MOTIVATIONAL, AFFECTIVE AND SELF REGULATORY PROCESSES AS PREDICTORS OF ACADEMIC ACHIEVEMENT AMONG SECONDARY SCHOOL STUDENTS IN BOMET COUNTY, KENYA

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DECLARATION

I confirm that this thesis is my original work and has not been presented in any other university/institution for certification. 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

To my wife Lydia Soi and children Brian, Laura, Cynthia, Bruce and Lavender for always wishing me the best and encouraging me endlessly. In addition, this thesis is dedicated to my mother, Mrs. Alice Sitienei, whose belief and pride in me has laid the foundation for success.

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ABBREVIATIONS AND ACRONYMS

AA	Academic Achievement
AEAA	Association for Education Assessment in Africa
BEA	Basic Education for All
BEPS	Basic Education Policy Support
CPD	Continuous Professional Development
CEO	County Education Office
GPA	Grade Point Aggregate
HT	Head Teacher
KCSE	Kenya Certificate Of Secondary Education
KNEC	Kenya National Examination Council.
MOEST	Ministry of Education Science and Technology
MSS	Mean Standard Scores
MOES	Ministry of Education and Sports
NGO	Non Governmental Organization
PTA	Parent Teacher Association
SCEO	Sub County Education Officer
SMS	School Motivation Scale
SPSS	Statistical Package for Social Sciences
WAI	Weinberger Adjustment Inventory

ABSTRACT

Poor performance in national examinations in secondary schools is still a major challenge. The cause of poor academic performance has been attributed to environmental and instructional practices with less focus on motivational, affective and self regulatory processes which contributes to students' academic achievement. This study sought to find out how motivational, affective and self regulatory processes affect academic achievement of secondary schools students. The purpose of the present study was to investigate motivational, affective and self-regulatory processes as predictors of academic achievement among secondary school students. This study was guided by the self efficacy and attribution theories. In this study, an ex-post facto (causal comparative) research design was used. The study was carried out in nine secondary schools in Bomet County, Kenya. The population was 2346 students in the 75 schools. The sample for the study consisted of 243(126 females and 117 males) pupils drawn from the nine schools selected through stratified and random sampling techniques. The data on demographic characteristic, motivational, affective, self-regulatory processes and academic achievement was collected through adapted self report questionnaires and by accessing their pre mock and mock results of 2016 academic year from the county Education Office (CEO). Documentary surveys, interviews, observations and check lists were also used for data collection. Pilot study was carried out with a sample of 30 form three students from a mixed secondary school in Bomet County. This was done to better the reliability and validity of the research instruments. Both descriptive and inferential statistical procedures were used to analyze data from the sampled schools. Data was analyzed and tabulated using descriptive statistics generated from Statistical Package for Social Sciences. T-test was used to assess sex differences in the motivational, affective, self-regulatory processes and academic achievement of students. The Pearson correlation coefficient was used to assess the relationship between motivational, affective, self regulatory processes and academic performance. Multiple regression analysis was used to establish the predictive weights of the three variables on academic achievement. The study found significant relationships among motivational, affective, self-regulatory processes and academic achievement of students. T-test findings also indicated that there were significant gender differences in students' motivational, affective, self-regulatory processes and academic achievement of students. The study is significant in that it may help improve students' teaching learning strategies. In conclusion, the study found significant predictive model of academic achievement from motivational, affective and self-regulatory processes. The study came up with several policy recommendations and suggestions for further research. The study recommended that Parents should ensure that home provides children adequate emotional support and encouragement for their learning and that the government should motivate teachers through steady setting up of seminars, workshops and symposia in order to enhance academic achievement. Implications of the research are reviewed.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter entails the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, assumption of the study, significance of the study, limitation and delimitation of the study, theoretical and conceptual frameworks and operational definitions of terms.

1.2 Background to the Study

The academic achievement of secondary school students determines success later in life. Students with higher levels of academic achievement at Secondary School level are more likely to proceed for higher education and more likely to get better employment opportunities with higher salaries (Joppke & Morawska, 2014). Globally, there has been consistent downward trend of poor academic achievement among high school students. In USA, graduation rates declined from 65% to 50% (Radunzal & Noble, 2015). What this means, is that 35% to 50% of students currently enrolled may not attain high academic achievement, an outcome that is not impressive.

Similarly, in Nigeria, academic achievements of high school students have gradually dropped by 10% in the last five years (Afolayan, 2013). Statistics from Bomet county director's office revealed high percentage of students consistently scoring low grades, downward trends in mean scores and more so cross gender and locational disparities.

The majority of Bomet County youth complete high school (65%), and another 12.8% go on for University education. However, the academic achievement has declined drastically from 35.7% to 33.9 % over the past three years (Essential Statistics, 2015). Furthermore, there is a distinct cross gender and locational disparity with one sub-county doing far much better than the others in terms of academic performance (Bomet County Education, 2016). The social and economic development of a country is directly linked with students' academic success. According to Hermann (2015), Poor academic achievement has been a challenge in the education system because it is a loss to the society.

It has long been documented that study habit of students plays a key role in academic achievement. For example, to comply with information and technological advances, students will have to be more self-directed and initiative (Shaine, 2015). A number of variables influence student's ability to achieve academically and these includes factors such as, self-regulatory, motivational, affective processes, social economic status and previous academic performances (Shirley, 2013). Thus, students with high level of distress may be at risk for academic failure due to a general withdrawal from school work and failure to conform to normative behavior. Student and school motivational strategies here referred to as motivational process means student's interest and effort in learning (Ronato, 2014). Therefore, it is a broader process when compared with more popularly researched variables like achievement motivation (Mukuru, 2013).

However, studies on motivational processes as predictors of academic achievement have in some cases found contrasting findings. For example, Baris (2015) found no correlation between GPA and motivational processes and self-regulated processes. Conversely, Roohani and Asibani (2015) found positive correlation between motivational processes and academic achievement.

Such outcomes indicates that there is a need for more investigation on the synchronized influence of self-regulatory, motivational and affective processes on students' academic achievement. In the present study, the researcher investigated self-regulatory, motivational and affective processes as predictors of academic achievement among secondary school students in Bomet County. According to Weinberger (1989) distress and self-restraint represents affective functioning. Distress indicates student's affective operation. Higher levels of distress have a lot to do with low emotional well-being, depression, low self-esteem and states of anxiety (Shakir & Pervez, 2014). Chastain (2006) pointed out negative correlations between the affective processes and academic achievement. However, the study did not investigate the relationship between academic achievement and the combined effects of self-regulatory, motivational and affective processes on academic achievement.

Although from a different cultural set up, Safure (2016) suggested that self-regulatory, motivational and affective processes strongly predicts the academic achievements of American students. Other studies conducted in South America supports the above

findings. For example, Nolting (2007) reported that performance in mathematics has almost as much to do with students' affective processes such as distress and anxiety. According to Ebrahimi and khoshsima (2014) multiple studies have revealed that distress and anxiety represent the strongest predictor of poor academic achievement. Self-restraint refers to interest of achieving needs and a balance between personal goals and those of others (McCraty, 2007). Self-restraint is the capacity to handle impulses, aggressive behavior and empathy (Barret, 2014).

Sitzmann and Ely (2011) explained self-restraint as monitoring, regulating, setting goals and controlling cognition. Self-regulated learning is associated with high academic achievement (Grunschel, Patrzek &Fries 2012). Shaine (2015) study established that self-regulated students develop better learning habits, improves their performance and gauge their academic achievement. This study was carried out among high school students in China. Therefore, the present study grounded on the same research was conducted to establish whether self-regulatory processes predict academic achievement of secondary school students in Bomet County, Kenya. In a comparable study, Mbugua (2013) established that anxiety impart negatively on academic achievements. Although the study was conducted in Kenya, the respondents were visually impaired. The current study used respondents with normal vision. Most of the above studies were from developed countries and their findings may not apply to developing countries like Kenya due to variations in life style.

Thus this created a gap which this study filled by investigating self-regulatory, motivational and affective processes as predictors of academic achievement among secondary school students in Bomet County, Kenya.

1.3 Statement of the Problem

Majority of secondary school students in Bomet county graduate from high school (65%) but only 12.8% of the students proceed to higher education. This means that a higher percentage of students perform poorly. Over the past three years, the cumulative KCSE mean scores in Bomet County have consistently declined from a mean of 6.59 in 2013 to 5.87 in 2014 and 5.69 in 2015. Furthermore, there is a distinct cross gender and locational disparity with one sub-county doing far much better than the others in terms of academic performance. Students who perform poorly may not go for post-secondary education and the society may not have adequate skilled human capital needed to meet the demand for prosperity. This may contribute to higher poverty and crime rate.

