it was found that among the domains of academic motivation and strategies of self-regulated learning, intrinsic motivation towards accomplishment and organizing strategy had the highest positive predictive value on academic achievement. Significant sex differences were found with regard to academic motivation and self-regulated learning and they were in favour of boys. Ultimately, students' self-regulated learning was found to have the highest positive predictive value on academic achievement as compared to academic motivation. In the exploratory part of the study, a significant main effect on academic achievement was found between type of school, academic motivation and self-regulated learning. A major implication and recommendation of the study was that, teachers, parents and all stakeholders in education should work together in creating conducive school and home environments for fostering the development of these psychological constructs; academic motivation and self-regulated learning, among students. More specifically, the development of the domains of

academic motivation and types of self-regulated learning strategies found to have a positive predictive value on academic achievement should be emphasized.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter focuses on background to the study, statement of the problem, purpose of the study, objectives of the study, research hypotheses, significance of the study, delimitations and limitations of the study and assumptions of the study. The theoretical and conceptual frameworks as well as operational definitions of terms are also given.

1.2 Background to the Study

Globally, education has been viewed as a key component which contributes to an individual's success in life. When a child joins school, he or she is under pressure from parents and teachers to excel in academics. For years, students have been told, "Study hard!" "Get good grades!" "Go to University!". The reasons for working hard in school, and how to work hard, as well as the factors that predict academic achievement have continued to be areas of interest for students as well many stakeholders in education. Research in these areas has been conducted by educational researchers, psychologists and guidance and counseling professionals and the findings are still inconclusive.

Generally, over the decades and across cultures, education has been used to prepare children for citizenship and to cultivate a skilled workforce in readiness for taking up jobs in a competitive global market. In an effort to achieve these

goals, different societies have been using public examinations. These examinations are majorly administered by an agency outside the school, for instance, Ministry of Education in Kenya. At the secondary school level, the functions of these examinations are diverse and include; acting as gatekeepers guarding entry to higher institutions of learning, certification and selecting students during the choice of their careers (Kellagan & Greaney, 2003). Failure in these examinations has far reaching implications for the student in terms of missing opportunities for further education and even more rewarding life chances.

In Kenya, the Kenya Certificate of Secondary Examination (K.C.S.E) is the second public examination after the Kenya Certificate of Primary Education (K.C.P.E), and, it is done by form four candidates who are finishing the secondary school cycle. However, students' performance in this examination in the past three years has been poor. According to 2009, 2010 and 2011 K.C.S.E examination statistics, out of the total candidates who sat for the examination in each of these years, approximately 27% scored a mean grade of C+ and above. Statistics further revealed that in each year, approximately 43% of candidates nationally obtain D+ and below. The huge disparity in the number of candidates who obtain the top and the bottom grades, imply a skewed distribution towards lower grades.

Nairobi County is among the Counties in Kenya where many candidates have been attaining poor grades in K.C.S.E examination. It has been observed that candidates in Nairobi County public secondary schools who have been attaining the bottom

two grades (D – and E) in K.C.S.E for the years 2009, 2010 and 2011 are approximately 7% and, this is 5% points above the national statistics of 2%.

The skewed performance in K.C.S.E examination is worrying as many candidates continue to miss opportunities in higher education and employment. Siringi (2011) identified poor school admission policies, inadequate staffing, limited learning resources, reduced community support, mismanagement and widespread teachers and students' absenteeism and indiscipline as the main factors leading to the poor performance in most schools. These are environmental factors and nothing is said about individual psychological factors which may immensely contribute to academic achievement. The psychological factors include academic motivation and self-regulated learning, which were investigated in this study.

According to Ajayi, Lawani and Salomi (2012), academic motivation is an important concept in classroom learning and is linked to increased levels of academic achievement. A student who is academically motivated is seen as self determined to succeed in academic work (Gesinde, 2000) and the urge to achieve, that is, the level of motivation varies from one student to another. Furthermore, there are different types of academic motivation. Ryan and Deci (2000) noted that the type of motivation concerns the 'why' of a student's action. For example, a student who is highly motivated to do homework out of curiosity and interest is said to be intrinsically motivated while another student who is motivated to do

homework to procure the approval of the teacher or parent is said to be extrinsically motivated.

Interestingly, there is another student who may not value the homework or feels incompetent to do it and lacks an intention to act. This student is said to be amotivated (Ryan & Deci, 2000). The difference in student's level and type of motivation may explain why some students do better than their counterparts in school despite being exposed to similar schooling experience. The importance of the difference in academic motivation level and type in predicting academic achievement of secondary school students in Nairobi County needed to be investigated in order to help in guiding the students towards getting high test scores in classroom tests and in public examinations.

The interplay between academic motivation and self-regulated learning has been found to be important in predicting a students' academic achievement (Kitsantas, 2002). Kitsantas (2002) refers to self-regulation as the self-generated thoughts, feelings and actions for attaining goals, and, lack of it has been identified as a major cause of underachievement when students are unable to control their own behaviour (Dembo & Eaton, 2000). Self-regulated learners have been found to exercise self-control, self-discipline and self-direction when dealing with academic tasks. As a result, self-regulated learning has become a major focus of educational research in many parts of the world (Tavakolizadeh & Ebrahimi-Qavam, 2011), and this stimulated the design of the present study in Kenya.

The self-regulated learners embark on planning, self-inspection, self-controlling and self-evaluation and thus create conducive learning environments at different stages of their learning (Walters, 2003). Moreover, to enhance comprehension and memory when carrying out academic tasks, self-regulated learners engage in different cognitive strategies, for example, repetition, rehearsal, elaboration and organization. Having effectively employed these strategies, the learner is able to experience a sense of self-worth and independence in doing school work (Tavakolizadeh & Ebrahimi-Qavam, 2011). This leads to increased success in academic achievement.

1.3 Statement of the Problem

Poor academic achievement among learners in public (external) examinations may result to loss of many rewarding life opportunities either for the individual learner or for the society in general. The learner may miss the opportunity to further education while in the long run; the society may not have enough skilled human capital needed to meet the demands for wealth production. Thus, there is need to study the factors that are associated with either high or low academic achievement.

From the foregoing background to the study, it is evident that academic motivation and self-regulated learning have been found to be important variables in predicting students' academic achievement. While some educational researchers have reported the relationship of each of the two variables with students' academic achievement in developed countries, so far no study has been found to have

developed a prediction model which explains the best predictor of academic achievement. For instance, it is not clear between the two variables (academic motivation and self-regulated learning), which is the better predictor of secondary school students' academic achievement.

Investigations by educational researchers in Kenya on the psychological constructs which influence students' academic achievement have focused on academic self-concept, locus of control, attitude towards school subjects, self-handicapping and defensive pessimism and achievement motivation. Thus, academic motivation and self-regulated learning have received little attention, if any and yet they have been reported to have influence on academic achievement of students in developed countries. The central problem of this study was therefore to develop a prediction equation of academic achievement from academic motivation and self-regulated learning of secondary school students' in Nairobi County, Kenya.

1.4 Purpose of the Study

The main purpose of this study was to determine the relative predictive weight of academic motivation and self-regulated learning on academic achievement of secondary school students. The information gained may be used to guide students in internalizing and development of the construct which positively enhances academic achievement. The study also explored if there existed significant gender differences in students' academic motivation and self-regulated learning, so that

appropriate measures could be taken to reduce these differences which may lead to underachievement in examinations.

1.5 Objectives of the Study

The study sought to achieve the following objectives:

- i. To determine the relationship between academic motivation and academic achievement.
- ii. To establish the relationship between self-regulated learning and academic achievement.
- iii. To test if there are gender differences in students' academic motivation and self-regulated learning.
- iv. To establish the prediction equation of academic achievement from academic motivation and self-regulated learning.

1.6 Research Hypotheses

The study was guided by the following research hypotheses:

H_{a1}: There is a relationship between academic motivation and academic achievement.

H_{a2}: There is a relationship between self-regulated learning and academic achievement.

H_{a3}: There are gender differences in students' academic motivation and self-regulated learning.

H_{a4}: There is a significant prediction equation for academic achievement from academic motivation and self-regulated.

1.7 Assumptions of the Study

In this study, the following assumptions were made;

- i. Individual students had different types and levels of academic motivation and made use of different self-regulated learning strategies, which led to different levels of self-regulated learning.
- ii. The participants provided honest responses on the items in the questionnaire.

1.8 Limitations of the Study

The study was limited within a few selected public secondary schools in Nairobi County. The results of the study may therefore not be generalizable beyond the specific population from which the sample was drawn. Moreover, no control group was utilized and all items in the instruments were based on self-report. Thus, it was unavoidable that there may have been a certain degree of subjectivity.

1.9 Delimitation of the Study

The study was delimited to form three students in public secondary schools in Nairobi County. The study focused on two variables that influence academic achievement, that is, students' academic motivation and self-regulated learning. The determinants of students' academic motivation and self-regulated learning such as home environment (parental occupation, education and wealth), school

environment (for example, availability of adequate learning resources) and individual student's factors such as self-efficacy were not investigated. This was informed by the review of the existing literature which mainly focused on the relationship between academic motivation, self-regulated learning and academic achievement.

1.10 Significance of the Study

The findings of this study may be useful to teacher trainers who may realize the importance of equipping teacher trainees with the necessary training skills needed to enhance students' academic motivation and appropriate use of self-regulated learning strategies. This will go a long way in enhancing learners memory and comprehension in academic tasks. Teachers, parents and students may realize the importance of creating a conducive home and school environment for acquisition of the appropriate type of academic motivation and self-regulated learning strategies that enhance academic achievement. In the field of research, the findings of the study may add to the existing literature on the importance of academic motivation and self-regulated learning in predicting students' academic achievement.

1.11 Theoretical Framework

This section comprises two sub-sections. The first sub-section discusses the Self Determination Theory (Ryan & Deci, 1985) and the second one, the Social Cognitive Theory of Self-Regulation (Bandura, 1986).

a. Self Determination Theory (Ryan & Deci, 1985)

According to Deci and Ryan (1985), a major focus of Self Determination Theory (SDT) is to supply a more differentiated approach to motivation, by asking what kind of motivation is being exhibited at a given time. By considering the perceived forces that move a person to act, self determination theory has identified several distinct types of motivation, each of which has specifiable consequences for learning, performance, personal experience and wellbeing (Deci & Ryan, 2000).

A major type of motivation is intrinsic motivation whereby an individual engages in an activity because of the inherent satisfaction of the activity itself. Thus, a student who is intrinsically motivated to learn will participate in academic activities because he or she is interested. Within intrinsic motivation, there are three domains; intrinsic motivation to know, intrinsic motivation to accomplish and intrinsic motivation to experience stimulation. Intrinsic motivation represents the most self determined component of motivation and self determined students will most likely be high academic achievers as they show persistence in academic activities and as a result will experience positive outcomes in form of good grades.

A second type of motivation is extrinsic motivation. Within SDT, Deci and Ryan (1985) introduced a sub theory, called Organismic Integration Theory (OIT), to detail different domains of extrinsic motivation. They include; external regulation which is less self determined in that, a student may engage in an academic activity in order to get a reward or to be praised by the teacher or peers. Another domain of extrinsic motivation is introjected regulation where a student may take on regulations to academic tasks but not fully accepting the said regulations as his or her own. For instance, a student may complete home work in order to avoid letting his or her parents down. Deci and Ryan, (2000) further describe another domain of extrinsic motivation, which is called identified regulation and is more self-determined. For example, a student may engage in a particular academic behaviour/activity because he or she perceives the usefulness of that behaviour, which may include getting higher grades in school and getting admission to study a competitive degree at the University. Within the continuum of learners who are extrinsically motivated to learn, learners expressing identified regulation are more likely to be high academic achievers as compared to learners who are externally regulated and who are more likely to be low academic achievers.

A third type of motivation within the self-determination theory is amotivation which is the most non self determined. A student with this type of motivation will show non regulation of effort towards academic activities. The perceived locus of causality is impersonal and such a student is usually non intentional, non valuing, incompetent and generally demonstrates behaviours which show lack of control

(Deci & Ryan, 2000). In the present study, a student who is amotivated is likely to be a low academic achiever and he/she is likely to demonstrate a limited use of any of the self-regulated learning strategies.

b. Social Cognitive Theory of Self-Regulation (Bandura, 1986)

Bandura proposed a theory of student self-regulated learning based on social cognitive theory. In accordance with Bandura's description, a distinction is made among personal, environmental, and behavioural determinants of self-regulated learning. Thus, self-regulated learning is not determined merely by personal processes but it is assumed to be influenced by environmental and behavioral events in a reciprocal fashion. For example, a student's solution response to an academic problem is assumed to be determined not only by personal perceptions of efficacy but also by such environmental stimuli as encouragement from a teacher and by enactive outcomes, that is obtaining a correct answer to previous problems. Thus, self-regulated learning occurs to the degree that a student can use personal processes to strategically regulate behavior and the immediate learning environment (Zimmerman, 1989).

Moreover, according to Bandura (1986), a student's personal capacity to self-regulate is assumed to depend on learning and development. Thus, older and more experienced students are believed to be better able to self-regulate themselves during learning than younger inexperienced ones. The older students can make use of appropriate self-regulation strategies in constructing and selecting courses of

actions which improve their academic achievement. The strategies used by students to optimize personal regulation include, organizing and transforming, rehearsing and memorizing, goal setting and planning. Further, strategies such as self-evaluation are used to enhance behavioural functioning while strategies of environmental structuring, seeking information, reviewing and seeking assistance are intended to optimize the student's immediate learning environment (Zimmerman, 1989).

The social cognitive theory further assumes that self-efficacy is a crucial component of self-regulated learning. Efficacy beliefs will influence how students feel, think, motivate themselves and behave (Bandura, 1986). Research shows that students with greater sense of perceived self-efficacy display more of the behavioural and environmental determinants of self regulated learning and are more likely to set higher goals for themselves and have a firmer commitment to them. This is a characteristic of learners who are intrinsically motivated and notably high academic achievers. Learners who are extrinsically motivated and amotivated are more likely to be less self-determined and thus, their use of self-regulated learning strategies will be limited compared to the intrinsically motivated learners.

Based on the two theories, that is, Self Determination Theory (Ryan & Deci, 1985) and Social Cognitive Theory of Self-Regulation (Bandura, 1986), it is evident that students have different types of academic motivation which determine their

academic outcomes. For instance, intrinsically motivated learners are usually high academic achievers compared with the extrinsically motivated and amotivated learners who are likely to be low academic achievers. Further, given that effective use of academic self-regulated learning strategies is important in enhancing a student's academic achievement, it is expected that self-regulated learning and type of academic motivation are interdependent. This means that learners who are intrinsically motivated are likely to use self-regulated learning strategies more effectively and may be found to be high academic achievers. Conversely, learners who are extrinsically motivated are more likely to have limited use of self regulated learning strategies and are therefore likely to be low academic achievers.

1.12 Conceptual Framework

Figure 1.1 shows that the main study variables are; academic motivation, self-regulated learning and academic achievement. The anticipated interrelationship among these variables is also shown. A student's academic achievement may be influenced by the type and level of academic motivation and use of self-regulated learning strategies. A student with a high score on academic motivation is likely to be more self determined and may make more use of self regulated learning strategies. This student is most likely going to be a high academic achiever. On the other hand, a student with a low score on academic motivation is likely to be less self- determined and makes limited use of self- regulated learning strategies and as a result is likely to be a low academic achiever. Gender differences in type of

academic motivation and use of self-regulated learning strategies are likely to be found.

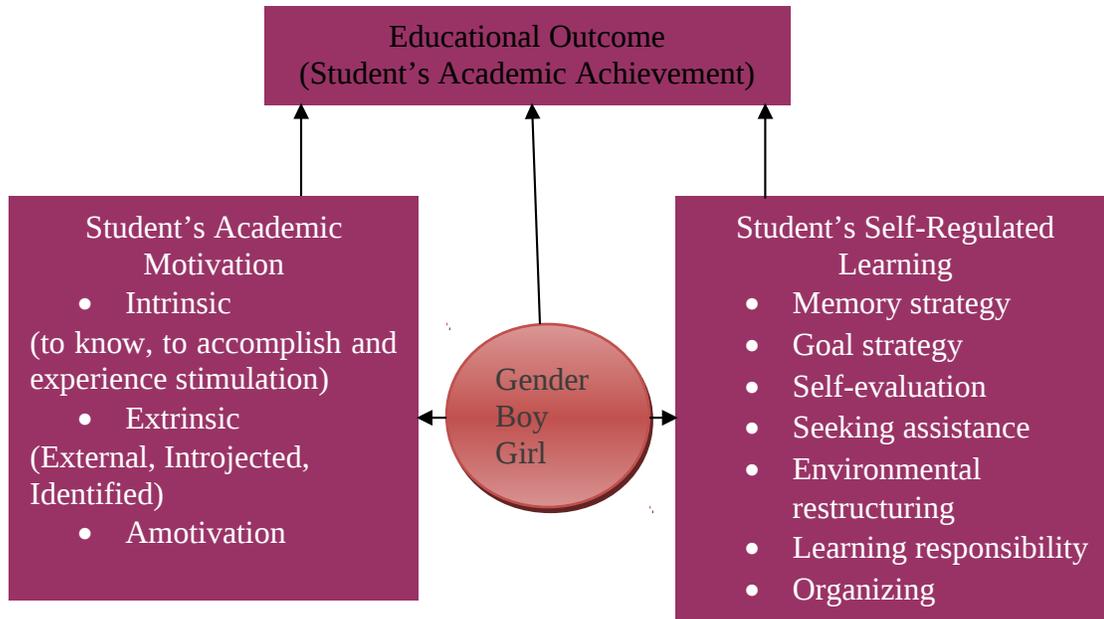
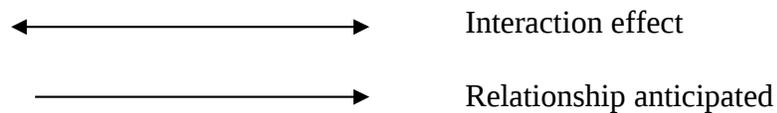


Figure 1.1 Conceptual Framework



1.13 Operational Definition of Terms

Academic Achievement: The standardized mean T- score a student obtained at the end of term two school examination.