Therefore, there was need to investigate factors which are associated with poor academic achievement. In Europe and other countries, studies on self-regulatory, motivational and affective processes as predictors of academic achievement have been done and have yielded different results. Examples include Kathryn (2013) and Reisberg (2010). These studies were carried out in developed countries and due to variation in societal values, the outcomes achieved from these researches may not be relevant and suitable to expound on the case of Bomet County.

Moreover, many of these studies looked at individual variables in relation to academic achievement and more so used respondents from university and middle level colleges. This created a research gap which this study filled by investigating on the concurrent influences of self-regulatory, motivational and affective processes on academic achievement at the secondary school level. Furthermore, some studies such as Herman (2015) tend to consider self-regulatory, motivational and affective processes as predictors of academic achievement in the background of particular subject areas. This was also another research window which was filled up in the current study by considering all subjects' scores. Moreover, there is scanty record of studies in Bomet County that may have been done to reveal the influence of the three variables on academic achievement. The above mentioned observations inspired the current study which investigated self-regulatory, motivational and affective processes as predictors of academic achievement among secondary schools students in Bomet County, Kenya.

1.4 Purpose of the Study

The purpose of the present study was to investigate motivational, affective and self-regulatory processes as predictors of academic achievement among secondary school students in Bomet County, Kenya**.**

1.5 Objectives of the Study

This study was guided by the following objectives:

i. To establish the relationship between students' motivational process and academic achievement.

ii. To investigate the relationship between students' affective process and academic achievement.

iii. To find out the relationship between students' self-regulatory process and academic achievement.

iv. To test if there is gender differences in students' motivational, affective and self-regulatory processes.

v. To develop a predictive model of academic achievement from motivational, affective and self-regulatory processes.

1.6 Research Hypotheses

The following research hypotheses were addressed by this study:

H_{a1} There is a significant relationship between students' motivational process and academic achievement.

H_{a2}. There is a significant relationship between affective process and academic achievement.

H_{a3}. There is a significant relationship between self-regulatory process and academic achievement.

H_{a4}. There are significant gender differences in students' affective, motivational and self-restraint processes.

H_{a5}. There is a significant prediction equation for academic achievement from motivational, affective and self-restraint processes.

1.7 Significance of the Study

It is hoped that this study may assist parents to understand and appreciate a number of factors which may influence academic achievement of students, of which self-regulatory, motivational and affective processes are imperative. This awareness and identification may provide support in the development of varied approaches for appropriate interventions meant to improve academic achievement. The outcomes of the study may also aid students to understand that their individual attributes (self-regulatory processes) play a role in their academic achievement. This may assist students to make appropriate interventions and to foster their self-restraint strategies and thus improve their academic successes. The study may also help teachers to develop students' targets, self-regulatory, motivational and affective processes by promoting valuable programs which are advantageous to the students.

The findings of this investigation may be useful to policy planners in designing intervention schemes and practices which may enhance students' self-regulatory, motivational and affective processes. It is also anticipated that the research may also help curriculum developers to accept self-regulated learning as a reality and to project a head and plan for thousands of students who fails to get into university every year. Lastly, it is expected that outcomes from this study may contribute to existing literature on the importance of affective, motivational and self-regulatory processes as predictors of academic achievement.

1.8 Limitations and Delimitations

1.8.1 Limitations of the Study

The study used self-report questionnaires. A common limitation of self-report data is social appeal and the need to look good in order to win public approval. Because the data for self-regulatory, motivational and affective processes was obtained by administering self-report inquiry form, responses may have been affected by social desirability. Also the study was limited within a few selected secondary schools in Bomet County. Hence, conclusions may not be generalizable away from the particular population from which the sample was drawn. The study did not establish cause- effect relationship since it was not possible to manipulate the variables. To deal with the said limitations, the researcher encouraged the respondents to give honest and truthful information.

1.8.2 Delimitations of the Study

Student's self-restraint, motivational and affective processes were measured; the teachers' self-restraint, motivational and affective processes were not addressed because the study sought to investigate self-restraint, motivational and affective processes as predictors of academic achievement of secondary school students in Bomet County, Kenya. Academic achievement may be determined by other variables such as media, demographic and social economic status which was not investigated in this study. Also the respondents served a small percentage of students (10%) when compared with state averages. In view of that, findings of the study should not be used to represent students that do not share these characteristics.

The study was delimited to form three students. This was mainly due to convenience with regard to suitability and availability of the respondents. Further,the study was confined to the two external examinations done in form three.

1.9 Assumptions of the Study

The study was based on the following assumptions:

(i) The participants would respond honestly.

(ii) That all the students are exposed to similar methods of instruction.

(iii) The sample that would be chosen and the manner in which it would be chosen would be generalizable to the secondary school students population and to other similar classes as well.

(iii) That K.C.S.E. is acceptable, reliable and accurate measure of academic achievement of secondary school students.

1.10 Theoretical and Conceptual Framework

1.10.1 Theoretical Framework

The study was guided by two theories: The theory of attribution propounded by Weiner (1974) and self-efficacy theory by Bandura (1986). These theories provided means through which the researcher investigated self-restraint, motivational and affective processes as predictors of academic achievements. The two theories complemented each other in the discussion of this study.

(a) Attribution Theory

Weiner (1974) developed a psychological theory of attribution that has become a popular research paradigm. According to this theory, human beings are considered as actively seeking to understand and master the environment. Founded on this theory, the consequence of individuals' performance may be affected by external attributions and or internal attributions. External attributions designate causes that students are not able to regulate (level of tests) while internal attributions involves effort, amount of time students spent on homework and all those factors that students are able to control.

Attribution theory is normally used to clarify the difference in motivation among high achievers and poor academic performers. Based on this theory, high achievers will attempt more willingly than keep away from chores associated with achievement for the reason that they consider achievement is due to high ability and determination which they are certain. Poor academic achievement is attributed to bad luck or a poorly set examination. Hence, poor academic achievement does not affect self-worth but success builds gratification and confidence.

Alternatively, low achievers shun activities meant for success as they tend to distrust their ability and believe that achievement is luck or caused by factors which they cannot control. On the word of this theory, internal attributions and external attributions determine students' task engagement and commitment (Elliot, 2005).

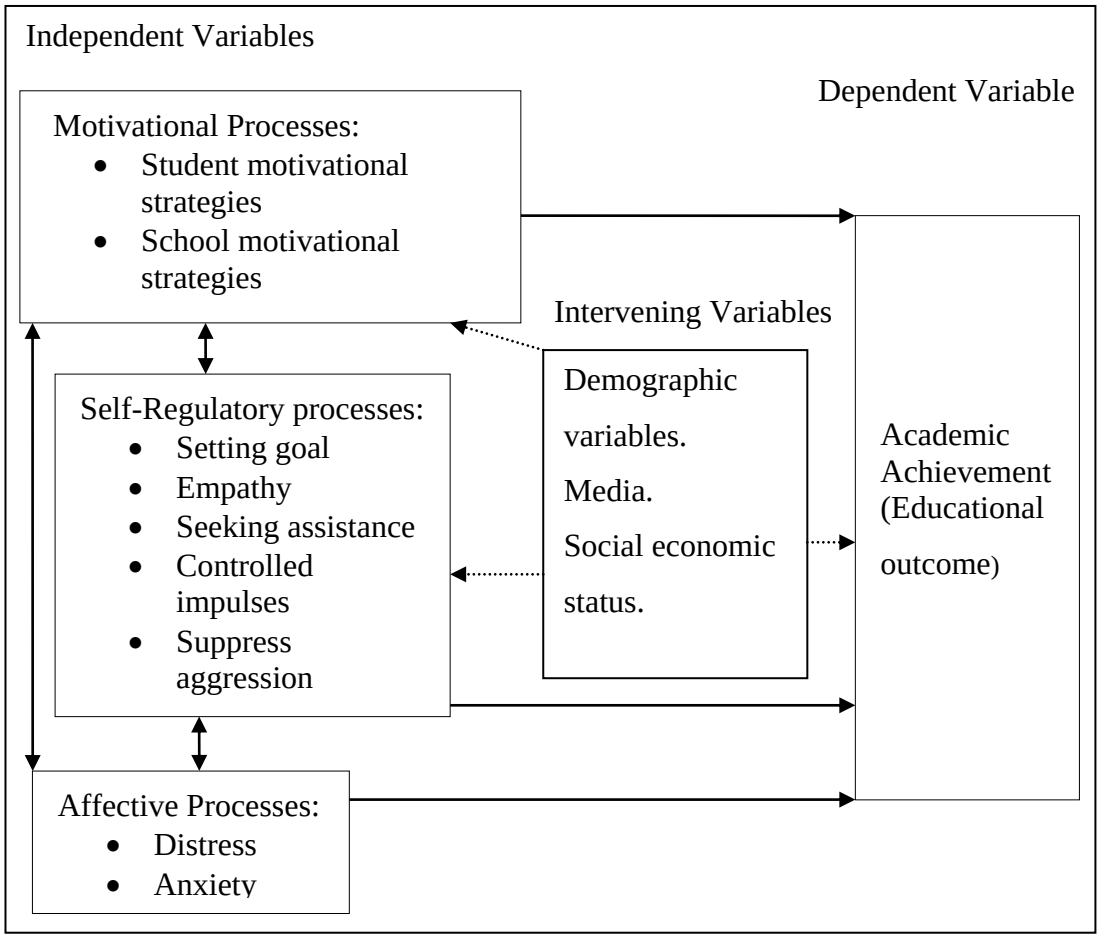
In spite of this, some scholars maintained that internal attributions portray a more significant role when compared with external attributions. When students apply more effort into school work they will be apt to achieve academically (Elliot, 2005). In the current study, the emphasis was placed on the internal attribution –effort as outcome of motivational processes. The theory is relevant to this study in that when students are motivated they will exercise self-restraint (self-regulation). Self-regulated students set goals, monitor, regulate, control tasks and are more probable to achieve better academic outcomes. It was anticipated that when learners exert more effort (Self-restraint) in their studies, they are likely to do well in academic achievement. When students put a lesser amount of effort in learning because of distress (affective process), they are likely to achieve low grades.

(b) Self Efficacy Theory

The idea of self-regulation emerged from Albert Bandura's groundbreaking theory of self efficacy (Zimmerman, 2003), which was later fused into social cognition theory. Essentially, Self-Efficacy was advanced by Albert Bandura as part of a bigger theory, the Social Learning Theory (Ashford & LeCroy, 2010), which has evolved into the Social Cognitive Theory (Levin, Culkin, & Perrotto, 2001). Self-efficacy is self-beliefs on one's ability to achieve at some designated levels (Feltz, 2007). Even as studying children, Bandura (1997) established that their self-beliefs about their abilities to achieve at designated levels appeared to determine how ably they thought they could self-regulate their thoughts and behavior.

Consecutively, the children with superior self-regulation were capable to learn better and enhance their self-efficacy. The theory is applicable in this study given that learners with a robust self-efficacy are more probable to provoke themselves with challenging tasks and be for all intents and purposes motivated. These students will put more effort so as to meet their obligations and point failure to causes which they can control. Self-efficacious learners also make progress swiftly from hindrances and eventually may achieve their goals. Contrariwise, learners with low self-efficacy are unlikely to put effort and may consider challenging chores as threats. As a result, learners with low self-efficacy set low targets which explain low academic performance. In the present study, it was anticipated that self-efficacious students are motivated, self-regulated and have less distress (affective). When students are motivated, self-regulated and have less distress they tend to record higher on academic achievement.

1.10.2 Conceptual Framework



Key: Influence
Possible influence
Interactions' effect

Figure 1.1: Conceptual framework showing relationship among the variables.

Source: Researcher's conceptualization, 2015.

Figure 1.1 shows the interrelationship among the variables. The framework indicates the nature of relationship between the predictor variables and academic achievement which may results in either positive or negative relationship. The structure of the relationship is such that predictor variables influence the intervening variables and vice versa. The criterion variable may also be influenced by the intervening variable.

The predictor variables directly influence the response variable. There are also interactions among the predictor variables. The study considered the intervening variables to be media and socio economic status. According to the interrelationships, students who register high on motivational processes scale are likely to score higher on academic achievement. On the other hand a student who score low on motivational processes is likely to be a low achiever. When a student is not distressed he or she is likely to exercise self-restraint and may score good grades. A distressed student is likely to make limited use of self-regulated learning strategies and is likely to be below average on academic achievement.

1.11 Operational Definition of Terms

The following terms were defined in line with the way they were used in this study**.**

Academic achievement:	Scores attained by students in second term of year 2016.
Affective processes:	Students traits which are mainly emotional in nature: distress, anxiety, interests, values, preferences, self-esteem, locus of control and attitudes among others.
Distress:	Form three students' emotional reaction to academic task.
Essential statistics:	Consolidated Kenya National Examination Results.
Motivational processes	Student's interests, powerful forces towards a goal and psychological undertakings geared towards academic achievement.
Self-regulatory processes:	Students dynamic, fruitful practice where they set goals, monitor, regulate and control their cognizance.
School motivational strategies:	Enabling students find worth in tasks, providing backing role models and giving positive response by using impartial tasks.
Student motivational strategies:	Students inherent interests and purposive striving leading to quality relationship with teachers.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter contains literature review of studies on relationship between motivational processes and academic achievement. A further review of studies on the relationship between affective processes and academic achievement is presented, while the third part deals with literature related to self regulatory processes and academic achievement. Finally, the last section reviews studies that have explored gender differences in students' self-restraint, motivational, affective processes and academic achievement.

2.2 Students' Motivational Processes and Academic Achievement

Student motivational processes are directly related to academic achievement because they reveal a student's ability and willingness to identify and achieve socially important goals such as academic achievement. More precisely, several components of motivational processes can directly enhance a students' potential for academic achievement. Increasing and enhancing students' motivation is central to high academic achievement. Studies investigating the relationship between motivational processes and academic achievement have remained inconclusive. In a recent study, Hermann (2015) investigated effects of students' motivational strategies on the development of achievement motives in Physical Education. The sample comprised of 919 Students from Switzerland. Data was collected using a self-developed questionnaire.

Observed motivation environment was measured using the German LASSO scales, namely teacher care, classmate cooperativeness and satisfaction with teaching. To evaluate sport achievement motives, the study used a validated German scale. The study found a positive relationship between achievement motives and students' motivation strategies in Physical Education.

The investigation also established that factors determining motivation decline as a result of changes in the classroom environment and teachers. Moreover, results showed significant gender differences on both motives. This was also found for individual and aggregated satisfaction with teaching. Unusually, teacher care showed inhibitory effects on both achievement motives. These findings reported that student's motivational strategy in Physical Education determines the level of performance. The study further explained that a motivational strategy in Physical Education classes is in itself distinctive.

This study used students' motivational strategies on the development of achievement motives in Physical Education among college students and there was need to conduct a similar study based on secondary school students in order to compare the findings. Moreover, the study was based on a sample drawn from a developed country and a related study was needed in order to draw on cross-cultural differences and similarities if any. In a similar study, Onyango (2013) investigated the correlation between school motivational strategies and learners' assessment grades at high school in Kenya.

The objective was to compare what schools' administration offer teacher in anticipation of motivating them and the academic achievement of the selected schools. The research embraced a descriptive survey design. A sample of 104 respondents was chosen. Questionnaires for collecting data from respondents were administered to the participants during the second term of 2013 academic year. Data was analyzed using simple multiple regression and Pearson product moment correlation. The results of the investigation established that incentive of educators improves the quality of students' test grades.

To improve students' academic achievement, the study suggested that institutional administrators need to look for ways of motivating teachers. The sample was drawn from teachers and a comparable study based on students was needed so as to compare the findings. This is an imperative research gap which this study anticipated to fill by using a sample from secondary schools students. Mona (2013) sought to find out the relationship between English language, learning strategies, attitudes, motivation and students' academic achievement in Saudi Arabia. A descriptive survey design was used. Data was collected using Attitudinal Measure of Learners of English as a Second Language questionnaire. A sample of 110 students was used. The study revealed that there were significant relationships between the success in English motivation and academic achievement. The learners considered their learning environment as positive and they were contented with their teacher. Success in English was related with students' motivation.

Even though findings from this study revealed a positive relationship between the achievement in English and motivation, the study was carried out in a developed country and there was need to conduct a similar study in a developing country to compare findings. While the foregoing study used college students, the respondents in the present study were secondary school students. A recent study by Somaye (2014) investigated the relationship between motivational processes and academic achievement of secondary school students in Lamerd, Iran. A total of 1825 high school students were sampled for the study. An ex post facto research design was used. Data was collected using students questionnaires.

The findings indicated that there was significant relationship between students' motivational processes and academic achievement. The study also found a significant relationship between academic achievement and the development of inherent interests. Although the sample was drawn from high school, it was from Iran which is a developed country. The present study built on the above study by finding out the contribution of motivational processes on academic achievement of secondary school students in Kenya. A study by Mukuru (2013) inquired about the influence of motivation on students' academic achievement in Technical Training Institutions in Kenya. The research adopted a descriptive design. Using a sample of 315, the study targeted teaching and non-teaching staffs. A questionnaire with likert scale questions was distributed to the respondents. To clarify some administrative issues, an interview was also designed for the school administrators.