Academic Motivation: A student's desire to learn or liking of learning-related activities.

Amotivation: Type of motivation where a student may not value academic activities or feels incompetent to do them and lacks an intention to act

Extrinsic Motivation: Type of motivation whereby the perceived locus of causality is external and regulatory styles include; external regulation, introjected regulation and identified regulation.

Intrinsic Motivation: Type of academic motivation whereby the perceived locus of causality is internal and the student engages in academic activities because of interest, enjoyment and inherent satisfaction derived from doing those activities.

Level of Academic Achievement: This was determined by the participants' academic achievement T-score.

Level of Academic Motivation: This was determined by the participants' academic motivation score as measured by the Academic Motivation Scale.

Level of Self- Regulated Learning: This was determined by the participants' self-regulated learning score as measured by the Academic Self-Regulated Learning Scale.

L8

Self-Regulated Learning: A student's capability of active participation in the learning process by using different learning strategies.

Self-Regulated Learning Strategy: The specific learning strategy used by a self-regulated student. They include; Memory strategy, goal setting, self-evaluation, seeking assistance, environmental structuring, learning responsibility, planning and organizing.

Types of Academic Motivation: These were classified as; intrinsic, extrinsic and amotivation.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, studies on the relationship among types of academic motivation, self-regulated learning and academic achievement are reviewed. Further, a review of studies on the relative prediction of academic motivation and academic self-regulated learning on academic achievement is given. Finally, a review of studies on the difference in academic motivation and academic self-regulated learning between boys and girls is presented.

2.2 Relationship between Academic Motivation and Academic Achievement

A few studies were found to have directly investigated the relationship between academic motivation, more specifically, the type of academic motivation (intrinsic, extrinsic and amotivated) and secondary school students' academic achievement. In a recent study, Matthews, Hoessler, Jonker & Stockley (2013) studied academic motivation in calculus. The sample consisted of 650 first-year university students enrolled in an engineering calculus course at a mid-sized Canadian University. In order to understand the relationships between students' approaches to studying, their exam performance and academic motivation, the researchers explored three main research questions and one of them was focused on the relationship between engineering students' academic motivation and their performance(overall, mechanical, and conceptual) in a calculus course. To examine the relationship,

multiple regressions were applied to students' final exam, mechanical section, and conceptual question grades.

The findings showed that across all the measures of academic performance, high academic motivation as indicated by greater self-determination predicted higher grades. When the regression of final exam scores was examined against the three combined motivation scales (intrinsic motivation, extrinsic motivation and amotivation), it was found that the students who were more extrinsically motivated and those who were amotivated had lower final exam scores. Students' intrinsic motivation, however, did not predict their academic performance. Furthermore, when academic motivation was refined into the seven sub-scales, it was observed that intrinsic motivation to accomplish was the only predictor of better overall final exam performance, whereas students with higher intrinsic motivation towards stimulation, extrinsic motivation toward introjected regulation, and amotivation did poorly on the exam overall.

Although the findings of this study revealed the relationship between academic motivation, subscales/domains of academic motivation and students' general academic achievement, the sample was based on university students and there was need to compare the findings when secondary school students were used. More over, the study was based on a sample drawn from a developed country and given that Kenya is a developing country; a similar study was needed in order to report on the cross-cultural differences and similarities if any.

In a related study among primary school pupils, Othman and Leng (2011) examined the relationship between self-concept, intrinsic motivation and self-determination and academic achievement. The sample of the study was 200 students in standard 5 and standard 6 from a Chinese primary school in Johor, Malaysia. Data was collected using a self-developed set of questionnaire. Research findings showed that, correlations among intrinsic motivation, self-determination and academic achievement were all significantly low and negative. However, this study did not report the relationship between the specific domains of intrinsic motivation (intrinsic motivation to know; towards accomplishment; to experience stimulation) and academic achievement. In addition, the relationship among extrinsic motivation, amotivation and academic achievement was not reported and this was a major focus of the present study.

Matuga (2009) investigated self-regulation, goal orientation, and academic achievement of secondary school students in online university courses in Ohio, America. The sample consisted of 40 students and the results showed that high achieving students had the highest means on the motivation subscale which measured goal orientation, intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and test anxiety. This indicated that there was a positive relationship between motivation and academic achievement. However, the relationship between academic achievement and the specific types of academic motivation was not reported.

Chowdhury & Shahabuddin (2007) reported the findings of a study on self-efficacy, motivation and their relationship to academic performance of Bangladesh College students. More specifically, the study was designed to examine how self-efficacy, motivation and academic performance interacted among students enrolled in an introductory marketing course. Data was collected from 125 students through a self-administered questionnaire. Empirical results revealed that there was a statistically positive correlation between intrinsic motivation and performance (0.33) and, extrinsic motivation and performance (0.25).

However, these findings were based on college students and it was important to design a similar study in Kenya, more specifically among secondary school students in order to compare the results. In Bangladesh, compared to extrinsic motivation, intrinsic motivation was found to have the highest positive relationship with academic achievement of college students. This finding inspired the design of current study, where the researcher investigated the relationship between types of academic motivation (intrinsic, extrinsic and amotivation) and academic achievement.

In another study, Cokley, Bernard, Cunningham & Matoike (2001) did a psychometric investigation of the Academic Motivation Scale using a United States sample. The participants were 263 students enrolled in undergraduate psychology courses at a large Midwestern university. It was hypothesized that students with higher GPAs would get higher scores on intrinsic motivation than

students with lower GPAs. Conversely, students who scored high on amotivation subscale were expected to have lower GPAs. However, the results were not conclusive as no significant relationship was found between students' intrinsic motivation and GPA. Further, the relationship among extrinsic motivation, amotivation and academic achievement was not reported.

Karsenti & Thibert(1995) presented findings of a study on the type of motivation which was truly related to school achievement. The sample consisted of 1428 (714 males and 714 females) students from both junior and senior levels of an inner city high school in Canada. The results of the study demonstrated that academic motivation was significantly related to school achievement (GPA). Surprisingly it was found that amotivation was the type of motivation most significantly related to GPA, for both boys and girls, across all levels of secondary schooling. This conclusion informed the design of this study in order to compare the findings with a similar sample drawn from Kenya.

In Kenya, no study has been found to have directly investigated the relationship between academic motivation and academic achievement of secondary school students. However, the expected relationship can be inferred from studies which have investigated variables such as achievement motivation. Omondi (2005) investigated the relationship between achievement motivation and performance in English composition writing among secondary school students in Nyando District. A sample of 105 form three students participated in the study. The findings

showed that there was no significant relationship between achievement motivation and performance. The students who performed highly in the achievement test had high motivation levels as reflected through high Attitude Motivation Index (AMI). This scenario was the same with those who did not perform well in achievement test as they too had high AMI. It is important to note that, motivation was investigated as a global concept and the researcher ignored that there were several types of motivation within the global concept of motivation. The different types of motivation may show significant relationship(s) (either positive or negative) with students' academic achievement and this will be investigated in the current study.

2.3 Relationship between Self-regulated Learning and Academic Achievement

Majority of the studies which investigated the relationship between self-regulated learning and academic achievement were done in the developed countries. Loong (2012), revealed the findings of a study on self-regulated learning strategies and their effects on Mathematics performance of pre-university students in Malaysia. The study examined any differences in self-regulated learning strategies between two groups of international students in Monash university. One group had 58 international students in the first semester and the second group had 18 international students in their second and third semesters. The Learning and Study Strategies Inventory (LASSI) was used to measure the use of self-regulated learning strategies, and the final score of the most manageable Mathematical subject was used to measure their Mathematics performance. The result revealed

that the second and third semester international students' Mathematics performance was not significantly predicted by self-regulated learning strategies.

This finding was based on university students and the current study was focused on secondary school students. Furthermore, the LASSI questionnaire was used to measure self-regulated learning unlike in the present study where self-regulated learning was measured by use of the Academic Self-regulated Learning Scale. It will therefore be interesting to compare the findings given the difference in study location, sample and instruments.

Matuga (2009), in his study of self-regulation, goal orientation, and academic achievement of secondary students in online university courses found that there existed differences in self-regulation between high achieving and low achieving students. Low achieving students had the highest scores on the self-regulation subscale, than either the high achieving or average achieving students at the start and at the conclusion of the course. The strategies of self-regulated learning measured include; rehearsal, elaboration, organization, critical thinking, metacognitive regulation, resource management, effort regulation, time and study environment management, peer learning and help seeking. It is important to note that the relationship between the specific self-regulated learning strategies and academic achievement was not investigated and this is a major objective of the current study.

In a related study, Juanita (2008) investigated the relationship between self-regulated learning and academic achievement in middle school students. Eighty-nine middle school students in South Carolina completed a modified version of the Motivated Learning Strategies Questionnaire (MSLQ). The results showed that there were no significant correlations between self-regulated learning and academic achievement. These results contradicted earlier findings by Cakiroglu, Sungur and Yumusak (2007) who investigated Turkish high school students' Biology achievement in relation to academic self-regulation. A sample of 519 tenth-grade students participated in the study. Results of multiple linear regression analyses showed that; intrinsic goal orientation, task value, rehearsal strategy use, organization strategy use, management of time and study environment, and peer learning contributed significantly to the prediction of achievement scores.

Nevertheless, Kitsantas (2002) did a study on the effect of self-regulatory processes on test preparation and performance of college students in America. A sample of 62 college students was interviewed on their self-regulatory processes where the results showed that high test scorers reported more self-regulated processes than did low test scorers. Further analysis on the specific self-regulatory strategies using t- test for independent samples revealed that, high test scorers outperformed low test scorers in goal setting, organizing, planning and transforming notes, and help seeking. There were also numerical differences in the sample means indicating that high test scorers were more likely to use self-regulatory processes of monitoring and keeping records, self-consequences, or environmental

structuring but these differences were not statistically significant. These results implied that a relationship exists between use of self-regulated learning strategies and academic achievement. The nature of this relationship could only be understood through a research study.

In a related study, Chen (2002) designed a study to investigate self-regulated learning strategies and achievement in an introduction to information systems course. The subjects were 197 students in a business information systems course in USA. The purpose of the study was to investigate the self-regulated learning strategies that were related to academic achievement. The MSLQ was used to measure self-regulated learning strategies. Surprisingly, the findings revealed that peer learning had a negative effect on learners' achievement.

In Kenya, although educational researchers have not directly investigated the relationship between self-regulated learning and secondary school students' academic achievement, this relationship can be inferred from a few related studies. Wawire (2010) designed a study on predictors and consequences of self-handicapping and defensive pessimism among students in selected high schools in Nairobi province, presently known as Nairobi County. The sample consisted of 400 form four students selected from 8 schools. In the study it was hypothesized that cognitive strategies (self-handicapping and defensive pessimism) predict self-regulation. Results from multiple regression analysis revealed that cognitive strategies were significant predictors of self-regulation. Given that cognitive

strategies are among the factors expected to influence students' academic achievement, it was expected that self-regulation strategies would have a significant relationship with academic achievement.

In a related study, Lina (2006) investigated teaching strategies and their effect on performance in Geography in selected public secondary schools in Nairobi province of Kenya. The sample consisted of 70 form three students selected from nine secondary schools. One of the objectives of the study was to establish the learners' opinion about the teaching methods in use. Seventy five percent of the participants responded that the class was pleasant if they were allowed to participate in it and where everybody worked together and regulated their learning activities. Further, only 19.7% of the respondents reported to have enjoyed classes when the teacher was in total control. This finding indicated that students would like to be active in their own learning by choosing learning strategies and that learning at all cognitive level is beneficial when learners self-regulate their academic activities with the help of the teacher (Lina, 2006). Thus, it is expected that a significant positive relationship existed between self-regulated learning strategies and academic achievement. The current study explored the actual nature of the relationships.

2.4 Gender Differences in Students' Academic Motivation and Academic Self-regulation

2.4.1 Gender Differences in Students' Academic Motivation

Many studies have investigated sex differences in students' academic motivation and the results were inconsistent and inconclusive. In Greece, Barkoukisa, Tsorbatzoudis, Grouiosa and Sideridisb (2008), conducted a study to assess the validity and reliability of the Greek version of the AMS which measured intrinsic, extrinsic motivation and amotivation. The sample consisted of 911 high school pupils ranging in age from 12 to 16years. The students of the sample were attending the eighth and ninth grades of five high schools. The results revealed the existence of gender differences regarding intrinsic motivation to know and amotivation. More specifically, females were higher in intrinsic motivation to know, and lower in amotivation, compared to males. However, the study did not reveal if there were gender differences with regard to extrinsic motivation an aspect of interest to the present study.

Rusilo and Arias (2004) investigated gender differences in academic motivation of secondary school students in Spain. A sample of 251 students was selected from the second cycle of mandatory secondary education. The results showed the existence of gender differences in extrinsic motivation with girls showing lower levels. Interestingly, even though this study revealed that boys were more extrinsically motivated, gender differences in the specific domains of extrinsic

motivation (external, introjected and identified regulation) were not reported and this was a major focus of the present study.

Gilles and Karsenti (1996) presented the findings of a study on motivation profile of adolescent boys and girls taking into consideration gender differences throughout schooling. The study subjects were 538 elementary-school students, 1,519 high-school students, and 2,434 junior-college students from the Montreal, Canada. Results supported the existence of gender-related differences across all levels of schooling. From grade 6 to junior college, girls were significantly more self-determined and less amotivated towards academic activities than boys who, in contrast, were significantly less self-determined. It is important to note that these findings were based on overall academic motivation score which was used to calculate the self-determination index. As a result, gender differences on the specific types of academic motivation were not reported, more specifically for secondary school students. It was interesting to investigate these differences among secondary school students in a developing country which was an objective of the current study.

2.4.2 Gender Differences in Students' Self-regulated Learning

Gender differences in students' self-regulated learning have interested researchers over time. Among them are Al asmari and Ismail (2012) who reported the findings of a study on self-regulated learning strategies as predictors of reading comprehension among students of English as foreign language. One of the primary

aims of the study was to examine whether there were significant differences between males and females in use of self regulated learning strategies. The participants of this multi-level study included 248 (112 males and 136 females) undergraduate students across the 2nd, 4th, 6th, and 8th levels majoring in English at a Saudi Arabian University. The results revealed that there were differences between males and females in the use of self regulated learning strategies in favour of females. These results were based on undergraduate students unlike in the present study where the participants were secondary school students. Further, gender differences in the specific self-regulated learning strategies were explored.

In an earlier study, Zimmerman and Martinez-Pons (1989) investigated student differences in self-regulated learning. Self-regulated learning interview schedule was used to collect data. Forty-five boys and 45 girls of the 5th, 8th, and 11th grades from a school for the academically gifted and an identical number from regular schools in Newyork were asked to describe their use of 14 self-regulated learning strategies and to estimate their verbal and mathematical efficacy. The groups of students from both schools included Whites, Blacks, Hispanics, and Asians. The results showed that girls displayed more goal-setting and planning than boys. With regard to students' keeping records and monitoring, significant differences were found by sex. Girls kept records and monitored more frequently than boys. Further, girls surpassed boys in environmental structuring. These results were based on elementary school children in a developed country. It was important to investigate if these gender differences in the use of self-regulated learning

strategies exist among secondary school students in a developing country and the relationship with academic achievement.

In Ethiopia, Habte (1997) conducted a study among elementary school pupils in Awassa and the purpose was to examine sex and grade-level differences in motivational and self-regulated learning strategy components. A total of 680 subjects in grades 5,6,7, and 8(170 students from each grade-level among which males, 325 and females, 314) were randomly selected on the basis of their 1996/97 academic year first semester GPA (upper 27% and lower 27%). The results indicated statistically significant sex differences in self-competence, cognitive strategy use and self-regulation. All significant differences were observed to be in favour of males. This is contrary to the findings of other studies in developed countries which found significant gender differences in use of self-regulated learning strategies and the differences were in favour of females.

In another study in Ethiopia, Gameda (1996), investigated motivational orientation, learning strategy and academic achievement among high school students in Northern Soma. The sample consisted of 391 boys and 366 girls from 5 randomly selected secondary schools. Statistically, significant gender differences were found in self-efficacy, test anxiety, cognitive strategy use and self-regulation. All significant differences were in favour of males. However, the gender differences in the specific self-regulated learning strategies were not reported and this was among the objectives of the current study.

2.5 Prediction of Academic Achievement from Academic Motivation and Self-regulated Learning

Scanty studies have been done to investigate the relative predictive weight of academic motivation and academic self-regulation on students' academic achievement. In a related study, Loong (2012) conducted research on self-regulated learning between low, average and high Mathematics achievers among pre-university international students in Malaysia. The main objective of the study was to compare the use of self-regulated learning strategies between low, average and high Mathematics achievers for both home and international students. The use of self-regulated learning strategies was measured by the Learning and Study Strategies Inventory (LSSI), while their Mathematics performance was measured by the final score of the most manageable mathematical subject in the pre-university program. The sample consisted of 80 home students and 76 international students. The results revealed that for all the students regardless of educational and cultural background, attitude towards study and test taking strategies had the most significant effects on performance in Mathematics. Thus, compared with other factors under study, self-regulated learning was not reported to be a significant predictor of academic performance. It was interesting to design the current study in order to investigate self-regulated learning together with other factors such as academic motivation, and, report their relative predictive weight on academic achievement.

In Nigeria, Akinsanya and Ajayi (2011) studied the relative effects of parents' occupation, qualification and academic motivation on students' achievement in senior secondary school Mathematics. Two thousand and four hundred students from 60 schools were involved. The result revealed that the effect of academic motivation had the least effect among the variables which exerted significant effects on students' academic achievement in Mathematics. From these results, there was a need to further investigate the relative effect on academic achievement given academic motivation and other variables such as self-regulated learning.