The research highlighted that respondent's motivation, compensation and work situation determines their performance. The other finding of the study was that motivation was a robust predictor of performance, whereas on the contrary amotivation (lack of motivation) was a negative predictor of performance.

The research was carried out in one region and for that reason, findings cannot be representative of other counties. Though this study was carried out in Kenya, it targeted technical institutions and therefore, there was need to conduct a related study in a non technical institution to draw up institutional differences and resemblances if appropriate. The current study therefore catered for this as it used students from secondary schools.

Another study by Yeung (2011) investigated primary and high school students' motivation in English learning in Singapore. This research looked at motivational constructs (self-efficacy, engagement and effort pulling out) of schoolchildren from 78 schools in Singapore (N = 4214). By means of a large and varied sample of primary and secondary students, rating and gender variances in these constructs were observed. The study adopted MIMIC methodology to structural equation modeling. Findings revealed that motivational process predicts academic achievement. Explicitly, the score for self-efficacy and academic engagement tended to be lower when motivation was low.

Although this study found out that motivation have critical effect on successive education outcomes, it was carried out in a develop country and therefore a study on motivational processes of students in secondary schools in a developing country is of outmost need. This inspired the present study.

2. 3 **Students' Affective Processes and Academic Achievement**

Students with high levels of distress and anxiety are in danger of academic failure as a result of not being committed with schoolwork. Ekhlas (2013) reported that affective processes are related to withdrawal from academic task and that high level of affective process is associated with low academic achievement. Studies on how an affective process affects academic achievement have found diverse findings. Rizwan (2016) studied the relationship between distress and academic achievement among high school students in Lahore, Pakistan. A sample of 414 students was randomly selected from seven different departments in university. Data was collected by using the Distress Inventory (DI). Data was analyzed using regression analyses. Outcomes revealed substantial negative relationship between distress scores and students' achievement grades. This study was carried out in Pakistan and it was important to develop an equivalent study in Kenya. This prompted the researcher to find out the relationship between affective processes and academic achievement among secondary school students in Bomet County, Kenya.

Niemi (2016) undertook a study on medical students' distress quality and academic success during a six-year medical programme. A sample of 110 university students was used. Questionnaire and interviews were used to assess severity of distress. Distress symptoms were common. The results showed a negative relationship between distress and academic achievement. The study used experimental design whereas the present study adopted expost facto research design. Akin (2010) examined the relationship between university students' self-efficacy, anxiety and academic performance. The intent of the research was to test the connections between self-efficacy, anxiety and academic performance among university students in Turkey. Sample of 395 students were randomly selected from four universities.

Questionnaires were used to collect data. Findings established significant relationships between the variables. Chemistry laboratory anxiety revealed a negative relationship with chemistry grades. Also, the study reported that attitudes were positively related with self-efficacy. While the above reviewed study investigated the relationship between students' anxiety and academic scores, it focused on university students and was subject specific. Stranded on the same study, the current study drew sample from secondary school students and used the overall academic grade.

Shakir and Parvez (2014) investigated the correlation between anxiety and academic success of teenagers. Through purposive sampling, 361 Indian teenagers were picked for the study. Questionnaires were used for data collection. The study found an inverse correlation between the academic success and anxiety. Substantial dissimilarities were established between academic successes of low and high anxiety learners. The sample was drawn from India while the current study was carried out in Kenya. Bethany and Benefield (2013) conducted tests in which relaxation of muscle training and learning skills were imparted to students from Baptist University (USA). Sample A had six participants while seventeen participants were in Sample B. Using three surveys that measured anxiety and study activities, each respondent was pre and post -tested. Time expended on learning and their attention levels were investigated. The pre and posttest found that a decrease in test anxiety improves participants' performance.

The study adopted pre-test and posttest, the current study did not use pre-test and posttest because it was not an experimental study. Moreover the respondents for the study were University students while the current study used secondary school students. In a related study, Mbugua (2013) investigated anxiety among visually impaired learners. The purpose of the study was to find the relationship between anxiety and academic achievement among visually impaired students. The target population was all learners at Thika High School, Kenya. With the use of stratified random sampling technique, a sample of 100 students was drawn for the study. Interviews and questionnaires were used for data collection.

Outcomes from the research reported that visually impaired learners suffer anxiety at diverse levels and this affects their emotional stability and academic achievement negatively. The respondents for the study were visually impaired and therefore their academic disposition was varied. In order to draw comparison between the two varied academic dispositions, the current study used secondary school students who are not visually impaired. Pehlivan and Koseoglu (2016) indicated that assertiveness as an affective process determines academic achievement of students and their careers. Using purposive sampling, 200 high school students from Michigan State (USA) participated in the study. A portraiture research design was used. Data was collected using students questionnaires. The outcomes showed that there was significant positive relationship between students' assertiveness and academic achievement. Although the sample was drawn from high school, it was from USA which is a developed country. This created a research gap which inspired the present study.

In a comparable study, Guney (2015) reported that assertiveness is an affective process which strongly predicts academic achievement. A sample of 122 preschoolers from Malaysia took part in the study. A sequential mixed method research design was used. Data was collected using learners questionnaires. The results exhibited considerable relationship between students' assertiveness and academic achievement. The sample was drawn from pre-school, the present study used secondary school students as respondents. This presented a research window which stirred the present study. Another study by Başaran (2015) revealed a positive relationship between assertiveness and academic achievement.

The study sampled 344 primary school pupils from South Africa. An ex-post facto research design was used. Data was collected using questionnaires. The findings disclosed significant positive relationship between students' assertiveness and academic achievement. Although the findings showed significant relationship between the variables, the participants were primary school pupils and it was necessary to scheme for a similar study centered on secondary school students.

Saracaloglu and Varol (2016) investigated self-concept as determinant of academic achievement. By means of random sampling, 150 college students participated in the study. Descriptive survey research design was adopted for the study. Statistics were collected using students inquiry form. The results exposed a significant relationship between self-concept and academic achievement. Self- concept was found to predict academic achievement and that self-concept is the total of individuals' opinions regarding their disposition and the way they discern and appraise their academic achievements. The sample consisted of college students, the current study used secondary school students for its sample. A similar study by Başaran (2015) investigated self-concept as a predictor of academic achievement. A sample of 56 Natal university students took part in the study. A descriptive survey research design was used. Data was collected using students questionnaires. The findings showed significant relationship between self-concept and academic achievement. The study used University students as participants while the present study used secondary school students as respondents.

Sokmen and Bayram (2013) looked at the relationship between logical thinking skills and academic achievement in USA. By means of stratified sampling, 50 primary pupils participated in the study. The study used an ex-post facto research design. Data was collected using interview schedules. The results displayed a meaningful relationship between logical thinking and academic achievement. Primary school pupils were sampled for the study but the current study used secondary school students. The study found out that logical thinking expresses a thinking flair called precise thinking and high academic achievement. A recent study by Ozlem (2014) studied logic as a factor determining academic. Using purposive sampling, 133 University students from India took part in the study. A descriptive survey research design was used. Data was collected using students questionnaires. The outcomes showed that there was significant relationship between logical thinking and academic achievement. The study reported that logic is very important in determining academic achievement since it is accepted as the knowledge of thinking rules which is linked with reasoning relationships between thoughts and academic achievement.

In Kenya, a number of studies on logical thinking have been done. For example, Yıldırım (2014) reported that logical thinking affects academic achievement in different ways. The findings further enlighten that logical thinking is important in motivation which also influence academic achievement. Yıldırım (2014) dealt with logical thinking of primary students unlike the current study which dealt with affective processes of secondary school students.

Similarly, Yaman (2016) found out that logical thinking is an expertise that can be gained from cognitive processes which determines academic achievement. A sample of 300 secondary students participated. An ex-post facto research design was employed. Data was collected using students questionnaires. The study reported significant relationship between logical thinking and academic achievement. Yaman (2016) suggested that logic is an indispensible tool of thinking and academic achievement. Since each academic area aims to govern and explain the phenomenon and the relationship between phenomenons regarding their field, logical thinking is found to play a key role in academic achievement. The study further suggested that logic is an obligatory tool in explanation, prediction and verification processes of academic achievement. However, most of the reviewed studies did not consider some vital issues in research like the simultaneous effect of three affective processes on academic success. The studies only scrutinize the issue through one process. Investigating the effect of affective processes on academic achievement one by one does not give adequate information about comparative tasks of affective processes (Alcı, Erden, & Baykal, 2015).