In another study carried out on college students in United Arab Emirates (UAE), Al Khatib (2010) reported that among the seven subscales of the MSLQ, four of the dependent variables were significant predictors of students' academic performance. Self-efficacy had the largest beta weight, $\beta = .285$, $p < .01$ indicating that this variable made the strongest contribution to explaining the dependent variable variance (academic performance) when all other variables in the equation were held constant. The beta coefficient of self-regulated learning was ($\beta = .232$, $p < .01$) and it was the second strongest contributor to explain the variance in the dependent variable. The third contributor to explaining the dependent variable was intrinsic goal orientation with a beta weight of $.224$, $p < .001$. In this study, the conclusion was that self-regulated learning was better than academic motivation in predicting students' academic achievement. However, these results were based on college students and therefore, there was need to investigate the relative predictive value of these variables on secondary school students' academic achievement.

Downing & Ning (2010) conducted a longitudinal study on the reciprocal relationship between motivation and self-regulation. The study adopted the social cognitive perspective and examined the reciprocal interplay between motivation and self-regulation constructs (as measured by the Learning and Study Strategies Inventory) in influencing academic performance. Based on two waves of measurements obtained from a large sample of undergraduates from a university in Hong Kong, a cross-lagged structural equation model identified significant reciprocal effects whereby students' self-regulation predicted their subsequent motivation. After controlling for prior academic achievement, student motivation was also found to be the strongest predictor of academic performance. Since these findings were based on university students the current study wished to investigate the relative predictive power of the two predictor variables (academic motivation and self-regulated learning) at the secondary school level.

In another study done in Ethiopia on elementary school pupils, Habte (1997), found that the magnitude of motivational and self-regulated learning strategy components in combination showed significant relationships with academic achievement in all grade-levels. Earlier on in Ethiopia, Gameda (1996) had reported that the motivational and learning strategy components, when combined together had statistically significant relationships with academic achievement in all grades. However, these studies did not reveal which among the variables was the

better predictor of students' academic achievement between the two variables, and this was the main purpose of the current study.

2.6 Summary of Review of Related Literature

From the foregoing review of related literature, it has been observed that, majority of the studies reviewed on academic motivation, academic self-regulated learning and academic achievement were done in developed countries. More so, many of these studies were done among university, college and elementary school students with limited studies focusing on students in secondary schools. Furthermore, the findings reported on studies on relationship between the predictor variables (academic motivation and academic self-regulated learning) and academic achievement have been contradicting and inconclusive. Thus, there was need for a study to be conducted in secondary schools in Kenya, in order to contribute to understanding the importance of these two variables, that is, academic motivation and self-regulated learning in predicting academic achievement.

Based on the literature reviewed, the following predictions are made;

- i. There is a significant and positive relationship between academic motivation and academic achievement.
- ii. There is a significant and positive relationship between self-regulated learning and academic achievement.

- iii. There are significant gender differences in academic motivation and self-regulated learning in favour of boys.
- iv. There is a significant prediction equation of academic achievement from academic motivation and self-regulated learning.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents a description of the research methodology, more specifically, the research design, research variables, location of the study, population, sampling techniques and sample size determination, research instruments, data collection, logistical and ethical considerations and finally, data analysis.

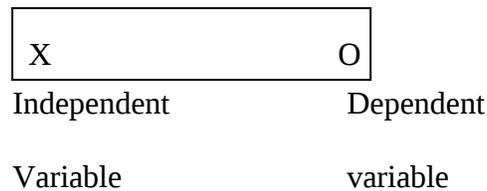
3.2 Research Design and Locale

3.2.1 Research Design

An ex post facto research design was used. According to Ary, Jacobs, Razavieh and Sorensen (2009), ex post facto research is conducted after variation in the variable of interest has already been determined in the natural course of events. This research design is useful when investigating cause-effect relationships between independent and dependent variables in situations which do not permit randomization and manipulation of variables. Thus, ex post facto research design was considered suitable for this study because it was not possible to manipulate the independent variables.

According to Cohen, Lawrence and Keith (2003) there are two kinds of designs in ex post facto research. They include; the correlational which was adopted in this study and the criterion group study. The correlation study involves the collection of two sets of data, one which will be retrospective, with a view of determining the

relationship between them. The basic design of such a correlation may be represented as;



Mutweleli (2009) noted that when a relationship is found between the two variables, there are three possible interpretations;

- i. That the variable X has caused O;
- ii. That the variable O has caused X; or
- iii. Some third unidentified, and therefore unmeasured variable has caused X and O. This is normally referred to as the third variable problem.

The third variable problem presents a major weakness of ex- post- facto research design. Kerlinger (1964) suggests, it is impossible to isolate and control every possible variable, or know with absolute certainty which is the most crucial variable. However, this design has a major advantage in that it meets an important need of the researcher where the experimental approach is not possible. Cohen et al., (2003), adds that ex- post- facto research is a valuable exploratory tool and more so, when possible cause and effect relationships are being explored, as is the case in this study.

3.2.2 Research Variables

In this study, the main independent/ predictor variables were students' academic motivation and self-regulated learning. Academic motivation was measured by use of Academic Motivation Scale with scores ranging from -18 and 18. Scores from -7 to -18 indicated low level of academic motivation, while scores from -6 to 6, and 7 to 18 indicated average and high level of academic motivation respectively. Self- regulated learning was measured by use of Academic Self-Regulated Learning Scale. The minimum and maximum scores a respondent would obtain were 54 and 216 respectively. Scores falling between 54 to 107 indicated low level of self regulated learning while scores ranging from 108 to 161 and 162 to 216 represented average and high level of self-regulated learning. Gender of the participants was treated as a categorical variable.

The dependent/response variable was the students' academic achievement which was measured in terms of total scores obtained from school records for subjects done at the end of term two examination. The scores were then converted to T-scores. A T- score is a standard score with a mean of 50 and a standard deviation of 10. To get the T- score value, the scores obtained were first converted to standard Z-score and then transformed to T scores by the formula; $T = 10(Z) + 50$. T-score values of between 60 to 80 were considered as high level of academic achievement where as T- score values of between 40 to 60 and 20 to 40 were considered as falling in average and low levels of academic achievement.

3.2.3 Locale

The study was carried out in Nairobi County. Nairobi is the capital and largest city in Kenya and occupies around 150 square kilometers. It has an estimated cosmopolitan urban population of between 3 to 4 million. In total, there were 77 public secondary schools at the time of the study but only 58 schools had up to form four class. According to the 2009, 2010 and 2011 K.C.S.E statistics, out of the maximum 12 points, the Nairobi County combined mean score was approximately 6 which is the equivalent to a mean grade of C (plain). Given that the minimum mean grade for university admission is C+, the general academic achievement of students in public secondary schools in Nairobi County may be considered to be poor by many stakeholders in the education sector who expect secondary school students to excel in their studies and later on join universities and be transformed to skilled manpower for economic productivity.

Statistics obtained from the Nairobi County Director of Education's office, showed that in the past three years (2009, 2010 and 2011) the cumulative percentage of schools in Nairobi County which managed a mean grade more than C+ (plus) is approximately 27 percent. This percentage is slightly below the national cumulative percentage of 29.12, for the year 2011 as shown in Table 3.1.

Table 3.1

Kenya Certificate of Secondary Education Overall National Grade Summary for 2011

Gender	A	A-	B+	B	B-	C+
Male	1315	6322	11150	14793	18344	22474
Female	615	2471	5240	8151	11771	16712
All	1930	9063	16390	22944	30115	39216
Cum.Total	1930	10993	27383	50327	80442	119658
%age	0.47	2.2	3.99	5.58	7.33	9.55
Cum. %age	0.47	2.67	6.66	12.24	19.57	29.12

Source: KCSE Essential Statistics (2012)

Key: Cum. Total- Cumulative Total, %age- Percentage, Cum.%age – Cumulative Percentage

Further analysis using the K.C.S.E results obtained from the Nairobi County Director of Education office, revealed that a massive 41 percent of the secondary schools in Nairobi County managed a mean grade of D+ (plus) and below. The high percentage of students obtaining low grades necessitated the choice of location of this study in Nairobi, so as to help understand some of the possible psychological factors related to academic achievement that have not been put into focus yet very crucial to learning.

Nairobi being the capital city of Kenya, it is possible that students are exposed to many factors associated with city life. For instance students can access unlimited internet at cyber cafés; entertainment spots are within reach and generally interesting commercial promotions targeting adolescents are all over the city.

These factors may interfere with the students' academic motivation and self-regulated learning; hence limit active participation in classroom learning.

3.3 Population

The target population composed of all the year 2012 form three students in public secondary school in Nairobi County. The accessible population was form three students from 58 public secondary schools. The choice of the schools was based on the fact that they had presented form four candidates in the past three national examinations (year 2009, 2010 and 2011), which was one of the criteria for inclusion in the study. These schools also had many students enrolled in form three which helped in meeting the required sample size. According to statistics obtained from Nairobi County Director of Education office, in the year 2012, there was a total of 9441 (5455 boys and 3986 girls) form three students in Nairobi County.

Form three students were preferred because by the time of this study they had been in secondary school for about three years and had selected the subjects for K.C.S.E examination. These students more than ever before are expected to be getting more serious with their studies. Academic motivation and self-regulated learning are necessary components of self-discipline that goes along with hard work in studying.

Bandura (1986) argued that a student's personal capacity to self-regulate is assumed to depend on learning environment and level of development. Thus, it is expected that in readiness for end of term three examination and K.C.S.E, which is

one year away, form three students have already adopted particular academic self-regulated learning strategies in line with the type/domain and level of academic motivation they have. The knowledge gained in establishing the relationship among academic motivation self-regulated learning and form three students academic achievement will help in guiding the students in the development of relevant and appropriate level and type of academic motivation and self-regulated learning strategies. This is expected to improve academic achievement while in form four.

3.4 Sampling Techniques and Sample Size Determination

3.4.1 Sampling Techniques

Three types of sampling procedures were employed; purposive sampling, stratified sampling and simple random sampling. Purposive sampling was used to select the schools and form three classes. The schools that were purposively selected were further selected using stratified sampling. The schools were stratified into five categories representing boys' boarding, boys' day, girls' boarding, girls' day and mixed day. Simple random sampling was used to select two boarding schools for boys, two boarding schools for girls, two day schools for boys, one day school for girls and three mixed day schools. In total, ten schools were selected to participate in the study.

The sample consisted of 938 participants obtained through simple random sampling procedures. To get the required number of participants per school, the

researcher first obtained the class list of all the form three students. Secondly, paper folds equivalent to the total number of form three students in the school were prepared. Thirdly, paper folds equal to the targeted number of participants in the school were written 'yes' and the rest left blank. The papers were then placed in a basket and thoroughly mixed. The students who were already assembled in the school assembly hall were asked to pick a paper fold randomly. The students who picked paper folds written 'yes' were requested to remain in the assembly hall while their counterparts who picked blank paper folds were requested to go back to their class. The students who remained were then given code numbers guided by their school admission number. This was necessary since each participant's academic achievement was to be obtained from the school records.

More specifically, a total of 204 participants were selected from the boy's boarding schools, that is, 102 participants from each school. In the girls' boarding category, 108 girls were selected from each school, giving a total of 216. A total of 160 participants were selected from the boys' day category. From the girls' day category, a total of 70 participants were selected from one school. Finally, in the mixed day category, a total of 180 boys and 108 girls were selected to participate in the study.

3.4.2 Sample Size Determination

The actual sample size of the schools and the participants in the study is presented in Table 3.2.

Table 3.2***Sampling Frame***

Type of School	Population			Sample Size		
	Schools	Students		Schools	Students	
		Boys	Girls		Boys	Girls
Boys Boarding	9	2041	-	2	204	-
Boys Day	10	1588	-	2	160	-
Girls Boarding	11	-	2141	2	-	216
Girls Day	6	-	672	1	-	70
Co-educational	21	1766	1083	3	180	108
day						
Co-educational	1	60	90	-	-	-
Boarding						
Sub-total	-	5455	3986	-	544	394
Total	58	9441 (100%)		10(17%)	938 (Appr.10%)	
		(100%)				

Key: Appr. – Approximately

Source: County Director of Education Office, Nairobi

Data in Table 3.2 show that the sample size for schools and students was approximately 17 % and 10 % respectively. According to Gorard, (2001), a sample of between 10 and 20 percent is considered appropriate.

3.5 Research Instruments

Two research instruments were used in this study, a questionnaire and document analysis.

3.5.1 Questionnaire

The questionnaire was used to collect data on the participants' demographic characteristics, academic motivation and academic self-regulated learning scores.

To achieve this, the questionnaire was divided into three parts. Part I consisted of questions on the participant's personal information (gender and age), school characteristics (name of school, type of school, that is, whether boys' boarding, girls' boarding, boys' day, girls' day or mixed/ co-education day). Part II sought information on participants' academic motivation using the Academic Motivation Scale (AMS). In Part III there was the Academic Self-Regulated Learning Scale (A-SRL-S) which sought information on participants' self-regulated learning. A More description of the Academic Motivation Scale and the Academic Self-Regulated Learning Scale is given next.

a. Academic Motivation Scale - High School Version

Academic motivation of the participants was measured by the Academic Motivation Scale (High School version) developed by Vallerand, Pelletier, Blais, Briere, Senecal, and Vallieres (1992). The researcher sought permission of the use of this scale from the authors. The authors agreed and the scale was therefore adapted. Using information from pilot study modifications were made to suit the participants in the present study. The pilot study was carried out on a random sample of 30 form three students (15 boys and 15 girls) from a mixed day public secondary schools in Nairobi County. This school was not included in the main study. The pilot was done in order to pretest the questionnaire for the purposes of ensuring clarity of instructions and items and determining their validity and reliability.

According to Vallerand, et al (1992), the AMS is based on self-determination theory and has 28-items divided into seven subscales, reflecting one subscale of amotivation, three ordered subscales of extrinsic motivation (external, introjected, and identified regulation), and three distinct, unordered subscales of intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation). The items in each subscale were rated on a seven point scale ranging from 1 = totally disagree to 7 = totally agree. Each subscale consisted of four items. Thus, subscale scores could range from 4 to 28. A high score on a subscale indicated high endorsement of that particular type of academic motivation. A full description of the scale and the scoring procedure is given in appendix II.

Using information from the pilot study, the items which were in the original AMS and were found to confuse the participants were modified. For instance, item number one on the AMS was modified to include a K.C.S.E certificate as opposed to the high school degree which was in the original scale. The content validity of the AMS was ensured through peer review whereby only items which were relevant to academic motivation were included. Vallerand et al., (1992) reported that the AMS had construct validity which was determined by assessing correlations of the subscales and correlations between the subscales and motivational antecedents and consequences.

The Reliability of the AMS was also reported by Vallerand et al., (1992). The internal consistency for the seven subscales assessed during the development of

the English version of AMS, was found to be between 0.83 and 0.86. Given that these reliability coefficients were obtained using a sample in developed countries, the pilot study was used to determine the internal consistency of the instruments for the current sample and location in a developing country. The reliabilities obtained using measures of internal consistency, more specifically the Cronbach's Alpha reliabilities for the AMS are given in Table 3.3. The seven subscales seen in Table 3.3, show good reliabilities although less than those measured by Vallerand et al, (1992). The reliabilities for intrinsic motivation combined, extrinsic motivation combined and Academic Motivation Scale were 0.80, 0.76 and 0.80. These reliabilities co-efficients were considered to be high enough to warrant the use of the Academic Motivation Scale in the local settings.

Table 3.3

Cronbach's Alpha reliabilities for the AMS

Serial Number	Sub-scale	Number of items	Reported alphas (Vallerand et al, 1992)	Cronbach's alpha(from pilot study)
1	IM- to know	4	0.84	0.63
2	IM-toward accomplishment	4	0.85	0.61
3	IM- to experience	4	0.86	0.61
4	stimulation EM-identified	4	0.62	0.54

5	EM-introjected	4	0.84	0.65
6	EM-external	4	0.83	0.60
	regulation			
7	Amotivation	4	0.85	0.62
	I M combined	12	-	0.80
	E M combined	12	-	0.76
	AMS (Overall)	28	-	0.80

Note: IM-Intrinsic Motivatiom EM-Extrinsic Motivation

b. Academic Self-Regulated Learning Scale

Academic self-regulated learning was measured by use of the Academic Self-Regulated Learning Scale (A-SRL-S) developed by Magno (2010). The A-SRL-S is a scale where 54 items are classified under seven factors of self-regulation: memory strategy, goal setting, self-evaluation, seeking assistance, environmental structuring, learning responsibility, planning and organizing. The items were rated on a four point scale where 1 = strongly disagree upto 4 = strongly agree. The items in each subscale measuring the seven factors of academic self-regulation were as follows; memory strategy (14 items), goal setting (5 items), self-evaluation (12 items), seeking assistance (8 items), environmental structuring (5 items), learning responsibility (5 items) and organizing (5 items). In general, scores for academic self-regulated learning range between 54 and 216. A high score on a subscale indicated a high usage of that particular strategy.

Permission for using the A-SRL-S in the present study was sought from the author. The scale was considered suitable for the present study owing to its reported high validity and reliability measures when it was used with students in the Philippines with comparable characteristics with Kenya's secondary school students' in terms of age and level of schooling. Magno (2011) reported that the A-SRL-S had provided evidence for convergent, construct and predictive validity after it was administered to a sample of 2052 Filipino college students aged between 16 and 20 years.

The internal consistency for the seven subscales measuring strategies of self-regulated learning as reported by Magno (2011) was found to be between 0.70 and 0.84. For the purpose of this study in the pretesting stage of the A-SRL-S, the data obtained yielded measures of internal consistency (reliability co-efficients) given in Table 3.4.

Table 3.4

Cronbach's Alpha reliabilities for the A-SRL-S

Serial Number	Sub-scale	Number of items	Reported alphas (Magno, 2011)	Cronbach's alpha (Pilot study)
1	Memory Strategy	14	0.84	0.87
2	Goal Setting	5	0.74	0.82
3	Self-Evaluation	12	0.82	0.88
4	Seeking Assistance	8	0.71	0.83
5	Environmental Structuring	5	0.70	0.83

6	Learning	5	0.72	0.81
	Responsibility			
7	Organizing	5	0.71	0.87
	A-SRL-S (Overall)	54	-	0.97

The seven sub-scales shown in Table 3.4 show higher reliabilities than those reported by Magno (2011). The highest reliability 0.88 was found in the sub-scale measuring self-evaluation while the least reliability of 0.81 was found in the sub-scale measuring the learning strategy related to learning responsibility. The overall reliability co-efficient for the Academic Self-regulated Learning Scale was determined and found to be 0.97. This was considered to be very high and thus the scale was adopted (See appendix I, part IV).

3.5.2 Document Analysis

Academic achievement of the participants was obtained from school achievement records and recorded in a proforma table, designed specifically for this purpose (see appendix IV). The aggregate score in the eight subjects for all participants examined at the end of term two examination, year 2012, was obtained. These scores were first transformed to z- scores and then to T-scores in order to render them comparable among different schools.

3.6 Data Collection

3.6.1 Logistical and Ethical Considerations

As part of logistics the following was done:

- i. **Research Authorization:** In order to be able to collect data from the sampled schools, the researcher obtained research authorization letter and research permit from the National Council for Science and Technology.
- ii. **Familiarization Meeting:** After obtaining the research permit, the researcher visited the sampled schools and conducted familiarization meeting with each school principal. The purpose of the study and the anticipated benefits of the research to the school were explained to the principal and an appropriate day and time for collecting data was booked.

In the day of data collection, the following ethical considerations were made:

- i. The purpose of the research was thoroughly explained to the participants and their consent to participate in the study was sought (See Appendix I).
- ii. The participants were assured of confidentiality and anonymity of their responses.
- iii. The researcher assured the participants that there would be no risks involved.

3.6.2 Actual Data Collection

The researcher administered the instruments either during normal class hours or in any other appropriate time as agreed with the school administration. The participants were given instructions on the completion of the two scales. It took the participants approximately 30 minutes to complete the questionnaire. The form

three class teachers were requested to provide academic achievement records which were used to obtain the participants' scores in the end of term two examination.

3.7 Data Analysis

The quantitative data obtained from the questionnaire was coded for statistical analysis using the Statistical Package for Social Sciences (SPSS). After completion of data entry, data cleaning was done in order to ensure that there were no outliers or improper entries which may contaminate the results. Descriptive and inferential statistical methods of data analysis were used in the presentation of the findings. The descriptive statistical procedures were used to describe the characteristics of the participants and summarize the data collected. Relevant inferential statistical procedures were used to test each hypothesis. The following were the specific null hypotheses tested together with the statistical tests used:

H₀₁: There is no significant relationship between academic motivation and academic achievement. Statistical test: Pearson's product moment correlation coefficient.

H₀₂: There is no significant relationship between self-regulated learning and academic achievement. Statistical test: Pearson's product moment correlation coefficient.

H₀₃: There are no significant gender differences in students' academic motivation and self-regulated learning. Statistical test: t-test for independent samples.

H₀₄: There is no significant prediction equation of academic achievement from academic motivation and self-regulated learning. Statistical test: Multiple regression analysis.

CHAPTER FOUR

FINDINGS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

In this chapter, the study findings are presented, interpretations and discussion of the results given in line with the stated objectives and hypotheses. The chapter is organized into four main sections. The first section is introduction, the second section is general and demographic information, the third section is results, interpretation and discussions and the fourth section is exploratory analysis.

4.2 General and Demographic Information

This section gives the general information on the return rate of the questionnaires and demographic data which shows the sampling unit (schools) and the respondent's age.

4.2.1 Return Rate

The researcher visited all the sampled schools and administered the questionnaires to the respondents and ensured that all the questionnaires were properly filled and collected. Thus the return rate for the students' questionnaire was 100 % (938), representing 394 girls and 544 boys. The actual sample size as shown by the return rate is presented in Table 4.1.

Table 4.1***Return Rate***

Type of School	Gender				Total	
	Girl		Boy		F	%
	F	%	F	%		
Girls boarding	216	23	0	0	216	23
Boys boarding	0	0	204	21.7	204	21.7
Co-education day	108	11.5	180	19.2	288	30.7
Boys day	0	0	160	17.1	160	17.1
Girls day	70	7.5	0	0	70	7.5
Total	394	42	544	58	938	100

Key: F-Frequency, % - Percentage

4.2.2 Demographic Data on Gender, Age and Type of School

The participants' gender was cross tabulated with age and type of school and the results are indicated in Table 4.2. The data in Table 4.2 shows more than half of the girls were aged between 15 to 17 years. Nearly 13% of the girls were aged between 18 to 20 years and none of the girls was aged between 21 to 23 years. Similarly, more than half of the boys were aged between 15 to 17 years, about 35% were aged between 18 to 20 years and about 2 % were aged between 21 to 23 years and they were from co-educational and boys' day schools. The no response was 1% for girls and 0.6% for boys.

Table 4.2

Gender, Age and Type of School

Gender of Participants	ToS	Age (Years)								Total	
		15 – 17		18 -20		21-23		NR		F	%
		F	%	F	%	F	%	F	%		
Girls	GB	20	51.	12	3	0	0	2	0.5	216	54.
		2	3							8	
	Co-ed	84	21.	22	5.6	0	0	2	0.5	108	27.
			3							4	
	GD	53	13.	17	4.3	0	0	0	0	70	17.
Total		33	86	51	12.	0	0	4	1	394	100
		9		9							
Boys	BB	17	32.	23	4.2	0	0	3	0.6	204	37.
		8	7							5	
	Co-ed	76	14	10	18.	3	0.6	0	0	180	33.
				1	6					1	
	BD	90	16.	64	11.	6	1.1	0	0	160	29.
Total		34	63.	18	34.	9	1.7	3	0.6	544	100
		4	2	8	6						

Key: F-Frequency, % - Percentage, ToS- Type of School, GB- Girls Boarding, Co-ed- Coeducational, GD- Girls Day, BB- Boys Boarding, BD- Boys Day, NR- No Response

4.3 Results of the Study

The results of the study were presented in line with the objectives of the study. The relevant descriptive statistics for each objective was given, followed by the

specific inferential statistics used to test the null hypothesis stated in order to achieve the study objective. Finally, a discussion of the findings was given.

4.3.1 Relationship between Academic Motivation and Academic Achievement

a. Description of Participants' Academic Motivation and Academic Achievement

The participants' academic motivation scores were analyzed to get the range, mean, standard deviation, skewness and kurtosis. The results are presented in Table 4.3. As shown in Table 4.3, the minimum score was - 6.29 while the maximum score was 14.54. The anticipated minimum and maximum scores were -18 and 18 respectively. The mean score was 6.22 and the standard deviation was 3.44. The coefficient of skewness was found to be -0.63 meaning that many participants rated themselves highly on this scale. Kurtosis was 0.47 which showed that the distribution was leptokurtic with many values concentrated around the mean.

Table 4.3

Description of Academic Motivation Scores

N	Range	Min	Max	Mean	Standard Deviation	Skewness	Kurtosis
938	20.83	-6.29	14.54	6.22	3.44	-0.63	0.47

Key: Min- Minimum Score

Max- Maximum Score

The participants' academic motivation score was further used to categorize the participants as having either low, average or high level of academic motivation. The cut-off scores for category of low, average and high academic motivation were -18 to 7, -6 to 6 and 7 – 18 respectively. The results are shown in Table 4.4.

Table 4.4

Levels of Academic Motivation

Level of Academic Motivation	Frequency	Percent
Low	0	0
Average	456	48.6
High	482	51.4
Total	938	100.0

It is observed from Table 4.4 that no participant was rated as having low level of academic motivation. Majority of the participants were categorized as having high level of academic motivation and less than half of the participants were categorized as being average in academic motivation.

Since academic motivation had seven domains, descriptive analysis was done with an aim of getting the participants range, mean, standard deviation, skewness and kurtosis on each of the sub-scales of the AMS. In order to get the required descriptive statistics, the participants' total score in each sub-scale was used and the results are presented in Table 4.5. The data in Table 4.5 shows that the range for six domains of academic motivation was 24. The maximum and the minimum scores in this case were 28 and 4 respectively. The range for extrinsic motivation

identified scores of 23 was least and the minimum and maximum scores were 5 and 28 respectively. The standard deviation of 3.82 for this particular domain was also the least. Generally the standard deviation of the scores of the domains of academic motivation was considered moderately large with values ranging from 3.82 to 5.86.

Table 4.5

Descriptive Statistics of Sub-Scales of Academic Motivation

Sub-Scale	Range	Min	Max	Mean	S	Sk	Kurtosis
IMTK	24.00	4.00	28.00	20.98	5.04	-0.84	0.37
IMTA	24.00	4.00	28.00	18.58	5.31	-0.24	-0.48
IMES	24.00	4.00	28.00	14.59	5.71	0.12	-0.67
EMid	23.00	5.00	28.00	23.81	3.82	-1.27	2.04
EMin	24.00	4.00	28.00	18.85	5.86	-0.34	-0.69
EME	24.00	4.00	28.00	22.29	4.82	-0.94	0.68
AM	24.00	4.00	28.00	7.24	4.09	1.64	2.99

n = 938

Key: Min- Minimum, Max- Maximum, S- Standard deviation, Sk- Skewness, IMTK- Intrinsic Motivation to Know, IMTA - Intrinsic Motivation Towards Accomplishment, IMES-Intrinsic Motivation to Experience Stimulation, EMid-Extrinsic Motivation Identified, EMin-Extrinsic Motivation Introjected, EME- Extrinsic Motivation External Regulation, AM-Amotivation,

The highest mean score of 23.81 and the least mean score of 7.24 were obtained on extrinsic motivation identified and amotivation scores. The distribution of scores for intrinsic motivation to know, intrinsic motivation towards

accomplishment, extrinsic motivation identified, extrinsic motivation introjected and extrinsic motivation external regulation were found to be negatively skewed which implied that participants rated themselves highly on these sub-scales. However, the distribution of scores for intrinsic motivation to experience stimulation and amotivation was positively skewed which meant that most participants rated themselves low on these scales. The values of kurtosis were less than three which implied a platykurtic distribution meaning that scores were more widely spread out.

In order to establish the interrelationship which existed among the seven domains of academic motivation, bivariate correlation analysis was done to obtain the correlation matrix and the results are presented in a correlation matrix in Table 4.6. As shown in Table 4.6, all the domains related to intrinsic motivation were positively and significantly correlated academic motivation with the highest relationship observed between intrinsic motivation to know and academic motivation ($r(938) = 0.59, p < 0.01$), followed by the relationship between intrinsic motivation to experience stimulation and academic motivation ($r(938) = 0.57, p < 0.01$) and the lowest relationship was found between intrinsic motivation towards accomplishment and academic motivation ($r(938) = 0.55, p < 0.01$).

Table 4.6

Correlation Matrix of the Domains of Academic Motivation

	IMTK	IMTA	IMES	EMid	EMin	EME	AM	AcM
IMTK	1							

IMTA	0.47**	1						
IMES	0.51**	0.47**	1					
EMid	0.32**	0.32**	0.33**	1				
EMin	0.28**	0.43**	0.38**	0.33**	1			
EME	0.18**	0.21**	0.21**	0.47**	0.40**	1		
AM	-0.09**	-0.12**	-0.09**	-0.18**	0.02	0.001	1	
AcM	0.59**	0.55**	0.57**	0.49**	0.09**	0.02	-0.73**	1

n= 938

**P<0.01

Key: IMTK- Intrinsic Motivation to Know IMTA- Intrinsic Motivation Towards Accomplishment IMES-Intrinsic Motivation to Experience Stimulation
EMid-Extrinsic Motivation Identified EMin-Extrinsic Motivation Introjected
EME-Extrinsic Motivation External Regulation AM-Amotivation AcM-Academic Motivation

All the three domains of extrinsic motivation were found to be positively correlated with academic motivation. The highest correlation was found between extrinsic motivation identified and academic motivation ($r = 0.49$, $p < 0.01$). This was followed by the relationship between extrinsic motivation introjected and academic motivation ($r(938) = 0.09$, $p < 0.01$). Although extrinsic motivation external regulation was found to be positively correlated with academic motivation, it was not significant ($r(938) = 0.02$, $p > 0.01$).

Amotivation was found to be negatively and significantly correlated to academic motivation ($r(938) = -0.73$, $p < 0.01$). Similarly, a negative and significant relationship was found between amotivation and all the domains related to intrinsic motivation, with the highest negative relationship ($r(938) = -0.12$, $p < 0.01$).

between amotivation and intrinsic motivation towards accomplishment. Interestingly amotivation was positively correlated, though not significant with extrinsic motivation introjected ($r(938)= 0.02, p>0.05$) and with extrinsic motivation external regulation ($r(938)= 0.001 p>0.05$). Extrinsic motivation identified was the only domain of extrinsic motivation which was negatively and significantly correlated with amotivation ($r(938)= -0.18, p< 0.01$).

In the analyses that follow, the researcher focused on the descriptive analysis of academic achievement scores. The participants' total score from eight subjects in the end of term two examination was transformed to z-scores and then to T-scores. The range, the mean, standard deviation, skewness and kurtosis of the transformed T – score were obtained. The results are presented in Table 4.7.

Table 4.7

Participants' Academic Achievement

N	Range	Max	Min	Mean	S	Skewness	Kurtosis
938	58	80	22	50	10	0.04	-0.3

Key: Max- Maximum, Min- Minimum, S- Standard deviation

The data in Table 4.7 shows that the range was 58, that is, the maximum and minimum T-scores were 80 and 22 respectively. The mean of 50 and standard deviation of 10 provided evidence that the distribution of participants' academic achievement scores had been transformed to T-scores. The researcher further

analyzed the participants' academic achievement scores taking into consideration the level of achievement as determined by the T-score value (See page 39 for cut-off score of each category). The results of this analysis are presented in Table 4.8.

Table 4.8

Levels of Academic Achievement

Levels of Academic Achievement	Frequency	Percent
Low	162	17.3
Average	643	68.6
High	133	14.2

n = 938

The data in Table 4.8 show that majority of the respondents were categorized as being average in academic achievement while in each of the high academic and low academic achievement category, there was less than a quarter of the respondents.

b. Hypothesis Testing

In order to determine the relationship between academic motivation and academic achievement the following null hypothesis was advanced:

H₀₁: There is no significant relationship between academic motivation and academic achievement.

To test this hypothesis the data was subjected to a bivariate correlation analysis using the Pearson's product moment correlation co-efficient. The results showed

that there was a significant and positive relationship between academic motivation and academic achievement($r(938) = 0.15, p < 0.05$). The null hypothesis was therefore rejected.

c. Discussion of the Results

This finding supported that of earlier studies by Matthews, et al, (2013), Matuga (2009) and Karsenti & Thibert (1995), which reported a positive relationship between students academic motivation and academic achievement. The samples used in Matuga (2009) and Karsenti & Thibert (1995) studies, were similar to the one used in the current study in terms of the level of schooling. Thus, irrespective of cross-cultural differences and different study locations, academic motivation was found to be positively correlated to academic achievement. The findings of these studies suggested that students who are academically motivated or self-determined to succeed in school were likely to be high academic achievers. However, the findings of the present study did not agree with those reported by Othman and Leng (2011) who focused on primary school pupils and found that the relationship between pupils academic motivation/self-determination and academic achievement was significant and negative. This implies that the level of schooling may be a significant factor in the measurement of these variables (academic motivation and academic achievement).

Further analysis using multiple regression analysis was done to determine the best predictor of academic achievement given the seven domains/ sub-scales of academic motivation. A significant regression equation was found ($F= 7.9, p < 0.05$) with $R^2 = 0.06$. The findings are summarized in Tables 4.9 and 4.10 and the resultant model of prediction given in equation i.

Equation i.

$$\hat{y} = 42.24 + 0.12 (\text{IMTA}) + 0.13(\text{EMid}) - 0.22\text{EMin} \quad (R^2=0.06)$$

$$p < 0.05$$

Where \hat{y} was the predicted academic achievement score and IMTA, EMid and EMin were the students' intrinsic motivation- towards accomplishment score, extrinsic motivation- identified score and extrinsic motivation- introjected score.

Table 4.9

Beta Coefficients for the Domains of Academic Motivation

Model	Standardized coefficients Beta	Sig.
(Constant)	42.24	.00
Intrinsic Motivation to Know-mean	-0.05	.24
Intrinsic Motivation Toward accomplishment-mean	0.12	.00
Intrinsic Motivation to Experience stimulation-mean	0.07	.106
Extrinsic Motivation Identified-mean	0.13	.00
Extrinsic Motivation Introjected-mean	-0.22	.00
Extrinsic Motivation External regulation-mean	0.06	0.10
		9
Amotivation-mean	-0.02	0.41

Dependent variable: academic achievement T-score

Table 4.10

Adjusted R² of Types of Motivation on Academic Achievement

Model	R	Adjusted R Square	Std. Error of the Estimate
1	0.24	0.06	0.98

a. Predictors: (Constant), Amotivation, Extrinsic Motivation External regulation, Intrinsic Motivation to know, Extrinsic Motivation Introjected, Extrinsic Motivation identified, Intrinsic Motivation to Experience stimulation, Intrinsic Motivation Towards accomplishment.

From equation i, it is observed that, the best and significant predictor of academic achievement was extrinsic motivation- identified ($\beta = 0.13$, $p < 0.05$), followed by intrinsic motivation-towards accomplishment which also had a positive and significant predictive value ($\beta = 0.12$, $p < 0.05$). The only type of academic motivation which was found to have a negative and significant predictive value on academic achievement was extrinsic motivation-introjected.