Although several researches include studies multi-dimensionally probing the subject, most of these studies used college students as respondents. Furthermore there are scanty studies on affective processes which have been carried out in Bomet County, Kenya. According to Alcı, Erden, & Baykal (2015) the knowledge about a student's accomplishment or failure in academic achievement revolves around such factors such

as discipline, class commitment, self-regulation and affective processes. Nolting (2014) reported that success in mathematics is dependent on students' anxiety and beliefs as it has to do with their mathematical attitude. A sample of 234 high school students took part in the study. An ex-post facto research design was used. Details were collected using questionnaires. The outcomes presented significant relationship between anxiety and academic achievement. The study further informed that affective processes such as anxiety impact on students' learning activities and finally influence their ultimate academic achievement. Mohammad (2012) studied the effect of anxiety on the academic achievement of Students at University level in Bahawalpur, Pakistan. It was a descriptive study and interview method was adopted for data collection. A sample size of 97 students was chosen through stratified sampling. In this research, questionnaire (Otis self-administering test of mental ability) and anxiety measurement scale was selected as an instrument for data collection. Data was analyzed by using the formula of regression to see the impact of anxiety on the academic achievements of students and formula of co-relation was applied to see the relationship between anxiety and academic achievements of students.

The findings revealed that anxiety has negative effects on academic achievement of students. The results reported that when anxiety increases, academic achievement decreases both in male and female students. The study was quantitative in nature and used secondary school students as respondents. Grounded on the same study, the present research was pertinent.

2.4 Students' Self-regulatory Processes and Academic Achievement

Self-regulatory practices have mostly been associated with high academic achievement. However some studies have shown that self-regulatory processes do not influence academic achievement (Somaye, 2014). Kolovelonis (2011) reported that social competence which encompasses skills in goal setting, problem-solving abilities and capacity to practice self-control is found to necessitate the implementation of self-regulatory skills and thus influences academic achievement. In a recent study, McGhee (2010) suggested that since academic achievement and self- regulatory processes share mutual traits, it seems that stimulating the progress of either characteristic of variable should have an influence on the other variable.

Further, the findings revealed that self-regulatory processes can be vital in determining learning outcomes if a student has positive views about his ability to convert and attain best academic achievement. A study by Ning (2012) found that students high in self-regulatory processes are more able to control their own learning undertakings, master challenging academic tasks and influence their educational achievement. Simple random sampling was used to obtain 123 college students to participate in the study. A descriptive survey research design was used. Data was collected using students questionnaires. The findings showed significant relationship between self-regulatory processes and academic achievement. The study used college students while the present study used secondary school students as respondents. Furthermore the study was carried out in Australia while the present study was carried out in Kenya, a developing country.

However, a number of studies have reported that the association between self-regulatory processes and academic achievement is contradicting. The ability to self-regulate one's learning and inspire oneself towards desired goals is above all critical at the secondary school where the syllabi are developing towards a more challenging context. Student academic achievement has been found to be influenced by self-restraint, which encompasses skills in goal setting, empathy, feelings of social support, controlled impulses and ability to suppress aggression in the face of social pressure. Furthermore, self-restraint processes can be useful in determining academic outcomes if a student has positive beliefs about his ability to realize optimal learning. Roohani and Asibani (2015) reported that self-regulatory processes have produced popular paradigms for comprehending academic achievement. In most academic courses, academic achievement in school rest on learners' capacity to read commendably and use the content to excel in examinations.

Roohani and Asibani (2015) studied the success of Iranian learners reading command training (self-restraint scheme development, SRSD). The study observed the results of partaking in the strategic-based training and nonstrategic-based training. To realize the aims of the study, 70 Iranian students from a language academy took part in the research. The study used a post-test and pre-test control group design. Metacognitive awareness inventory (MAI) and a scale for reading summaries were used for data collection. The study found that the strategic-based training positively influence the respondents' reading of texts. Likewise, the influence of SRSD training on participants'

reading of texts was meaningfully superior in the SRSD group when compared with the non-SRSD group. Although findings from this study revealed positive relationship between self-regulated learners and academic achievement, it was based on reading as a specific subject and more so it was experimental. This conclusion informed the design of the present study in order to compare the results with a similar sample drawn from Kenya.

In another study, Shaine (2015) sought to find the effect of self-efficacy and self-restraint learning approaches on performance of primary school pupils in Ethiopia. A random sample of 169 pupils took part in this research. Different sets of scales were used to collect data. Outcomes revealed positive relationships for all the variables. Results from multiple regression analysis also indicated that self-efficacy, self-restraint strategies jointly account for the variances in performance. However, these findings were based on respondents from primary school and it was important to scheme for a similar study using secondary school students. This stirred the present study so as to relate results.

Conversely, Baris (2015) investigated self- restraint strategies and academic motivation as predictors of students' academic achievement among university students. The respondents comprised of 166 students from Georgia Southern University, USA. Purposive sampling was used and data was collected using two sets of questionnaires.

The findings revealed that there was no relationship between academic motivation and academic achievement. The outcomes also indicated no relationship between students' self-restraint strategies and academic achievement. As per the current study, the sample for this study was drawn from university students and there was need for a similar study using secondary school students for purposes of comparison. A related study by Tangney, Baumeister, & Boone (2004) investigated the relationship between empathy and academic achievement among primary school pupils in South Africa. Purposively, 800 students were sampled for the study. Ex post facto research design was used and data was collected using students questionnaire.

Though empathy was found to predict positive academic achievement, the study used respondents from primary school and it was essential to plan for a comparable study based on high school students. In the same way, a study by Duckworth & Seligman (2015) sought to find the relationship between self-restraint and academic achievement of college students in Australia. Samples of 224 college students were considered for the study. Descriptive survey research design was adopted. Data was collected using self-report (parent reports, teacher reports and monetary report) questionnaires and analysis was done using descriptive statistics.

Self-restraint was found to predict ultimate scores, college appearance, standardized achievement scores. This was simulated in an auxiliary finding where self-restraint revealed more than twice variance as IQ in academic achievement. The study used respondents from college students and it was necessary to intention a study based on high school students. This stimulated the current study so as to compare findings.

Oli (2014) investigated the relationship between seeking assistance strategies and academic achievement. To carry out the study, 120 Indian students were chosen purposively. The transformed Bangla version of the Motivated Strategies for Learning Questionnaire was administered to collect data. Students' performance was measured by their most recent terms marks. Outcomes exposed that academic achievement was related with time and seeking assistance from teachers. High successes were related to managing time and seeking assistance from teachers. The research used respondents from university students and it was essential to intention a parallel study grounded on secondary school students. This stirred the present research so that conclusive findings may be established. Angela (2015) studied the relationship between controlled impulses and academic achievement among high school students in Pennsylvania, USA. The study sampled 140 respondents. Descriptive survey research design was embraced and self-report questionnaires were used to collect data.

Findings indicated that very self-disciplined (controlled impulses) students outpaced the more impulsive classmates on academic achievement. Although controlled impulses was found to predict academic achievement, the study was carried out in a develop country and it was important to design an equivalent study founded on a developing country. A recent study by Saira (2013) looked at the relationship between suppress aggression and academic achievement of secondary school students in Bangladesh. The study was guided by using sequential mixed method research design. Ten high schools from Dhaka municipality (Bangladesh) were chosen purposively for the study. Data was collected using questionnaire. Findings revealed that suppress aggression indicated a positive relationship with academic achievement. Although the sample was drawn from secondary school students, it was necessary to come up with a similar study in a developing country so as to compare outcomes.

Carolina (2014) reported that student self-restraint are likely to be directly related to academic achievement for the reason that they reveal a student's ability and preparedness to recognize and achieve academic goals. The study used an ex-post facto research design. A sample of 115 Mary land university students was preferred for the study. Statistics was collected using questionnaire. Findings revealed that self-restraint has positive relationship with academic achievement. The study also suggested that a number of constituents of self-restraint can directly improve a students' potential for academic achievement.

Further the study reported that self-restraint includes the identification of normative opportunities for behavior which allows students to perform what is expected of them in the school. It is true that complying with societal expectations permits students to achieve a variety of chores that are not essentially interesting but important for learning to be effective. Instances of such activities are the finishing of classroom assignments, following general school rules and showing interest in learning accomplishments. The sample was drawn from University students while the present study used secondary students. It was therefore necessary to carry out a study based on secondary students so as to compare findings.

Lavender (2005) undertook a study to explore the link between empathy and academic achievement for adolescent boys in Seattle, USA. The participants were 32 elementary school pupils. The study adopted online interviewing. Findings showed a strong relationship between empathy and academic achievement. Unlike the reported study, the present study had respondents drawn from secondary school students. Keller (2003) studied the capacity to postpone gratification and the connection with academic achievement. The sample comprised of 600 University students in Uganda. Data was collected using questionnaires and document analysis. Findings showed a strong relationship between capacity to postpone gratification and academic achievement. The study also informed that the capacity to postpone gratification assists students to remain on task and improves attention on the achievement desires of the school.

Moreover, the study suggested that the link between motivation and achievement was expected to be auxiliary by way of its relationship with self-restraint. The reported study used University students as participants, the current study used secondary school students as respondents. Another study by Roohani (2015) investigated children's behavioral self-regulation when studied directly and according to teacher assessment in France. Samples of 260 pupils were followed on longitudinally for two years. Self-regulation was measured using a structured direct observation. Multilevel analyses exposed that higher levels of self-regulation predicted higher academic skills after controlling for gender, age and maternal education. The study reported that self-regulation determined progress in academic achievement in all three groups.

This specified that behavioral self-regulation exclusively explained for student's academic outcomes. Even though the study found that self-regulatory process predicts academic achievement, the sample was pre-schoolers from a different cultural setting and this inspired the present study. The present study was meant to investigate motivational, affective and self-regulatory processes as predictors of academic achievement among secondary school students in Bomet County, Kenya.

2.5. Gender Differences in Students' Self- regulatory, Motivational and Affective Processes

2.5.1 Gender Differences in Students' Motivational Processes

Studies on gender differences on motivational processes have remained inconclusive. Fowler (2013) studied gender differences on motivational processes among the first year students in Michigan University, North America. This study investigated motivational processes founded on the expectancy value theory along with intents to persist of male and female first year engineering students at different academic periods: first semester (n=323), end of first semester (n=191), after first academic year (n=133). A wired survey, informed by another research, scrutinized six motivational hypotheses using questionnaires: identity with engineering, sense of belonging in engineering, expectancy of success, usefulness of engineering, interest in engineering and sense of worth of obtaining an engineering grade. Students were observed based on their plans to continue in the engineering program and to follow an occupation associated with their engineering degree. A confirmatory factor examination fixed with internal reliability proposed that the factors were fashioned applicably for this study.

Consistent with preceding studies, male students entered University with considerably higher scores of expectancy of achievement in engineering program than female students. Conversely, expectancy of achievement improved in the first year. However, female demonstrated marginally lower ratings of belonging in engineering than male.

In addition to female students showing a marginally significant increase in expectancy for success over the first year, male students exhibited a marginally significant decrease in their sense that an engineering degree is worth the cost. The outcomes supported the set of conclusions on gender and motivation in several studies but the respondents were Americans and a purpose of similar study based on Kenyan students was warranted. Reisberg (2010) carried out a study on sex differences in motivational processes with a sample of 990 Norwegian undergraduate students. A questionnaire was used to collect data. Analysis was done using t-test and the researcher observed that male students had considerably higher motivation convictions than their female colleagues. The study sample was drawn from a developed country and this inspired the idea of the present study so as to establish differences and similarities whenever possible.

Even though considerable gender differences in motivation are often reported in many studies, a few studies have found no gender differences. For example, Safure (2016) studied gender differences in motivation among secondary school physics students from New South Wales schools. The study investigated whether the variation is consistent among all the high school classes. Using Fine-grained analyses at module-specific level of the high school physics, the study found no gender differences.

Specifically, the study reported that motivation by both gender was qualitatively similar and that girls' motivation and persistent enrolment strategies in physics were found to be equal with boys. This finding exposed the necessity to change the gender-biased stereotype that girls perceive physics as a male domain and the the outcomes have implications for intervention strategies. This study was carried out in Europe and due to cultural differences, there was need for a similar study in a developing country so as to make comparison. Thus the present study sought to establish gender differences on students' motivation in Bomet County, Kenya.

2.5.2 Gender Differences in Students' Affective Processes

People accept as true that girls are more emotionally intense than boys, but the scientific proof is unclear. A study by Barret (2014) investigated the hypothesis that girls and boys contrast in their affective processes. A survey research design was used. A sample of 17 boys and 17 girls in Britain participated in the study by viewing affective images and rating their feelings of subjective arousal. Self-report questionnaires were used. The study found that boys were more externally focused and girls were more internally focused. This study was carried out in Britain which is a developed country with a different cultural environment. Therefore, the current study built on the above study by finding out gender differences on affective processes among secondary school students in Kenya.

Rizwan (2016) carried out a study on gender differences in affective processes among university students. Samples of 230 respondents were randomly chosen in a university in Pakistan. An ex post facto research design was used. Data was collected using students questionnaires and analysis was done using descriptive statistics, Pearson correlation and regression analyses. The study found that female students reported higher affective processes scores than male students. Further, the outcomes indicated that worry contributes more in test anxiety than other factors. Consequently, it was established that affective process is one of the factors which is predicts students' academic achievement. This study used university students and this stimulated the current study so as to compare results when secondary school students are used as respondents.

Another study by Ronato (2014) investigated gender difference on test anxiety among students in the University of Eastern Philippines enrolled in a course in problem solving in the succeeding semester of SY 2012-2013. The study sought to find the difference in the level of mathematics anxiety and academic achievement among boys and girls. Using a 24-item Mathematics Anxiety Inventory, girls had higher level of mathematics anxiety than boys and that there was a meaningful variation in the math's anxiety levels of male and female students.

The female respondents had the top five highest levels of anxiety in items relating to tests, homework and the essentials of mathematics, particularly algebra. Many of the male respondents had average to low levels of anxiety. Furthermore, significant negative relationship was found between anxiety level and mathematics achievement. The study used university student while the current study used secondary school students. It was anticipated that the current study may offer more understandings on gender differences on tests anxiety among secondary school students.The results demonstrated that the same affective experience is understood differently because girl's feelings are self-focused while boy's feelings are not self-focused and this impacts on their academic achievement. The study was carried out in a developed country while the present study was carried out in Kenya. Furthermore, there are few studies on gender disparity in affective process which may have been carried out in Bomet County and therefore the current study was of critical importance.

2.5.3 Gender Differences in Students' Self-regulatory Processes

Boys have a tendency to attribute their achievements to skills but girls frequently attribute their achievements to effort. The contrary is right when investigating on poor academic achievement. Girls regularly ascribe their poor academic achievement to lack of ability, while boys blame on low effort. A study by Safure (2016) examined gender differences in self-regulated online learning environment in Ankara, Turkey. Sample of 145 respondents from an online computer course were used. Motivated Strategies for Learning Questionnaire was used to collect data. Data was analyzed by linear stepwise regression method and multivariate analysis of variance.

Findings revealed that seeking assistance indicated a significant extent of variance in female students' academic performance and suppress aggression explained a significant variance among male students' academic success. This study was done using an online course and there was need for the present study to compare findings when a course which is not based on internet is considered.

Tobias (2013) studied whether self-restraint strategies explain for gender differences in language and mathematics performance. Explicitly, the study was on whether self-regulation explains variation in higher academic achievement by girls in comparison to boys. A sample of 53 German junior school students participated in the study. Data was collected using questionnaires and both descriptive and inferential statistics was used to analyze data. Findings revealed that girls outpaced boys in language accomplishment and suppress aggression strategies. The study found boys' performance in mathematics was undervalued when the study did not control for self-regulation strategies. This analysis presented findings regarding college students and stuck on the same research, the current study filled this gap in literature by presenting the findings from secondary school students. In a new study, Chen and Bembenutty (2005) studied the extrapolative value of self-regulation (academic adjournment of gratification, and motivational beliefs of teaching efficacy) and academic performance among pre-service teachers. The researchers found no gender differences on self-regulatory process but self-regulatory process was positively related to academic achievement.

Further, the results exposed that controlled impulses and academic interruption of gratification significantly predicted pre-service teachers' self-efficacy beliefs. Controlled impulses also significantly predicted academic delay of gratification. In a study of urban pre-service teachers', Chen and Bembenutty (2005) found that pre-service tutors who had higher controlled impulses scores and used time and study situation strategies applied more strength than those with lower controlled impulses scores. Pre-service teachers applying more energy were also more precise in evaluating their performance abilities, and consequently scored higher on tests.

A recent study by Herman (2015) examined gender differences on self-regulation among high school students in United States of America. A sample of 234 high school students participated in the study. Data was collected using students' questionnaires. The study revealed that boys and girls enter formal schooling with different levels of self-regulation which is associated with achievement gaps. This study was carried out in USA, a different cultural background and the reason for the present study will be to add to a growing literature on gender differences on self-regulation among secondary school students in Bomet County, Kenya.