These results supported earlier findings by Matthews, et al, (2013), who in his study using a sample of 650 first-year university students enrolled in an engineering calculus course found that intrinsic motivation to accomplish was the only predictor of better overall exam performance. Deci & Ryan (1995) postulated that if students interact with academic tasks in order to feel competent and to create unique accomplishments they are indeed demonstrating intrinsic motivation

towards accomplishment. These students engage in an academic activity for the pleasure and satisfaction derived when trying to excel, to reach a new standard. They focus on the process rather than the outcome, for instance, they would seek to understand a complex Mathematical expression or the theory underlying the observed relationship between or among events in different subject areas rather than try to memorize the outcome. These students are more likely to do better in academic tasks compared with students who are intrinsically motivated towards experiencing stimulation.

From Table 4.9, intrinsic motivation to experience stimulation was found to have a positive predictive value towards academic achievement though not significant ($\beta = 0.07$, $p > 0.05$). The fact that the results were not significant implied that any observed relationship could be attributed to chance. However, the results could be interpreted to mean that the students who involved themselves in academic activities for the experience of fun, excitement and positive sensations as observed by Vallerand et al. (1992) were not likely to be better in academic achievement than their counterparts who were intrinsically motivated to accomplish. For instance, a student who experiences pleasurable sensations from stories on heterosexual love relationships may read a set book in Literature where the theme of love is discussed, for the purpose of excitement. This student's score in Literature was likely to be poorer than that of another student who was reading the same theme of love but was more interested in mastering the text structure and the style of writing which is an aspect of intrinsic motivation towards

accomplishment. Nevertheless, these two students were likely to do better, than their counterparts who were intrinsically motivated to know.

The results in Table 4.9 further show that although not significant, intrinsic motivation to know had a negative predictive value towards overall academic achievement ($\beta = -0.05$, $p > 0.05$). This type of motivation is demonstrated when a student performs an academic task for the pleasure and satisfaction he or she experiences while learning, exploring, or trying to understand something new. For instance, this student will try to discover new ways of solving problems in the different academic subjects for the sheer pleasure experienced while learning something new. This might work against the student's academic achievement since the analytical scoring method mostly used in educational measurements in Kenyan secondary schools has limited space (if any) to accommodate students creativity. The expected responses and the score(s) are clearly defined in the analytical scoring scheme and any deviation may be penalized.

As showed in equation i, two domains of extrinsic motivation were found to have significant predictive value on students' academic achievement. These domains were extrinsic motivation-identified and extrinsic motivation towards introjected regulation. Although extrinsic motivation-identified had a positive beta weight ($\beta = 0.13$, $p < 0.05$) which was evidence for the existence of a positive relationship with academic achievement, extrinsic motivation towards introjected regulation had a negative beta weight ($\beta = -0.22$, $p < 0.05$) which indicated a negative

relationship with academic achievement. The third domain of extrinsic motivation, that is, extrinsic motivation towards external regulation was found to have a positive but not significant predictive value on academic achievement ($\beta = 0.06$, $p > 0.05$).

Thus, the overall best negative predictor of academic achievement among the domains of extrinsic motivation was found to be extrinsic motivation towards introjected regulation. This finding was supported by the previous findings reported by Matthews et al. (2013) who observed that students with high scores in extrinsic motivation towards introjected regulation were found to perform poorly in the overall exam.

Extrinsic motivation towards introjection involves taking in a regulation but not fully accepting it as one's own. In this case, the formerly external sources of motivation are internalized such that their actual presence are no longer needed to initiate behaviour (Vallerand, et al, 1992) and, because this behaviour is regulated by rules or demands, it is not considered self-determined behaviour. Students, who show this domain of motivation, may not make genuine decisions regarding their academic behaviour since it may involve coercion or pressure to perform in a particular manner. For instance, one may complete a classroom assignment or an academic task in order to avoid letting his or her parents or teachers down. This situation which no doubt may be accompanied by guilt, anxiety or embarrassment when one does not perform as per the expectations, may lead to low academic

achievement. This observation points to the fact that when students are subjected to high stake testing and they are pressured by teachers, parents and society in general to perform well in school, either, individually or as a school, it may be counterproductive.

The final domain of academic motivation was amotivation. From Table 4.9, amotivation score was found to have a negative but non significant beta weight (-0.02, $p > 0.05$). This means that the data did not provide adequate evidence to show that students who were amotivated would automatically be expected to perform poorly in school. This contradicted the findings of previous studies, for instance, Matthews et al, (2013) and Karsenti and Thibert (1995). More specifically, Karsenti and Thibert (1995) found that amotivation was most significantly related to GPA, for boys and girls across all levels of schooling.

Finally, the coefficient of multiple correlation shown in Table 4.10 showed that R value ($R = 0.24$) was relatively low, positive and significant ($F = 7.9$, $p = 0.00$). The adjusted R^2 ($R^2 = 0.06$) value which is the coefficient of determination, indicated that approximately 6% of the total variance in students' academic achievement was explained by the combined effect of the domains of academic motivation.

Having found that a positive and significant relationship does exist between students' academic motivation and academic achievement, the researcher sought to investigate whether learners with different levels of academic motivation had

significant mean differences in academic achievement. The T-score values for academic achievement were analyzed using the t-test of independent samples and the results are presented in Tables 4.11 and 4.12.

Table 4.11

Mean differences in Academic Achievement Between Participants with Average and High Academic Motivation

	Level of Academic Motivation	n	Mean	Std. Deviation
T score	Average	456	48.89	0.46
	High	482	51.18	0.45

Table 4.12

Independent Samples t-test

		t-test for Equality of Means		
		T	Df	Sig. (2-tailed)
T score	Equal variances assumed	-3.54	936	.00
	Equal variances not assumed	-3.54	934.01	.00

From Tables 4.11 and 4.12 it is observed that an independent t-test comparing the mean scores of the participants with average and high levels of academic motivation found a significant difference between the means of the two groups

($t(936) = -3.54, p < 0.05$). The mean of the high academic motivation group was significantly high (mean = 51.18, standard deviation = 0.45) than the mean of the average academic motivation group (mean = 48.89, standard deviation = 0.46). Thus, the mean difference was in favour of the participants with high academic motivation and this collaborates the argument by Ajayi, Lawani and Salomi (2012), who asserted that academic motivation is an important concept in classroom learning and is correlated with increased levels of academic achievement.

4.3.2 Relationship between Self-Regulated Learning and Academic Achievement

a. Descriptive Analysis of Self-Regulated Learning

The participants' self-regulated learning was analyzed on the basis of the self-regulated learning score. The analysis was aimed at getting the range, the mean and the standard deviation of the scores. The results are presented in Table 4.13.

Table 4.13

Description of Self-Regulated Learning Scores

N	Range	Minimum	Maximum	Mean	Standard Deviation	Skewness
938	159	54	213	138	32.15	-0.38

The data in Table 4.13 shows that the minimum and maximum scores were 54 and 213 respectively. The mean score was 138 and the standard deviation was 32.15 and this was large and this agreed with the range of 159 which was considered very big. The distribution of self-regulated learning scores was found to be negatively skewed (skewness = -0.38) meaning that majority of the respondents rated themselves highly on the Academic Self-regulated Learning Scale.

The participants' self-regulated learning score was further used to categorize the participants as being low, average or high self-regulated learners (see the cut-off scores in page 39). The results were shown in Table 4.14.

Table 4.14

Levels of Self-Regulated Learning

Levels of Self-Regulated		
Learning	Frequency	Percentage
Low	207	22.1
Average	509	54.3
High	222	23.7
Total	938	100.0

Table 4.14 shows that majority of the participants rated themselves within the average level of self-regulated learning while nearly less than half of the participants were distributed within the high and low self-regulated learning categories.

Given that self-regulated learning had seven strategies, descriptive analysis was done with an aim of getting the participants' statistical measures on each of the seven sub-scales of the A-SRLS. The seven strategies of self-regulated learning were memory, goal setting, self-evaluation, seeking assistance, environmental structuring, learning responsibility and organizing. In order to get the required statistics, the participants' total score in each sub-scale was used and the results are presented in Table 4.15.

Table 4.15

Descriptive Statistics on Strategies of Self- Regulated Learning Scores

							Std.	
SRLS	N	Range	Min	Max	Mean	Deviation	Skewness	
MS	938	55.00	14.00	69.00	34.03	8.43	-.11	
GS	938	15.00	5.00	20.00	12.79	3.60	-.13	
SE	938	43.00	12.00	55.00	31.15	7.75	-.27	
SA	938	24.00	8.00	32.00	20.15	5.24	-.12	
ES	938	15.00	5.00	20.00	13.25	3.77	-.40	
LR	938	15.00	5.00	20.00	12.47	3.68	-.07	
OR	938	15.00	5.00	20.00	14.14	3.92	-.53	

Key: MS- Memory Strategy GS- Goal Setting SE-Self-Evaluation SA-Seeking Assistance ES-Environmental Structuring LR-Learning Responsibility OR-Organizing Score SRLS-Self-Regulated Learning Strategy Min- Minimum Max-Maximum

The data in Table 4.15 show that the range was highest within memory strategy scores (range = 55) and that range was least among goal setting, environmental structuring, learning responsibility and organizing strategies scores (range = 15 in

each strategy). The highest mean score of 34.03 was observed in the memory strategy scores where as the minimum mean score was found in the learning responsibility scores (mean = 12.47). The standard deviation of 8.43 of memory strategy scores was the highest while goal setting scores had the least standard deviation of 3.60. The coefficient of skewness was negative for all the strategies of self-regulated learning with the highest negative value (-0.53) observed in organizing scores.

Having studied these statistics on the different strategies of self-regulated learning, the researcher investigated the intercorrelations among the different strategies and the resultant correlation matrix is presented in Table 4.16. Results in Table 4.16 show that all the strategies of self-regulated learning were positively and significantly correlated with the overall self-regulated learning score. The highest correlation ($r(938)=0.91, p<0.01$) was between self-evaluation and self-regulated learning while the least but still very high correlation ($r(938)=0.85, p<0.01$) was between goal setting and self-regulated learning and between learning responsibility and self-regulated learning.

Table 4.16

Correlation Matrix of the Strategies of Self-Regulated Strategies

	MS	GS	SE	SA	ES	LR	OR	SRL
MS	1							
GS	0.77**	1						
SE	0.76**	0.74**	1					
SA	0.73**	0.69**	0.78**	1				
ES	0.72**	0.73**	0.75**	0.73**	1			
LR	0.71**	0.69**	0.72**	0.74**	0.72**	1		
OR	0.73**	0.69**	0.77**	0.73**	0.79**	0.75**	1	
SRL	0.90**	0.85**	0.91**	0.88**	0.87**	0.85**	0.87**	1

n= 938

**P< 0.01

Key: MS- Memory Strategy GS- Goal Setting SE-Self-Evaluation SA-Seeking Assistance ES-Environmental Structuring LR-Learning Responsibility OR- Organizing Score SRL-Self-Regulated Learning.

In line with the study objective of determining the relationship between self-regulated learning and academic achievement, the researcher did a cross tabulation of the participants level of self-regulated learning and mean academic achievement. The results are presented in Table 4.17. Results in Table 4.17 show that the participants categorized as having low level of self-regulated learning had the lowest mean academic achievement T-score of 40.61. The participants categorized as being average in the level of self-regulated learning had a mean academic achievement T-score of 51.63. The participants categorized as having high level of self-regulated learning had the highest mean academic achievement T-score of 55.27.

Table 4.17

Levels of Self-Regulated Learning and Mean Academic Achievement

Level of Self-Regulated Learning	N	Mean Academic Achievement T-Score
Low	207	40.61
Average	509	51.63
High	222	55.27

b. Hypothesis Testing

In line with the second objective of this study which was to determine the relationship between self-regulated learning and academic achievement, the following null hypothesis was advanced:

H₀₂: There is no significant relationship between self-regulated learning and academic achievement.

To test this hypothesis, the data was subjected to a bivariate correlation analysis by use of the Pearson's product moment correlation coefficient. The results showed that there was a positive and significant relationship between students' self-regulated learning and academic achievement ($r(938) = 0.55, p < 0.01$). The null hypothesis was therefore rejected.

c. Discussion of the Results

Matuga (2009) reported similar findings in his study of self-regulation, goal orientation, and academic achievement of secondary students in online university courses. The interpretation of this result was that students who had high scores on self-regulated learning as measured by the ASRL-S also had high overall academic

achievement score. Similarly, students who had low scores on self-regulated learning were found to be low academic achievers. However, the findings of this study did not support earlier findings by Loong (2012) who reported that international students' academic performance, particularly Mathematics performance, was not significantly predicted by self-regulated learning strategies. Similarly, Juanita (2008) reported that there were no significant correlations between self-regulated learning and academic achievement of middle school students.

As highlighted in the literature review, these studies (Loong, 2012 & Juanita, 2008) did not report the relationship among the various self-regulated learning strategies and academic achievement. This relationship was investigated in the current study where the researcher subjected the data to a multiple regression analysis in order to determine the relative predictive weight of each of the seven strategies of self-regulated learning on academic achievement. A significant multiple regression model was found ($F= 80.54$, $p < 0.05$) with $R^2 = 0.38$. The results are summarized in Tables 4.18 and 4.19.

Table 4.18

Beta Coefficients for the Strategies of Self-Regulated Learning

Model	Standardized Coefficients	
	Beta	Sig.
Constant	26.57	.00
Memory Strategy Score	0.22	.00
Goal Setting Score	0.01	.83

Self-Evaluation Score	0.10	.06
Seeking Assistance Score	-0.14	.00
Environmental Structuring Score	0.21	.00
Learning Responsibility Score	-0.18	.00
Organizing Score	0.40	.00

a. Dependent variable: Z score: Total Score

Table 4.19

Adjusted R² of Self-Regulated Learning Strategies on academic Achievement

Model	R	Adjusted R Square	Std. Error of the Estimate
1	.61	.38	.79

a. Predictors: (Constant), Organizing, Goal setting, Seeking Assistance, Learning responsibility, Memory Strategy, Environmental Structuring, Self-evaluation.

The resultant multiple regression equation from Table 4.18 and Table 4.19 is given in equation ii.

Equation ii.

$$\hat{y} = 26.57 + 0.22 (MS) - 0.14(SA) + 0.21(ES) - 0.18(LR) + 0.4(Or) \quad (R^2=0.38)$$

$$p < 0.05$$

Where \hat{y} is the predicted academic achievement score, MS is memory strategy, SA is seeking assistance, and LR is learning responsibility and Or is organizing score.

The intercept is 26.57 and this is the expected academic achievement score when the value of the predictor variable (self-regulated learning strategy) is 0. The organizing strategy was found to have the highest positive and significant

predictive value ($\beta = 0.4$, $p = 0.05$) on students' academic achievement. This finding supported earlier research reports by Cakiroglu, Sungur and Yumusak (2006) and Kitsantas (2002) who found that organizing strategy significantly predicted academic achievement of students.

The fact that organizing strategy positively predicted academic achievement better than all the other self-regulated learning strategies meant that students who generally organized their academic activities for instance; by marking the important concepts and information they found in their reading, anticipated the type of test questions to guide their reading, kept past notes and studied whenever they could, were likely to achieve highly in their academics.

Memory strategy was also found to predict academic achievement positively and significantly ($\beta = 0.22$, $p < 0.05$). Thus, the data obtained in this study revealed that students who apply memory strategy for instance; by writing down the information they need to remember, grouping similar information into categories, using own words in writing notes, drawing figures to understand ideas or representing concepts with symbols such as drawing so as to help in remembering them, summarizing what they read as well as rehearsing the material learned were likely to be high academic achievers as compared to their counterparts who rarely used these strategies in their academic activities. Chen (2002) identified organizing and memory strategies to be part of cognitive and metacognitive strategies used by self-regulated learners to enhance their learning outcomes. These learners are able

to monitor their learning methods and respond to their evaluations, for instance by discriminating between effective and ineffective or inadequate learning environments which might lead to low academic achievement. Thus, organizing and memory strategies help to improve the management of the learning environment for optimum academic outcomes.

In line with this observation, environmental structuring learning strategy was found to have a positive and significant predictive weight on academic achievement ($\beta = 0.21$, $p = 0.00$). Similar findings were reported by Cakiroglu, et al, (2006). Students utilize this strategy for instance by locating a place that is quiet and relatively free of visual and auditory distractions so that they can concentrate on their studies.

Surprisingly, learning strategies related to learning responsibility and seeking assistance were found to have a negative and significant predictive weight on academic achievement. Learning responsibility had the highest negative and significant predictive weight on academic achievement ($\beta = -0.18$, $p = 0.00$). This was an unexpected finding. One would expect that learners who recheck their homework to ensure that it is done properly before submitting or learners who finish homework first before doing unnecessary things are likely to be high academic achievers as compared to their counterparts who rarely check on their assignments before submitting. A possible explanation to this would be that most of the participants in this study under reported the use of this strategy regardless of

their academic abilities. Furthermore, some learners would possibly recheck their assignments before submitting to ensure that every question is responded to but not to ensure the accuracy, clarity or correctness of the answers.

Seeking assistance also predicted students academic achievement negatively ($\beta = -0.14$, $p = 0.00$). This finding supported earlier findings by Chen (2002) who reported that peer learning/ seeking assistance had a negative effect on learners' achievement. However, they contradicted the findings by Cakiroglu, et al, (2006) and Kitsantas (2002). Seeking assistance which involves among other things learners working in groups, comparing notes with those of classmates and more importantly sharing with peers the materials learned, is different from other learning strategies in that it is also a social interaction. The majority of the participants in this study, that is, 72.9% were aged between 15 and 17 years. Probably students in this age group have more other social activities that can distract them from studying especially when they are seeking help from peers. For instance, this could be the time learners use to update themselves on the most current issues in the social media as highlighted on facebook, Whats App, twitter and their discussions may not necessarily be on academic activities. If this happens, it is definitely at the expense of academic achievement.

The adjusted R^2 ($R^2 = 0.38$), value shown in Table 4.19 is the coefficient of determination, which indicates that approximately 38 % of the total variance in students' academic achievement could be explained by the combined effect of the

self-regulated learning strategies. In line with this observation, the researcher was interested in investigating the mean differences in academic achievement among the learners with different levels of self-regulated learning. One-way analysis of variance was therefore done and the results presented in Table 4.20.

Table 4.20

One Way Anova

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	25768.01	2	12884.00	178.6	.00
Within Groups	67431.01	935	72.12	5	
Total	93199.09	937			

The data in Table 4.20 show that indeed there was significant mean differences in academic achievement among learners with different levels of self-regulated learning ($F = 178.68$, $p < 0.05$). A post hoc analysis was performed using the Tukey's Honestly Significant Difference (HSD) method to find out which groups were responsible for the differences. The results are presented in Table 4.21.

Table 4.21

Post- Hoc Analysis

(I) Level of	(J) Level of	Mean		
Self-regulated	Self-regulated	Difference (I-		
Learning	Learning	J)	Std. Error	Sig.
Low	Average	-11.02*	.70	.00
	High	-14.66*	.82	.00
Average	Low	11.02*	.70	.00
	High	-3.64*	.68	.00
High	Low	14.66*	.82	.00

Average	3.64*	.68	.00
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*. The mean difference is significant at the 0.05 level

Results in Table 4.21 show that all the groups were significantly different from one another. Participants having high level of self-regulated learning had the highest positive mean score difference when compared to other levels while the participants with low level of self-regulated learning had negative mean difference when compared with average and high self-regulated learners. This means that while the low self-regulated learners had the lowest mean academic achievement T-scores, the high self-regulated learners had the highest. This observation supports the views expressed by Walters (2003), Tavakolizadeh and Ebrahimi-Qavam (2011) who reported that learners with high self-regulated learning usually embark on planning, self-inspection, self-controlling and self-evaluation and thus create conducive learning environments which promote success in academic achievement.

4.3.3 Gender differences in Students' Academic Motivation and Self-Regulated Learning

a. Description of Gender differences in Academic Motivation

The participants' academic motivation scores were analyzed in order to find the mean and standard deviation and the results are summarized in Table 4.22.

Table 4.22

Gender differences in Academic Motivation

	Gender	n	Mean	Std. deviation
Academic	Girls	394	5.99	3.48
	Boys	544	6.51	3.39
Motivation				

n=938

Results in Table 4.22 show that the mean academic motivation score was 6.51 and 5.99 for boys and girls respectively. Thus, in terms of academic motivation, boys had a relatively higher mean score than girls. Further, since the academic motivation score had been used to group the participants into two categories of high and average level of academic motivation, a cross tabulation of these levels with gender was done. The findings are presented in Table 4.23.

Table 4.23

Level of Academic Motivation and Gender of the Participants

			Gender of the respondent		Total
			Girl	Boy	
Level of	Average	Frequency	184	272	456
			(19.6)	(29.0)	(48.6)
Academic	High	Frequency	210	272	482
			(22.4)	(29.0)	(51.4)
Motivation					
Total		Frequency	394	544	938
			(42.0)	(58.0)	(100.0)

n=938

Key: () - Percentage

The data in Table 4.23 show that more boys than girls were found to be within the two categories of high and average levels of academic motivation. The boys were equally distributed within the two categories while slightly more than half of the girls were within the category of high level of academic motivation. Given that

academic motivation has several domains, it was necessary to investigate the gender differences in these domains. The result of this analysis is given in Table 4.24.

Table 4.24

Gender Differences in Means of the Domains of Academic Motivation

Domain of Academic Motivation	Gender	n	Mean	Standard Deviation
Intrinsic Motivation to Know	Girl	394	20.88	4.82
	Boy	544	21.12	5.90
Intrinsic Motivation Toward Accomplishment	Girl	394	18.04	5.20
	Boy	544	19.34	5.32
Intrinsic Motivation to Experience Stimulation	Girl	394	14.32	6.05
	Boy	544	14.96	5.42
Extrinsic Motivation Identified	Girl	394	23.48	3.51
	Boy	544	24.21	4.02
Extrinsic Motivation Introjected	Girl	394	19.58	5.89
	Boy	544	18.33	5.77
Extrinsic Motivation External regulation	Girl	394	22.54	4.69
	Boy	544	22.10	4.90
Amotivation	Girl	394	7.41	3.86
	Boy	544	7.02	4.26

n = 938

Results in Table 4.24 show that boys had higher mean than girls in all the domains of academic motivation which define intrinsic motivation. These domains include, intrinsic motivation to know, intrinsic motivation towards accomplishment and intrinsic motivation to experience stimulation. In the domains of academic motivation related to extrinsic motivation, boys had a higher mean than girls in extrinsic motivation identified. Girls had higher mean than boys in extrinsic

motivation introjected and extrinsic motivation external regulation and amotivation.

b. Description of Gender differences in Self-Regulated Learning

The participants’ self-regulated learning scores were analyzed in order to find the mean and standard deviation and the results are presented in Table 4.25.

Table 4.25

Gender differences in Self-Regulated Learning

	Gender	N	Mean	Std. Deviation
Self-Regulated Learning	Girl	394	132.95	34.12
	Boy	544	141.62	30.18

n = 938

Results in Table 4.25 show that the mean self-regulated learning score for boys (141.62) was higher than for girls (132.95). The self-regulated learning score had been used to categorize the participants in three categories, that is, high, average and low levels of self-regulated learning. A cross-tabulation of these levels with gender was done and the findings are presented in Table 4.26.

Table 4.26

Levels of Self-Regulated Learning and Gender

			Gender		Total
			Girl	Boy	
Self-regulated	Low	Frequency	117 (12.5)	90 (9.6)	207 (22.1)
	Average	Frequency	193 (20.6)	316 (33.7)	509 (54.3)
	High	Frequency	84 (9.0)	138 (14.7)	222 (23.7)

Learning				
Total	Frequency	394	544	938
		(42.0)	(58.0)	(100.0)
n= 938	() Percentage			

Results in Table 4.26 show that majority of the participants categorized as having low level of self-regulated learning were girls whereas majority of the participants categorized as having either average or high levels of self-regulated learning were boys.

Since self-regulated learning had seven different strategies, there was need to investigate the mean differences in these strategies taking gender differences into consideration. The result of this analysis is given in Table 4.27.

Table 4.27

Gender Differences in Self-Regulated Learning Strategies

Self-Regulated Learning Strategy	Gender	N	Mean	Standard Deviation
Memory	Girl	394	32.98	9.28
	Boy	544	34.77	7.68
Goal Setting	Girl	394	12.24	3.75
	Boy	544	13.19	3.41
Self-Evaluation	Girl	394	30.08	7.86
	Boy	544	31.95	7.58
Seeking Assistance	Girl	394	20.67	5.29
	Boy	544	19.43	5.15
Environmental Structuring	Girl	394	12.66	3.79
	Boy	544	13.71	3.68
Learning Responsibility	Girl	394	12.00	3.72
	Boy	544	12.82	3.61
Organizing	Girl	394	13.57	3.87
	Boy	544	14.53	3.91

n = 938

From Table 4.27, it is observed that boys had higher mean than girls in all the self-regulated learning strategies. This finding is consistent with that in Table 4.26 where majority of the boys were categorized as being high in the level of self-regulated learning, meaning that compared to girls, generally, boys were making more appropriate use of self-regulated learning strategies.

c. Testing Gender Differences in Academic Motivation and Self-Regulated Learning

In reference to the third objective of the study which was to test if there are gender differences in students' academic motivation and self-regulated learning the third null hypothesis was stated as follows:

H₀₃: There are no significant gender differences in students' academic motivation and self-regulated learning.

To test this hypothesis, two supplementary null hypotheses were advanced. These were:

H_{03.1} There are no significant gender differences in students' academic motivation

H_{03.2} There are no significant gender differences in students' self-regulated learning

c.i Testing the First Supplementary Hypothesis

H_{03.1} There are no significant gender differences in students' academic motivation

To test this null hypothesis, data obtained with regard to the respondents' academic motivation was subjected to independent samples t-test. The results are presented in Table 4.28.

Table 4.28

Independent Samples t-test for gender differences in Academic Motivation

Variable	T	Df	Sig. (2-tailed)
Academic Motivation	-2.26	936	0.05

Results in Table 4.28 show that there were significant gender differences in academic motivation between boys and girls ($t = -2.26$, $df = 936$, $P < 0.05$), and this difference was in favor of boys. The first supplementary null hypothesis was therefore rejected.

Compared to girls, boys were found to be more academically motivated and self-determined. This finding contradicted earlier findings by Gilles and Karsenti (1996) who found that girls were significantly more self-determined than boys across all levels of schooling. It is important to note the reported difference was with reference to the overall academic motivation score and this was not exhaustive since gender differences in the specific domains of academic motivation needed to be investigated. The data obtained was therefore subjected to

the independent samples t-test taking into consideration the specific domains of academic motivation. The results are presented in Table 4.29.

Table 4.29

Independent Samples t-test for Gender differences in Domains of Academic

Motivation

Domain of Academic Motivation	t	Df	Sig. (2-tailed)
Intrinsic Motivation to Know	-0.33	936	0.74
Intrinsic Motivation Toward Accomplishment	-3.71	936	0.00
Intrinsic Motivation to Experience Stimulation	-1.66	936	0.08
Extrinsic Motivation Identified	-2.88	936	0.00
Extrinsic Motivation Introjected	3.25	936	0.00
Extrinsic Motivation External regulation	1.37	936	0.17
Amotivation	1.50	936	0.13

n=938

From Table 4.29 it is seen that, within intrinsic motivation, significant gender differences were found only with regard to intrinsic motivation towards accomplishment ($t = -3.71$, $df = 936$, $p < 0.05$). This difference was in favour of boys. It is important to note that although boys had higher means than girls in the other domains of intrinsic motivation, that is, intrinsic motivation to know and intrinsic motivation to experience stimulation, these differences were not significant. However it was concluded that boys were more intrinsically motivated compared to girls.

With reference to the domains of academic motivation related to extrinsic motivation, significant gender differences in favour of boys were found with regard to extrinsic motivation identified ($t = -2.88$, $df = 936$, $p = 0.00$) and

significant differences in favour of girls were found with regard to extrinsic motivation introjected ($t = 3.25$, $df = 936$, $p = 0.00$). Girls were also found to have higher but not significant mean difference in extrinsic motivation external regulation compared to boys. Generally, since girls were found to have higher mean than boys in two out of the three domains of extrinsic motivation, it was interpreted to mean that they were more leaned towards extrinsic motivation orientation.

Amotivation was the last domain of academic motivation where gender differences between boys and girls were investigated. Results presented in Table 4.24 show that there were insignificant gender differences ($t = 1.50$, $df = 936$, $p = 0.13$). Thus, although girls had higher mean in amotivation, this study provided evidence that this could possibly be due to chance.

The current study findings on gender differences in domains of academic motivation contradicted the findings of an earlier study done by Barkoukisa, et al, (2008) who found that there were gender differences regarding intrinsic motivation to know and amotivation. More specifically, females were higher in intrinsic motivation to know. Further, the findings of the present study did not support earlier findings by Gilles and Karsenti (1996) who reported that girls were lower in amotivation compared to boys. Contrary, to the findings of this study, Rusilo and Arias (2004), reported that girls had lower levels of extrinsic motivation compared to boys.

In most of the studies reviewed, girls were found to be more self-determined or either more intrinsically motivated or less extrinsically motivated compared to boys. The present study provided conflicting results and one possible reason that may help to explain the observed contradictions is the cross-cultural differences in the way of upbringing boys and girls in developed and developing countries. It is worth noting that all the previous studies cited were done in developed countries and no doubt the day to day schooling and home experiences of adolescents in these countries is different from what their counterparts in developing countries experience.

c.ii Testing the Second Supplementary Hypothesis

The second supplementary null hypothesis (in line with objective three) was stated in order to help in determining whether there existed any gender differences with regard to student’s self-regulated learning. The hypothesis was stated as follows:

H_{03.2} There are no significant gender differences in students’ self-regulated learning

To test this hypothesis, the self-regulated learning scores were analyzed by use of independent samples t-test and the results presented in Table 4.30.

Table 4.30

Independent Samples t-test for gender differences in Self-Regulated Learning

Variable	t	Df	Sig. (2-tailed)
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Self-Regulated Learning	-4.13	936	0.00
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From Table 4.30 it was observed that there was a significant gender difference in the overall self-regulated learning mean scores ($t = -4.13$, $df = 936$, $p < 0.05$) and this difference was in favour of boys. The second supplementary null hypothesis was therefore rejected.

Boys were found to be more self-regulated learners compared to girls. These findings were similar to those reported in Ethiopia by Habte (1997) and Gemedo (1996). However, a common observation in these two studies is that they never reported if there were gender differences in the various self-regulated learning strategies.

In the present study, self-regulated learning was made up of seven different learning strategies and the researcher investigated whether there were significant gender differences with respect to each self-regulated learning strategy. The participants scores in each self-regulated learning strategy were therefore subjected to independent samples t-test and the results of this analysis are presented in Table 4.31.

Table 4.31

Independent Samples t-test for Gender differences in Self-Regulated Learning Strategies

Self-regulated Learning Strategies	t	Df	Sig. (2-tailed)
Memory	-3.27	936	.00
Goal Setting	-4.00	936	.00

Self-Evaluation	-3.64	936	.00
Seeking Assistance	3.60	936	.00
Environmental Structuring	-4.17	936	.00
Learning Responsibility	-3.32	936	.00
Organizing	-3.80	936	.00

The results in Table 4.31 show that there were significant gender differences with respect to all the self-regulated learning strategies and these differences were in favour of boys except the learning strategy on seeking assistance where the difference was in favour of girls. These findings differ with earlier findings by Al asmari and Ismail (2012) and, Zimmerman and Martinez-Pons (1989) which reported that girls were found to have made more use of self-regulated learning strategies than boys. However, there were remarkable differences between these two studies and the present study in terms of the samples studied. Unlike the present study, these were based on samples drawn from the university and elementary school while this study was based in secondary school students. In addition cultural differences could also explain the different observation.

Girls surpassed boys in the use of seeking assistance strategy which has more to do with socialization and help seeking from peers, teachers, parents and other individuals who are perceived to be able to help in case one is faced with a challenging academic task. Generally, differences between boys and girls in the way they use different learning strategies can be traced from the time they were born. For instance, when a baby is born, the first words uttered are loud and clear: 'It's a boy! or 'It's a girl!' and what follows is giving of gender-appropriate name as well as gender-appropriate gifts. Over the next few years, the child is ready to

enter school. The boy has for instance been introduced to toy trucks and guns; the girl on the other hand has already been introduced to dolls and kitchen sets. Many expect the boy to enjoy outdoor play activities with less dependence on adults while the girl is expected to babysit and to enjoy music and social activities. The girl may not have as much space as the boy to play independently and this may limit the development of self-regulated learning strategies. Thus, the observed gender differences in self-regulated learning may be traced from the way boys and girls have been socialized both at home and in school.

Even though it was not part of the study objectives, the researcher investigated if there were significant gender differences in the outcome variable, which is students' academic achievement. The results are presented in Tables 4.32 and 4.33.

Table 4.32

Gender Differences in Academic Achievement

Gender	n	Mean	Standard Deviation
Girls	394	49.72	8.99
Boys	544	50.30	10.62

n=938

Table 4.33

Independent Samples t-test for Mean differences in Academic Achievement

Variable	t	Df	Sig. (2-tailed)
Academic Achievement	-0.88	936	0.38

The results in Table 4.32 show that the mean academic achievement t-score was 49.72 and 50.30 for girls and boys respectively. The standard deviations were 8.99 and 10.62 for girls and boys respectively. From Table 4.33 it is seen that there were no significant gender differences in academic achievement between boys and girls ($t = -0.88$, $df = 936$, $P > 0.05$).

4.3.4 Prediction of Academic Achievement from Academic Motivation and Self-regulated Learning

a. Cross-tabulation of Levels Academic Motivation and Self-Regulated Learning

The ultimate aim of this study was to investigate the interplay between academic motivation and self-regulated learning in predicting academic achievement. To achieve this objective, a cross-tabulation between the levels of academic motivation and self-regulated learning was done. The findings are presented in Table 4.34.

Table 4.34

Levels of Academic Motivation and Self-Regulated Learning

Level of Self-regulated Learning		Level of Academic Motivation		Total
		Average	High	
Low	Frequency	117 (12.5)	90 (9.6)	207 (22.1)
	Average	275	234	509

High	Frequency	(29.3)	(24.9)	(54.3)
		64	158	222
Total	Frequency	(6.8)	(16.8)	(23.7)
		456	482	938
		(48.6)	(51.4)	(100)

Key: () - Percentage

Results in Table 4.34 show that nearly half of the respondents who were classified as being high in academic motivation were average in the level of self-regulated learning. In addition, majority of the respondents who were classified as being high in self-regulated learning, were also found to have high level of academic motivation. The respondents falling in the category of low self-regulated learners were 207 (22.1) and majority of them had average level of academic motivation.

b. Testing the Prediction Equation for Academic Achievement from Academic Motivation and Self-Regulated Learning

The fourth null hypothesis of this study was advanced as follows:

H₀₄: There is no significant prediction equation of Academic Achievement from Academic motivation and self-regulated learning

To test this hypothesis, each of the independent variables was first subjected to a simple regression analysis in order to determine their separate predictive values on academic achievement. To begin with, academic motivation scores were analyzed and the results summarized in Table 4.35.