2.6 Prediction of Academic Achievement from Motivational, Affective and Self regulatory Processes

Scanty studies have been done to investigate the relative predictive weight of motivational, affective and self-regulatory processes on students' academic achievement. A study by Juliana (2014) sought to find motivational, affective and self-regulatory processes as determinants of academic achievement among high school students and college students in Argentina. The sample comprised of 459 students. Data was gathered by means of academic surveys and Academic Motivation Scale (AMS). A number of path analyses were used to test a theoretical model on motivational, affective and self-regulatory processes as predictors of academic achievement. Findings indicated that motivation is a better predictor of academic achievement when compared with affective and self-regulatory processes. The study was based on a sample from a developed country, and since Kenya is a developing country, it was important to conduct a similar research so as to compare the findings. A similar study by Hamed (2016) investigated prediction of academic achievement centered on motivational orientations and learning strategies in Egypt. A sample of 331 students using the multi-stage cluster sampling method was used.

Academic achievement was measured using students GPA. The data was analyzed by using multiple regressions. The findings revealed that, the strongest predictor for academic success is motivation. Self-restraint strategies also had a lower positive predictive weight but affective processes had significant negative relationship on academic achievement.

The study was based on a sample of college students and therefore it was necessary to carry out a similar study based on secondary school students to establish similarities or differences if any. Another study by Shirley (2013) conducted a research on the matched effects of self-regulatory, motivational and affective processes on academic achievement. A sample of 163 sixth-grade students in Britain participated in the study. The respondents were requested to fill three sets of questionnaires. Analyses were done using multiple regression analysis. The findings indicated that self-regulatory, motivational and affective processes predict academic achievement. However the results never showed which among the three variables is the best predictor of academic achievement and this stirred the intention of the current study which sought to find out the variables' relative predictive weights on academic achievement.

2.7 Summary of Related Literature

The literature reviewed showed that the influence of motivational, affective and self-regulatory processes continue to attract the attention of many researchers in Africa and across the world. In the foregoing related literature review, the following have been discussed: Motivational processes have been discussed in relation to its influence on academic achievement. The literature has revealed that motivational processes have positive impact on academic achievement. Moreover, students who are motivated showed improvement on academic achievement for example Onyango (2013) study.

Most studies conducted were done among university, college and elementary school students with limited studies focusing on students in secondary schools. Some studies were purely qualitative and also reviewed were studies on youths with visual impairment. The reviews of related literature on affective, self regulatory processes have been discussed in relation to its influence on academic achievement.

The literature has revealed that affective, self regulatory processes determine academic achievement. What is more, students' motivation, distress, anxiety and self-regulation have an influence on academic achievement. Again, some studies reviewed have parents of the participants interviewed. The current study dealt with students only. Studies on gender differences have established the differences on motivational, affective, self-regulatory processes and academic achievement. Other studies indicated contrary findings. Most of the studies were done in USA and Europe. Due to cultural variations, there were reasons for the current study so as to approve or confirm the findings. Still, instrumentation and data analysis procedures took a different dimension in the current study. Based on the literature reviewed, there is a significant predictive weight of motivational, affective and self-restraint processes on academic achievement. Even though the literature reviewed sheds light on motivational, affective and self-regulatory processes as predictors of academic achievement particularly in developed countries, the same conclusion by reason of culture, economic and social factors may not be applicable in so far as Kenya is concerned.

Hence, the purpose to carry out the present study was in order to refute or confirm such findings. Moreover, the research design, data collection procedure, analysis and the setting varied in the present study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter consists of the research design, study locale, sample of the study, justification of the design, research variables, target population, pilot study, data collection methods, reliability of research instruments, validity of the research instruments, statistical methodology, logistical and ethical consideration.

3.2 Research Design

The study used an *ex-post facto* research design. According to Kerlinger (2009), *ex-post facto* research is a systematic empirical inquiry in which the researcher does not have control over the independent variables because their manifestations have already occurred or because they cannot be manipulated. 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 (2003), ex- post- facto research is a valuable exploratory tool and more so, when possible cause and effect relationships are being explored, as was the case in the present study. In the present study, motivational, affective, self-regulatory processes were measured and the students' average grades were accessed during the year.

3.2 Research Variables

In this study, Independent/predictor variables were motivational, affective, self-regulatory processes and dependent /response variable was academic achievement. Motivational, affective, self-regulatory processes was measured using motivational strategies for learning questionnaire ranging from 18 to 72 for motivation. Scores from 18 to 25 indicated low level of motivation, while Scores from 60 to 72 indicated high level of motivation. Scores from 17 to 35 indicated low level of affective processes, while Scores from 50 to 68 indicated high level of affective processes. Scores from 9 to 18 indicated low level of self regulated processes, while Scores from 25 to 36 indicated high level of self regulated processes. In the current research, academic achievement mainly refers to the respondents' actual grade in the 2016 for subjects done at the end of term two by form three students. Academic achievement levels were determined from classroom test results that were obtained from teachers' records. The scores were converted to T scores. A T- score is a standard score with a mean of 50 and a standard deviation of 10.

3. 3 Location of the Study

The study was carried out in nine secondary schools in Bomet County. It is about 200km to the north west of Nairobi. It borders Kericho to the north, Kisii to the west, Narok to the south and Nakuru to the east. It covers an area of 483.7km^2. The communication infrastructure of the area is generally good.

Statistics from Bomet county director's office as shown in table 3.1 revealed high percentage of students consistently scoring low grades, downward trends in mean scores and more so cross gender and locational disparities. Bomet county national examinations mean score of 29.25 is below the national mean score of 34.00(Essential Statistics, 2015). These necessitated the choice of location of this study in Bomet County so that it may help in understanding some of the crucial factors determining academic achievement.

Table 3.1

Bomet County KCSE Mean Score Summary

Sub County	Gender	2013	2014	2015	Overall
Bomet East	Boys	31.33	30.34	29.89	26.32
	Girls	22.5	23.68	20.11	
Bomet Central	Boys	43.6	43.57	42.79	38.89
	Girls	35.71	34.69	33.00	
Konoin	Boys	26.15	25.12	25.22	23.83
	Girls	21.55	21.95	23	
Chepalungu	Boys	30.6	29.77	28.51	28.37
	Girls	27.13	26.44	27.8	
Sotik	Boys	31.2	30.99	27.43	28.88
	Girls	29.76	27.13	26.81	
		29.95	29.38	28.45	29.25
	Cum.%age	35.7	34.9	33.9	34.8

Source: KCSE Essential Statistics (2015)
Key: Cum.%age – Cumulative Percentage.

The economy of the area is mainly agricultural based with tea being the main cash crop which is labour intensive. Plucking of tea is done by the youths and they get paid in every session. It is possible that these factors may interfere with the students' motivation and self-regulated learning, hence limiting active participation in classroom learning and that was why the researcher chose the area for study.

3.4 Target Population

A total of 2432 form three students in Bomet County formed the target population. This population was the targeted group of students of interest because it helped in meeting the required sample for the study. The form three students were chosen because they have been in school for three years and have selected subjects for examination, hence better prepared to answer questions concerning KCSE. It was imperative to study self-regulatory, motivational and affective processes among high school students since they are capable to dependably introspect about their own emotional activities in steady and reliable means (Weinberger, 1989). High school is also a significant time in academic achievement (Wei, 2007). Thus, it is expected that in readiness for end of term two examination and K.C.S.E, form three students have already adopted particular academic self regulated learning strategies and are motivated.

3.5 Sampling Techniques and Sample Size Determination

3.5.1 Sampling Technique

The study used stratified sampling to obtain girls' and boys' boarding, day school, mixed boarding and private school. According to Kombo &Tromp (2006), this will ensure that certain groups in the population will be represented in the sample. Simple random sampling was used to select 243 form three students as the group was considered better to answer KCSE questions. According to Sidhu (2002), this ensured that the sample was free from unfairness. These represent 10% of the total students in the county. Kumar (2011) showed that a sample of 10% of total population was adequate for descriptive study. Purposive sampling was used to select a total of nine principals to participate in the study. This will enable the researcher to handpick cases to be included in research (Cohen, 2003). There are several benefits of using purposive sampling. For example, the partakers who have been nominated for the study have been picked with a specific purpose.

3.5.2 Sample Size Determination

The study sample was selected from 75 secondary schools in Bomet County. An optimum sample will be selected in order to produce miniature cross section (Kothari, 2011). A sample is the accessible population that has been procedurally chosen to stand for it (Onen, 2009). According to Kumar (2011), a sample of 10% of the target population is representative of the whole population. Therefore, a sample of 10% was established for each stratum. The sampling frame was all the boys and girls in form three in Bomet County.

From Table 3.1, a total of 2432 form threes formed the target population. Ten percent of 2432 is 243(10%) form threes and this constituted the students' study sample with age ranging from 14-24 years (average age = 16 years and SD = 1.23). Stratified sampling was used to select nine schools to participate in the study. According to Kombo &Tromp (2006), this will ensure that certain groups in the population will be represented in the sample.

Once the schools were selected, the researcher obtained a list of all form threes' registers from the class teachers, from which the list of boys and girls was drawn. To get the sample from each school, the researcher used folded papers written ''Yes'' and ''No'' which were properly mixed in a container before asking students to randomly pick them. Folded papers with a ''Yes'' was equal to the number of participants required from each school. The students who picked folded papers with a ''Yes'' participated in the study. The students who were selected were given code names based on their admission numbers. 117 boys and 126 girls were selected for the study, giving a total of 243 students representing 10%of the target population. Equal number of boys and girls were selected to guard against gender bias.

Table 3.2

Sample size

School type	Population			Sample		
		Students			Students	
	school	Boys	Girls	school	Boys	Girls
Boys boarding	10	630	-	1	63	-
Boys day	7	244	-	1	24	-
Girls boarding	18	-	472	2	-	47
Girls day	17	-	375	2	-	38
Co-educational	23	300	411	3	30	41
Sub totals	-	1174	1258		117	126
Totals	75(100%)	2432(100%)		9(12%)	243(Appr.10%)	

Key: Appr.- Approximately

Source: County Director of Education Office, Bomet

The study involved 117 Boys, 126 Girls.

3.6 Research Instruments

The data was collected using two instruments:

(a) Two five point rating scales (here referred to as questionnaires; Weinberger Adjustment Inventory (WAI) adapted from Weinberger Adjustment Inventory (Weinberger &,Schwartz, 1990) and School Motivation Scale (SMS) adapted from School Motivation Scale (Ford & Tisak, 1982) questionnaire. Weinberger Adjustment Inventory and School Motivation Scale were chosen for use in this research as they are commonly used in researches examining self-regulation and motivational processes respectively.

(b) Document analysis.

Pre mock, Mock results and KNEC (2015) results were obtained from the school records. This was because this evaluation form permanent part of students records and are used for placement in subsequent years. Teachers and students take these evaluations seriously. The marks were converted into standard scores (Z- scores).

3.6.1 Weinberger Adjustment Inventory (WAI) Questionnaire

A Questionnaire was used to collect affective and self-regulatory learning processes**.** This study used Questionnaire because of their economy and is easy to score. The questionnaire was used in this study because it reduces bias that might result from the personal characteristic of the interviewer. It was also used because it has greater anonymity which is associated with the absence of the interviewer. A questionnaire will be suitable for collecting data for research because it is appropriate for collecting a lot of information over a short period of time with a relatively low cost (Dahlberg & McCaig, 2010).

The questionnaire was specifically designed to accomplish the objectives of the study. Distress and restraint was rated on five-point Likert scales from 1 = Strongly Disagree to 5 = Strongly Agree. Each of the items provided the following responses: Strongly Disagree (SD), Disagree (D), Undecided (UD), Agree (A) and Strongly Agree (SA). Distress scores were developed from 15 items selected from affective dimensions: self-esteem, emotional well-being, depression and anxiety.

A score of 15-25 indicated that the students have low distress while a score of between 65 and 75 meant the student was distressed. The self- restraint items were derived from 15 questions based on: control of aggression, impulse control, empathy and responsibility. A score of 15-30 indicated that the students had low self-restraint while a score of between 60 and 75 meant the student had stable self-restraint. A bigger sample of students for both the scales was internally consistent (Cronbach, 1951). Test-retest was administered over a 2-month period.

3.6.2 School Motivation Scale (SMS) questionnaire

This questionnaire consisted of 26 items on student's interest in school. Responses were completed on a 5-point scale (1 = Strongly Disagree, 5 = Strongly Agree). A score of 26-50 indicated that the students had low level of motivation while a score of between 80 and 130 meant high level of motivation. A high number of students for both this scale will be internally consistent (Cronbach, 1951).

3.6.3 Document Analysis

The document that was analyzed was the end of term two 2016 mean scores for all participating students from school records. Grades were obtained from student files. Grades from the first term and second term were averaged to form an overall grade-point average (GPA). This was used since these exams results determined students' KCSE index number and were also meant for placement purposes. All the stakeholders tend to take these grades seriously.

Scores were transformed to standard Z-scores and then T- scores (separately school by school and each class by class) so as to make comparison easy.

3.7 Pilot Study

A pilot study was conducted using 30 randomly selected students from a mixed school. Arlene (2010) noted that piloting is an important process in research because it reveals what works and what does not work. A mixed school was chosen so as to guard against gender bias. The participants of the pilot study were invited to complete the self-report questionnaire in class. The head teacher gave permission on behalf of the parents to the researcher to carry out the pilot study with the students. The pilot study enabled the researcher to discover any deficiencies such as wrong phrasing of the questions, insufficient spaces to write responses, evaluate time, cost, adverse events, size and finally to establish the suitability of the area for the study. The researcher administered the questionnaire to 30 students through random sampling.

Afterward, the respondents were invited to give feedback *vis-à-vis* the pilot test. After getting participants' feedback, the researcher cautiously went through the recommendations provided by the participants and finally made alterations to the questionnaire items. The data gathered from the pilot research were organized, investigated and processed. From the findings, the research tools were reevaluated accordingly. The school was left out from the main study.

3.8 Validity of the Research Instruments

Validity of the instruments refers to whether a measure is truthful or genuine, in other words, a measure that is valid assesses what it purports to measure (Arlene, 2010). Therefore in the present study to ensure the validity of the questionnaire and the interview guides, draft copies were given to two lecturers from the Educational Psychology Department, Kenyatta University, who read through and made necessary corrections to ensure face validity. After this review, the questionnaire and interview guides were sent to the researcher's supervisor for further review. The researcher made sure that data collected using various instruments represents the content from the area under study. This included identifying the relevant items for each of the instruments used in the study. The main purpose of the pilot study was to check on content validity, language, clarity of the instruments and the relevancy of the information needed by the researcher.

3.9 Reliability of the Research Instruments

Reliability refers to the level of consistency or stability of an instrument over time (Sherri, 2009). The Reliability of the SMS reported by Ford (1992) was 0.83 while for WAI was 0.81. Because these reliability coefficients were attained with a sample drawn from an industrialized country, the pilot study was used to establish the internal consistency of the instruments for the present sample from Kenya, a developing country.

The reliabilities were obtained using procedures of internal consistency, more specifically the Cronbach' Alpha. Correlation coefficient of above 0.7 was appropriate to assess the instruments as reliable (Orodho, 2005).

Table 3.3

Cronbach's Alpha Reliabilities for the SMS and WAI

Number	Sub scale	Number of items	Circulated Alphas(SMS)	Cronbach's alphas(pilot study)
		18	0.83	
Number	Sub scale	Number of items	Circulated Alphas(WAI)	Cronbach's alphas(pilot study)
		30	0.81	

Key: WAI- Weinberger Inventory Scale, SMS- School Motivation Scale

3.10 Data Collection

After the proposal was approved by the graduate school of Kenyatta University, a research permit to carry out the research was obtained from the National Council for Science and Technology. After getting the research permit, the researcher visited the County Director of Education in Bomet to seek for an introduction letter to the selected schools for data collection. To ensure that the respondents were available at the convenient day and time, the head teachers of the schools were consulted. The convenient day and time for data collection was booked. The researcher convened a short meeting with the teachers and explained the anticipated benefits of the findings.

This was also to establish a close relationship with the teachers/students and to seek for their maximum support. The researcher gave a brief explanation of the purpose and aims of the study and guaranteed the respondents of confidentiality. During the time of data collection, the researcher reported to the particular schools at 9 a.m and left at 4 p.m. The researcher with the assistance of class teachers in the sampled schools personally administered the questionnaires to students. The selected students completed the questionnaires in the course of class time. Permission to administer the questionnaires during class time was sought from the concern head teachers. The questionnaires were distributed when the teacher was present in the class. The respondents were asked to complete the questionnaire during class time. In each school, a brief explanation of the study was given to the head teacher. The researcher administered the questionnaire in not more than 25 minutes. The researcher then filled the record analysis document after collecting the filled up questionnaires.

3.11 Data Analysis

Data was coded and cross checked to ensure that there were no outliers or improper records which might pollute the results. The data was logged in the computer for analysis with the Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics was used to analyze demographic variables. Descriptive statistics not only allows the researcher to use figures but also affords the investigator with data that allow for implications on the population and directions for answering the research questions (Borg & Gall, 1996).

The following were the particular null hypotheses which were tested and their corresponding statistical tests:

H_{01} There is no significant relationship between students' motivational process and academic achievement. **Statistical test: Pearson's product moment correlation coefficient.**

H_{02}. There is no significant relationship between affective process and academic achievement**. Statistical test: Pearson's product moment correlation coefficient.**

H_{03}. There is no significant relationship between self-regulatory process and academic achievement. **