Table 4.35

Beta Coefficients for Academic Motivation

	Standardized	Sig.	Adjusted R
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	Coefficients		Square
	Beta		
Constant	47.48	0.00	0.02
Academic Motivation(AM)	0.14	0.00	

The resultant simple regression equation from Table 4.35 is given in equation iii.

$$\hat{y} = 47.48 + 0.14(\text{AM}) \quad p < 0.05 \quad (R^2=0.02)$$

Equation iii. shows that academic motivation had a positive and significant predictive value on students' academic achievement ($\beta = 0.14$, $p = 0.00$). The adjusted R^2 value of 0.02 suggested that the amount of variation in academic achievement explained by academic motivation is 2 percent.

Further, self-regulated learning scores were analyzed to determine the predictive value on academic achievement and the results are summarized in Table 4.36.

Table 4.36

Beta Coefficients for Self-Regulated Learning

	Standardized	Sig.	Adjusted R
	Coefficients		
	Beta		Square
Constant	26.45	0.00	0.30
Self-Regulated Learning(SRL)	0.55	0.00	

From Table 4.36, equation iv is identified.

$$\hat{y} = 26.45 + 0.55(\text{SRL}) \quad p < 0.05 \quad (R^2=0.30)$$

Note: \hat{y} - Predicted academic achievement score SRL-Self-Regulated Learning Score

Equation iv shows that, just like, academic motivation, self-regulated learning had a positive and significant predictive value on students' academic achievement ($\beta = 0.55$, $p = 0.00$). The adjusted R^2 value of 0.30 implied that 30 percent of the variance in students' academic achievement was due to self-regulated learning.

The findings in equation iii and iv show that when studied separately, self-regulated learning accounted for a larger variance in secondary school students academic achievement as compared to students' academic motivation. However, there was need to investigate the combined effect of the two independent variables on academic achievement using multiple regression analysis. The results of the analysis are given in Tables 4.37 and 4.38.

Table 4.37

Beta Coefficients for Academic Motivation and self-regulated Learning

Model	Standardized Coefficients	
	Beta	Sig.
Constant	22.54	0.00
Academic Motivation	0.07	0.01
Self-regulated Learning	0.54	0.00

a. Dependent variable: T score: Total Score

Table 4.38

Adjusted R^2 of Academic Motivation and Self-Regulated Learning on Academic Achievement

	Std. Error of the	
R	Adjusted R Square	Estimate
0.57	0.31	8.3

From Tables 4.37 and 4.38 the resultant equation for predicting academic achievement from academic motivation (AM) and self-regulated learning (SRL) was significant ($F= 43.29$, $P < 0.05$) with $R^2 = 0.31$. The fourth null hypothesis was therefore rejected.

The specific prediction equation from Tables 4.37 and 4.38 is as shown in equation v.

Equation v:

$$\hat{y} = 22.54 + 0.07 (AM) + 0.54(SRL) \quad (R^2=0.31) \quad p < 0.05$$

From equation v it is observed that self-regulated learning had the highest positive and significant predictive value on academic achievement ($\beta = 0.54$, $p < 0.05$) as compared to academic motivation ($\beta = 0.07$, $p < 0.05$).

c. Discussion of the Results

This finding contradicted an earlier study by Loong (2012), who reported that compared with other factors; self-regulated learning was not a significant predictor of academic achievement. Further, Downing & Ning (2010) found that students' motivation was the strongest predictor of academic performance compared to other variables studied. However, the findings of the current study supported those

reported by Al Khatib (2010), Habte, 1997 and Gemed, 1996. These researchers found that self-regulated learning was the stronger predictor of students' academic achievement as compared to academic motivation.

The R^2 value ($R^2 = 0.31$) which is the multiple coefficient of determination, indicated that 31 % of the total variation in students academic achievement was explained by the combined effect of students academic motivation and self-regulated learning. About 69 percent of the academic achievement of students in this study was explained by other factors apart from academic motivation and self-regulated learning. These factors may be related to the individual student as well as environmental factors. Individual factors may include personality variables such as self-efficacy, locus of control and self-concept whereas environmental factors may include both home and school factors which may influence students' academic achievement.

An important observation (from equation v) is that the explained variation on academic achievement of the two predictor variables combined was more than the explained variation of academic motivation and self-regulated learning when studied individually, as shown in equation iii and iv. This means that students who are academically motivated and use self-regulated learning strategies are likely to be high academic achievers since Kitsantas (2002) noted that the interplay between academic motivation and self-regulated learning is important in promoting academic achievement

4.4 Exploratory Analysis

4.4.1 Main/ Interaction Effect between Type of School, Levels of Academic Motivation and Self-Regulated Learning

Even though it was not part of the study objectives, the researcher explored the main/ interaction effect between type of school, academic motivation and self-regulated learning as the factors, in predicting academic achievement. The data was subjected to general linear model (univariate) analysis and the results presented in Table 4.39. The results in Table 4.39 show that there was significant main/ interaction effect between type of school, level of academic motivation and level of self-regulated learning ($F = 1.95$, $P < 0.05$). The adjusted R squared was found to be 0.40 (40%). Compared with the findings given in equation v, where the R squared value is 0.31(31%), it can be concluded that the inclusion of type of school on the general linear model for predicting students' academic achievement did improve the prediction ability. This implies that there may be salient factors within the different types of schools which contribute significantly to students' academic achievement. These factors may be schools unique learning experiences, facilities, security and culture and, these factors may impact on the students' academic motivation and self-regulated learning differently.

Table 4.39

Tests of Between – Subjects Effects

Source	Type III SS	df	MS	F	Sig.
Corrected Model	38905.57 ^a	28	1389.49	23.26	.00

Intercept	1194148.42	1	1194148.42	19992.83	.00
ToS	7312.04	4	1828.01	30.60	.00
LAMt	338.76	1	338.76	5.67	.02
LSRL	12313.94	2	6156.97	103.08	.00
ToS * LAMt	583.93	4	145.98	2.44	.03
ToS * LSRL	944.12	8	118.01	1.98	.03
LAMt * LSRL	319.80	2	159.90	2.68	.05
ToS * LAMt * LSRL	816.45	7	116.64	1.95	.04
Error	54293.52	90	59.73		
		9			
Total	2443863.82	93			
		8			
Corrected Total	93199.09	93			
		7			

a. R Squared = 0.42 (Adjusted R Squared = 0.40)

n = 938

Key: SS- Sum of Squares, Df- Degree of Freedom, MS- Mean Square, F- Critical Value of F, Sig. – Significance, ToS - Type of School, LAMt- Level of Academic Motivation, LSRL – Level of Self-Regulated Learning.

In line with this, the researcher investigated whether there were differences in the prediction values of academic motivation and self-regulated learning taking into consideration the different types of schools. Multiple regression analysis was done and the results presented in Table 4.40.

Results in Table 4.40 show that academic motivation predicted positively and significantly the academic achievement of students in boys' boarding and

co-education schools. On the other hand, self-regulated learning predicted academic achievement of students in girls' day, boys' boarding, boys' day and co-education schools, positively and significantly. Interestingly, the two independent variables did not significantly predict academic achievement of students in girls' boarding schools. This suggests that some other factors apart from academic motivation and self-regulated learning accounted significantly for the academic achievement of students in girls' boarding schools. It may be possible that the learning experiences of students in girls' boarding schools do not adequately promote the development and use of self-regulated learning and academic motivation as key variables in determining academic achievement.

Table 4.40

Types of Schools and Regression Weights for Academic Motivation and Self-Regulated Learning on Academic Achievement

Type of School	Predictors	Standardized Co-efficients(Beta)	Sig.
Girls Boarding	Constant	34.90	0.00
	AcM	0.05	0.45
	ASRL	0.10	0.19
Girls Day	Constant	23.77	0.00

	AcM	0.01	0.85
	ASRL	0.02	0.00
Boys Boarding	Constant	47.27	0.00
	AcM	0.16	0.03
	ASRL	0.50	0.00
Boys Day	Constant	19.38	0.00
	AcM	0.09	0.34
	SRL	0.74	0.00
Co-educational	Constant	21.05	0.00
	AcM	0.01	0.02
	ASRL	0.61	0.00

Key: AcM- Academic Motivation, SRL- Self-Regulated Learning n = 938

4.4.2 Age , Academic Motivation and Self- Regulated Learning Scores

Given that the participants were classified into three age categories, that is between 15 to 17, 18 to 20 and 21 to 23, the researcher explored the mean differences that existed in academic motivation and self-regulated learning scores given the age of the respondents. The data was subjected to post hoc analysis using Tukey HSD method and the results presented in Tables 4.41 and 4.42.

Table 4.41

Age Category and Differences in Means of Academic Motivation Scores

(1)Age(Years)	(J)Age (Years)	Mean Differences (I-J)	Sig.
15-17	18-20	0.01	1
	21-23	-0.04	1
18-20	15-17	-0.01	1
	21-23	-0.05	1
21-23	15-17	0.04	1
	18-20	0.05	1

n = 938

Results in Table 4.41 show that the mean differences in academic motivation across the three age categories were not significant. However, it was observed that, although very small, the mean difference between the participants aged between 21 and 23 and the other age categories was positive. This means that these participants had higher academic motivation scores.

With regard to self-regulated learning scores, results in Table 4.42 show that the mean differences between participants in different age categories were not significant.

Table 4.42

Age Category and Mean Differences in Self-Regulated Learning Scores

(1)Age(Years)	(J)Age (Years)	Mean Differences (I-J)	Sig.
15-17	18-20	0.85	0.99
	21-23	21.17	0.20
18-20	15-17	-0.85	0.99
	21-23	20.32	0.24
21-23	15-17	-21.17	0.20
	18-20	-20.32	0.24

n = 938

It was also observed that the mean differences decreased with age, whereby the younger participants reported more use of self regulated learning strategies. This finding seems to contradict what Bandura (1986) reported. According to Bandura (1986), a student's personal capacity to self-regulate is assumed to depend on learning and development. Thus, under normal circumstances, older and more experienced students in appropriate level of schooling according to their age

should self-regulate better during learning than the younger and inexperienced ones, presumably in lower classes. Better self-regulated learning involves the use of appropriate self-regulation strategies in constructing and selecting courses of actions which improve academic achievement.

It is noted that the participants in this study were form three students in secondary schools in Kenya. A student who has gone through the formal education system in Kenya from standard one where the recommended age for enrollment is six years, is expected to be around sixteen years of age by the time they reach form three. Thus, any student who is above this age and in form three has definitely experienced some form of delay in their formal schooling. This delay may have been occasioned by class retention, truancy, sickness, juvenile delinquency, poverty and other factors which may limit the student's capacity to effectively use self-regulated learning strategies in school work. No wonder, the students who were found to be in form three and within the expected age limits reported more use of self-regulated learning strategies.

To be able to understand the claim by Bandura (1986) that older students are expected to self-regulate, one has to compare students at different levels of schooling. For instance, a comparison of self-regulated learning among learners in form one, form two, form three and form four is more likely to yield results similar to Bandura's (1986) findings. The same argument can be used to explain the results shown in Table 4.43 where, although insignificant, the older students were

found to have higher scores in academic motivation. This result contradicted earlier findings reported by Hegarty (2010). Hegarty (2010) conducted a study on the application of Academic Motivation Scale to graduate students in America and returned the finding of decreased intrinsic motivation with age. Given that intrinsic motivation greatly contributes to increased self-determination or academic motivation, it was expected that with increased age, students were to be found to be less self-determined. However, the study by Hegarty (2010) was based on graduate students and, this to some extent limits the generalizability of the results to some populations, more specifically, secondary school students.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is divided into four sections. The first section summarizes the findings of the study, the second section shows the implications of the findings, the third section, conclusions are drawn based on the findings and finally the fourth section gives the study recommendations for policy and further research.

5.2 Summary

The study was designed to investigate academic motivation and self-regulated learning as predictors of academic achievement of secondary school students in Nairobi County. The study also explored if there were significant gender differences in students' academic motivation and self-regulated learning. In the exploratory part of the study, the interaction effect between type of school, levels of academic motivation and self-regulated learning, and, types of schools and regression weights for academic motivation and self-regulated learning were studied. However, the ultimate goal of the study was to identify the model for predicting students' academic achievement from academic motivation and self-regulated learning.

In summary, the first objective of the study was to determine the relationship between academic motivation and academic achievement. Empirical evidence for the existence of a significant and positive relationship between students' academic

motivation and academic achievement was provided. Further analysis revealed that among the seven types of academic motivation, that is; amotivation, extrinsic motivation-external regulation, extrinsic motivation- introjected, extrinsic motivation- identified, intrinsic motivation to know, intrinsic motivation to experience stimulation and intrinsic motivation towards accomplishment, it was intrinsic motivation towards accomplishment and extrinsic motivation identified which significantly and positively predicted students' academic achievement. Intrinsic motivation to experience stimulation and extrinsic motivation towards external regulation were found to have positive but non significant predictive weight on academic achievement. The only type of academic motivation which was found to have a negative and significant prediction on academic achievement was the students' extrinsic motivation-introjected. Surprisingly, intrinsic motivation to know was found to predict academic achievement negatively, though not significantly, and this was also found with regard to amotivation.

The second objective of the study was to investigate the relationship between self-regulated learning and academic achievement. It was found that self-regulated learning had a positive and significant relationship with students' academic achievement. Moreover, results of multiple regression analysis revealed that among the seven strategies of self-regulated learning, that is; organizing, goal setting, seeking assistance, learning responsibility, memory strategy, environmental structuring and self-evaluation, only three strategies predicted academic achievement positively and significantly, these were; memory strategy,

environmental structuring and organizing. Goal setting and seeking assistance strategies were found to have positive but insignificant predictive value on academic achievement. The self-regulated learning strategies related to seeking assistance and learning responsibility were found to have a negative and significant predictive value on students' academic achievement.

The third objective of the study was to test if there were gender differences in students' academic motivation and self-regulated learning. Significant differences were detected in the two variables and these differences were in favour of boys. More specifically, with regard to intrinsic motivation, significant gender differences were found only with regard to intrinsic motivation towards accomplishment. Further, although boys had higher means than girls' intrinsic motivation to know and intrinsic motivation to experience stimulation, these differences were not significant. Significant gender differences in favour of boys were also found with regard to extrinsic motivation identified while significant gender differences in favour of girls were found with regard to extrinsic motivation introjected. Girls were also found to have higher but not significant mean in extrinsic motivation - external regulation. Even though girls had a higher mean in amotivation, the difference was not significant.

With regard to self-regulated learning, significant gender differences were observed on the overall self-regulated learning mean scores and this difference was in favour of boys. Furthermore, there were significant gender differences with

respect to all the self-regulated learning strategies and these differences were in favour of boys except the learning strategy on seeking assistance where the difference was in favour of girls and was significant.

The fourth objective of the study was to establish the prediction equation of academic achievement from academic motivation and self-regulated learning. Analysis done simple and multiple regression analysis yielded the following three equations:

$$\text{Academic Achievement} = 47.48 + 0.14(\text{AM}) \quad R^2 = 0.02$$

$$\text{Academic Achievement} = 26.45 + 0.55(\text{SRL}) \quad R^2 = 0.30$$

$$\text{Academic Achievement} = 22.54 + 0.07(\text{AM}) + 0.54(\text{SRL}) \quad R^2 = 0.31$$

Given the two main predictor variables in the study, that is, academic motivation (AM) and self-regulated learning (SRL) a significant prediction equation was found with self-regulated being the better predictor of students' academic achievement.

In the exploratory part of the study, a significant main effect on academic achievement was found between type of school, academic motivation and self-regulated learning. Further analysis revealed that academic motivation predicted positively and significantly the academic achievement of students in boys' boarding and co-educational schools. Self-regulated learning was found to predict the academic achievement of students in girls day, boys boarding and co-education schools, positively and this was significant.

5.3 Conclusions

The results of this study presented some evidence of the existence of the hypothesized relationship among academic motivation; self regulated learning and academic achievement. These two variables were found to have a positive and significant relationship with students' academic achievement. However, when these variables were analyzed taking into consideration the individual domains within academic motivation and strategies within self-regulated learning, it was found that some domains of academic motivation as well as some strategies of self-regulated learning had negative influence on academic achievement. These domains which included, intrinsic motivation to know, extrinsic motivation-introjected, amotivation could be used to identify students who are at risk of performing poorly in school. Even though, learning strategies related to seeking help and learning responsibility were found to have a negative predictive value on academic achievement, the role of collaborative/ group learning and individual responsibility in learning cannot be ignored. For example, the general positive effects of collaborative learning and group work are well recognized (Chen, 2002). Thus, students should not be discouraged from peer learning or seeking constructive help during their studies.

With regard to academic motivation, teachers and parents may devise ways of arousing students' interest in academics by showing the relevance of secondary school education in their lives and giving students' feedback in order to raise their expectancy for success. This will help in nurturing the students' intrinsic

motivation towards accomplishment and extrinsic motivation-identified both of which were found to have significant and positive influence on academic achievement. Among the domains of academic motivation, extrinsic motivation-introjected was found to have the highest and significant negative influence on students' academic achievement. Introjected regulation happens when students' seek to satisfy the demands of their teachers, parents and other parties interested in their academic achievement. Since this study has provided evidence that putting pressure on students to perform has a negative influence on their academic achievement, teachers, parents and all other stakeholders in education should aim at helping students to internalize the desire to want to learn in order to achieve excellence in academics for their own benefit(s). For instance, students' desire and satisfaction in learning may be enhanced by being friendly and sensitive to their needs. Teachers should therefore, engage in classroom practices and processes that enhance students' interests, inner motivation, and long-term persistence, and in the end, this may produce high academic achievement.

The study showed that gender is one of the factors that may account for differences in students' academic motivation and self-regulated learning. This is because significant gender differences were found with regard to these two variables. Boys were better than girls in all domains of academic motivation except extrinsic motivation-introjected and extrinsic motivation-external regulation. Similarly, boys were better in most of the self-regulated learning strategies. Out of the seven strategies, girls were better than boys in the strategy of

seeking assistance. Generally, given that these two constructs (academic motivation and self-regulated learning) were found to have a significant positive influence on academic achievement, there is need for development of interventional programs in schools targeting girls. These programmes should gear towards boosting girls' academic motivation and use of self-regulated learning strategies. A conducive learning environment should also be provided for boys in order to enhance their academic motivation and level of self-regulated learning. Generally, a major conclusion of the results of this study is that, teaching learners (regardless of gender) to self-regulate and enhance their motivational beliefs might serve to increase their academic achievement.

Self-regulated learning was found to be a better predictor of students' academic achievement as compared to academic motivation. However, the two variables combined accounted for more variance in predicting academic achievement as compared to when each variable was studied individually. Thus, the two variables should be seen as complementary and therefore students should be helped to develop them in order to experience increased success in academics. Parents and teachers should aim at creating a conducive home and school learning environments which will help students to develop appropriate self-regulated learning strategies. More specifically, students should be guided in the development of self-regulated learning strategies which were found to have a positive and significant influence on academic achievement. Such strategies include; memory strategy, environmental structuring and organizing strategies.

The teacher's role in the learning- teaching process should not just be delivering the subject matter, but should also promote active learning. In the case of memory strategy, teachers could help their students to transfer information from the working memory to the long-term memory bank(s) through rehearsal, practice and over-learning. In terms of environmental structuring and organizational strategies, teachers could help their students by providing opportunities to manipulate learning resources in the learning environment for optimal educational outcomes. Students should also be given opportunities to manage and organize their time and their study environments. For instance, students should be encouraged and facilitated to prepare weekly private study timetables in order to keep track of their academic activities.

The predictive values of academic motivation and self-regulated learning on academic achievement were found to vary depending on the type of school under consideration. This implied that there was a significant type of school effect on students' academic achievement as well as use of academic motivation and self-regulated learning in studies. Thus, some factors, especially within boys' boarding schools may be promoting the development and use of the two independent variables with favorable academic outcomes. Conversely, some factors within girls' boarding schools may be hindering the development of self-regulated learning and academic motivation and this to some extent limits the students' academic achievement.

5.4 Recommendations

Based on the findings of the study, the following recommendations for policy and further research were made:

5.4.1 Policy Recommendations

- i. Since academic motivation and self-regulated learning were found to have positive and significant influence on students' academic achievement, teachers, parents and all the stakeholders in education should work together in creating conducive school and home environments for fostering the development of these constructs in learners. More specifically, the development of the types of academic motivation and self-regulated learning strategies found to have a positive predictive value on academic achievement should be emphasized.
- ii. Educational trainers should consider the introduction of mandatory courses and seminars for helping teachers to develop necessary skills for helping students to develop appropriate self-regulated learning strategies and academic motivation.
- iii. Appropriate intervention programmes should be developed in schools, particularly targeting girls in order to help reduce the gender differences which were found to exist with regard to students' academic motivation and self-regulated learning.
- iv. A special task force within the education ministry be set up to ensure that there is equity in access to same learning experiences for students in

secondary schools irrespective of the type of school, that is, whether boys' boarding, girls' boarding, boys' day, girls' day or co-education school.

5.4.2 Recommendations for Further Research

The following suggestions were made for consideration for future research:

- i. The findings of this study have shown that self-regulated learning and academic motivation do have a positive and significant predictive value on students' academic achievement. However, the study did not investigate the possible school and home environmental determinants of these psychological constructs. For this purpose, there is need to carry out further research to identify the specific factors which influence the development of students' self-regulated learning and academic motivation.
- ii. Further studies should be done to determine whether the results of this study are representative. In the current study, a questionnaire was used to measure students' academic motivation and self-regulated learning. Since students may have over rated themselves in the questions with socially and, or academically desirable responses, perhaps interviews and focused group discussions with students would have allowed for crosschecking the consistency of the responses.
- iii. This study revealed an inverse and significant relationship between the self-regulated learning strategy of seeking assistance and secondary school students' academic achievement. Future research is needed to investigate

the appropriateness of using this sub-scale in studies involving students in different cultures.

- iv. The results of this study may be generalized to the Kenyan secondary school students' population with caution because it covered a small sample drawn from only one County. In order to control the effects of cultural, geographical and, or class differences, the study should be replicated in other counties and with students in different levels like form one, two, three and four.
- v. The findings of this study have revealed significant sex differences in students' academic motivation and self-regulated learning. These differences were in favour of boys. These results contradict those of many researchers in developed countries. Thus further research on this area is necessary in order to make the findings more conclusive.
- vi. No significant mean differences were found in academic motivation and self-regulated learning scores for students at different age categories. It was noted that the participants in this study were from three students hence the age differences were not big. To be able to study whether age of the student affects the level of academic motivation and self-regulated learning, further research is recommended taking into consideration students at form one and form four where the age difference is expected to be bigger.

- vii. The findings of this study are based on secondary school students. In order to further contribute to the understanding of the relationship(s) between academic motivation and self-regulated learning and academic achievement of students at different levels of schooling, a similar study should be replicated with samples drawn from students in primary schools, colleges and universities. The measurement scales used in this study should be modified and standardized before being used with students at the different levels of schooling.
- viii. In this study, academic achievement was measured using the total score attained by a student at the end of term two examinations. Although the scores were standardized, future studies should involve the use of a standard classroom test developed by local researchers and administered under controlled conditions in order to improve the reliability and validity of the scores. Further studies should also consider investigating the relationship between academic motivation, self-regulated learning and the specific subject areas such as Mathematics, English, Geography, Physics and Business Studies.

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APPENDICES

Appendix I

CONSENT TO PARTICIPATE IN THE STUDY

This is a research study designed to investigate how students plan to achieve their academic goals guided by motivation and self-regulated learning. The findings will help to provide better guidelines for; enhancing students' academic motivation and; choice of appropriate academic self-regulated learning strategies for passing examinations.

I would like to request you to complete this research questionnaire and help in this noble task. Remember that all the information you give will be treated with ultimate confidentiality.

Kindly sign in the space provided if you agree to participate in the study.

(.....) I agree to participate in this study.

Thank you very much for agreeing to participate in the study.

Yours Respectfully,

Mutweleli Samuel Mutua

Ph. D student, Kenyatta University

Appendix II
QUESTIONNAIRE FOR STUDENTS

PART I

BACKGROUND INFORMATION

Please read the following questions carefully and fill in the blank spaces or put a tick (✓) in the brackets where appropriate.

1. Code no. _____

2. Gender: Boy () Girl ()

3. Age in years ()

4. Name of school _____

5. Type of school:

Girls school () Boys school ()

Co-educational/ mixed school ()

6. Residential status:

A boarder () A day scholar ()

PART II

ACADEMIC MOTIVATION SCALE

Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons why you go to school. Encircle / tick your choice.

Totally Disagree(TD)	Disagree(D)	Undecided(U)	Agree(A)	Totally Agree(TA)		
1	2	3	4	5	6	7

WHY DO YOU GO TO SCHOOL?

		TD	D	U	A	TA
1.	Because I need at least a K.C.S.E certificate in order to find a high-paying job later on.					
2.	Because I experience pleasure and satisfaction while learning new things.					
3.	Because I think that a high-school education will help me better prepare for the career I have chosen.					
4.	Because I really like going to school.					
5.	Honestly, I don't know; I really feel that I am wasting my time in school.					
6.	For the pleasure I experience while surpassing myself in my studies.					
7.	To prove to myself that I am capable of					

	completing my secondary school course.								
8.	In order to obtain a more prestigious job later on.								
9.	For the pleasure I experience when I discover new things never seen before.								
10.	Because eventually it will enable me to enter the job market in a field that I like.								
11.	Because for me, school is fun.								
12.	I once had good reasons for going to school; however, now I wonder whether I should continue.								
13.	For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.								
14.	Because of the fact that when I succeed in school I feel important.								
15.	Because I want to have "the good life" later on.								
16.	For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.								
17.	Because this will help me make a better choice regarding my career orientation.								
18.	For the pleasure that I experience when I am taken by discussions with interesting teachers.								
19.	I can't see why I go to school and frankly, I could care less.								
20.	For the satisfaction I feel when I am in the								

	process of accomplishing difficult academic activities.							
21.	To show myself that I am an intelligent person.							
22.	In order to have a better salary later on.							
23.	Because my studies allow me to continue to learn about many things that interest me.							
24.	Because I believe that my high school education will improve my competence as a worker.							
25.	For the "high" feeling that I experience while reading about various interesting subjects.							
26.	I don't know; I can't understand what I am doing in school							
27.	Because high school allows me to experience a personal satisfaction in my quest for excellence in my studies							
28.	Because I want to show myself that I can succeed in my studies.							

PART IV

ACADEMIC SELF-REGULATED LEARNING SCALE

Below are questions about your learning strategies. Read each item and choose your level of agreement or disagreement on each statement by using the following response guide. 4 = Strongly Agree, 3 = Agree, 2 = Disagree, 1= Strongly Disagree. Encircle your choice. Be as honest as you can in answering the items.

MEMORY STRATEGY	Strongly	Agree	Disagree	Strongly
------------------------	-----------------	--------------	-----------------	-----------------

		Agree			Disagree
1.	I write the information that I need to remember it.				
2.	I group similar information into a category				
3.	I use my own words in writing my notes.				
4.	I draw figures to understand ideas better				
5.	I represent concepts with symbols such as drawing so that I can easily remember them				
6.	I summarize what I have read.				
7.	I outline the topics that I need to study				
8.	I summarize the topics that we take up in class				
9.	I visualize words in my mind to recall terms.				
10.	I construct questions based on what I have learned and attempt to answer them				
11.	I record the lessons that I attend to.				
12.	I make sample questions from a topic and answer				

	them.				
13.	I read my notes aloud while studying.				
14.	I make a list of the things I need to do.				
GOAL SETTING		Strongly Agree	Agree	Disagree	Strongly Disagree
1.	I make sure that I accomplish the things I need to do each day.				
2.	I make a schedule of the activities I need to complete				
3.	I plan the things I have to do in a week.				
4.	I keep track of myself if I am accomplishing my goals.				
5.	I have in mind an end goal in every task that I engage				
SELF-EVALUATION		Strongly Agree	Agree	Disagree	Strongly Disagree
1.	If I am having a difficulty, I inquire assistance from an Expert				
2.	I welcome feedback on my work.				
3.	I evaluate my accomplishments at the end of each study				

	session.				
4.	I let others assess my work before submission.				
5.	I keep track of my accomplishments.				
6.	I am aware of my progress when doing certain activities.				
7.	I ask feedback of my performance from someone whom I think is good on it.				
8.	I listen attentively to people who comment on my work.				
9.	I am open to feedbacks to improve my work.				
10.	I check my progress by reviewing my past performance.				
11.	I seek others' opinion on the things I need to change in my work when in doubt.				
12.	I improve my work by considering relevant feedbacks I received.				
SEEKING ASSISTANCE		Strongly Agree	Agree	Disagree	Strongly Disagree
1	I use a variety of sources when doing school related				

	task.				
2	I use library resources to find the information that I need.				
3	I make my own notes in class				
4	I enjoy group work because of the cooperation				
5	I ask a classmate about the homework that I missed.				
6	I ask the help of a friend to review my lessons.				
7	I compare my notes with that of my classmates.				
8	I share to my peers what I have learned.				
ENVIRONMENTAL		Strongly	Agree	Disagree	Strongly
STRUCTURING		Agree			Disagree
1	I avoid any distractions while doing school work.				
2	I find a place where I can study well.				
3	I focus myself in order to study.				
4	I am not easily distracted by the things around me when I study.				
5	I make a way to minimize distractions when I study.				
LEARNING RESPONSIBILITY		Strongly	Agree	Disagree	Strongly
		Agree			Disagree

1	I recheck my homework if it is done properly before submitting.				
2	I finish all my homework first before doing unnecessary things.				
3	I make sure I submit good work on time.				
4	I make time for my schoolwork during holiday/ weekends.				
5	I continue studying on a topic even if it is not required.				
ORGANIZING		Strongly Agree	Agree	Disagree	Strongly Disagree
1	I mark important concepts and information I find in my readings.				
2	I anticipate the type of test questions to pace myself in studying.				
3	I keep my past notes.				
4	I study whenever I can.				
5	I organize the materials that I need to study.				

Thank you very much for responding to all the items in the questionnaire.

Appendix III

SCORING THE AMS

Key for AMS High School version -28 items

<u>Item</u>	<u>Type/ domain/orientation of Motivation measured</u>
2, 9, 16,23	Intrinsic motivation - to know
6, 13, 20, 27	Intrinsic motivation - toward accomplishment
4, 11, 18, 25	Intrinsic motivation - to experience stimulation
3, 10, 17, 24	Extrinsic motivation - identified
7, 14, 21, 28	Extrinsic motivation - introjected
1, 8, 15, 22	Extrinsic motivation - external regulation
5, 12, 19, 26	Amotivation

Calculations;

To calculate a participant's score on the AMS, the mean response for each of the sub-scales was found. These means varied between 1 and 7. The means were then inserted in the following formula which was used to calculate a self-determination index which was taken as the participant's academic motivation score. The formula had been adapted from Vallerand, Pelletier, Blais, Briere, Senecal, and Vallieres (1992).

$2\{(\text{know}+\text{acc}+\text{stim}/3)\} + \text{iden} - \{(\text{intro}+\text{reg}/2) + 2\text{amo}\} = \text{Academic Motivation.}$

know = intrinsic motivation to know; acc = intrinsic motivation to accomplishments; stim = intrinsic motivation to experience stimulation; iden =

identification; intro = introjected regulation; external regulation; amo = amotivation.

This formula gives scores ranging from -18 (very little self-determination/ academic motivation) to +18 (extreme self-determination/ high academic motivation). Highest level of self-determination: $2((7+7+7/3)) + 7 - ((1+1/2) + 2*1)$

So :

$2((7+7+7/3))+7-((1+1/2)+2(1))=$ would be the highest self-determined score = 18

$2((21/3))+7-((2/2)+2(1))$

$2((7))+7-((1)+(2))$

$2((7))+7-(3)$

$2((7))+7-(3)$

$14+4=18$

Appendix IV

ACADEMIC ACHIEVEMENT PROFORMA TABLE

School:

Gender: Boy () Girl ()

CODE NO.	TOTAL SCORE	MEAN MARK

Appendix V

RESEARCH AUTHORIZATION

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349
254-020-310571, 2213123, 2219420
Fax: 254-020-318245, 318249
when replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RCD/14/012/1295** Date: **5th September, 2012**

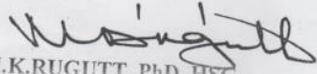
Samuel Mutua Mutweli
Kenyatta University
P.O, BOX 43844-00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Academic motivation and self-regulated learning as predictors of academic achievement of students in public secondary schools in Nairobi County, Kenya*" I am pleased to inform you that you have been authorized to undertake research in Nairobi Province for a period ending **28th February, 2013**.

You are advised to report to the **Provincial Commissioner and the Provincial Director of Education, Nairobi Province** before embarking on the research project.

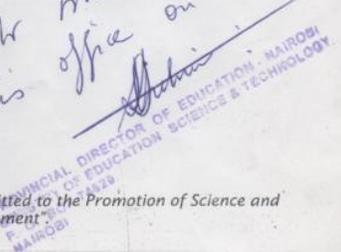
On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


DR.M.K.RUGUTT, PhD, HSC
DEPUTY COUNCIL SECRETARY

Copy to:

The Provincial Commissioner
The Provincial Director of Education
Nairobi Province

MRB
Mr mutweli reported to this office on 4/9/10/2012



"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development"

Appendix VI

RESEARCH CLEARANCE PERMIT

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

GPK60553mt10/2011 (CONDITIONS—see back page)

PAGE 3

PAGE 2

Research Permit No: **NCST/RCD/14/012/1295**

Date of issue **5th September 2012**

Fee received **KSh.2000**

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
Samuel Mutua Mutweleli
Of (Address) Kenyatta University
P.O BOX 43844-00100
NAIROBI
Has been permitted to conduct research in

Location
Nairobi District
Nairobi Province

On the topic: Academic motivation and self Regulated learning as predictors of academic achievement of students in public secondary schools in Nairobi County, Kenya

Secretary
National Council for Science and Technology

Applicant's Signature

For a period ending: 28th February 2012

Appendix VII

KCSE ESSENTIAL STATISTICS FOR 2011 AND 2012

CONFIDENTIAL

9.0 TABLE 7: OVERALL GRADE SUMMARY FOR 2012

GENDER	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
MALE	1277	5947	11753	15962	18936	22180	27134	31582	35655	37694	26436	4263
FEMALE	698	3288	5977	9221	12174	16291	21771	27166	31548	35872	25997	3621
ALL	1975	9235	17730	25183	31110	38471	48905	58748	67203	73566	52433	7884
CUM. TOTAL	1975	11210	28940	54123	85233	123704	172609	231357	298560	372126	424559	432443
%AGE	0.45	2.12	4.07	5.77	7.13	8.82	11.21	13.47	15.41	16.87	12.02	1.81
CUM %AGE	0.45	2.57	6.64	12.41	19.54	28.36	39.58	53.05	68.46	85.32	97.35	99.15

10.0 TABLE 8: OVERALL GRADE SUMMARY FOR 2011

GENDER	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
MALE	1315	6322	11150	14793	18344	22474	27631	31955	34093	32995	23741	3684
FEMALE	615	2741	5240	8151	11771	16742	22334	26890	29760	31397	23532	2916
ALL	1930	9063	16390	22944	30115	39216	49965	58845	63853	64392	47273	6600
CUM. TOTAL	1930	10993	27383	50327	80442	119658	169623	228468	292321	356713	403986	410586
%AGE	0.47	2.2	3.99	5.58	7.33	9.55	12.16	14.33	15.55	15.68	11.51	1.6
CUM %AGE	0.47	2.67	6.66	12.24	19.57	29.12	41.28	55.61	71.16	86.84	98.35	99.95

Appendix VIII

MAP OF NAIROBI COUNTY

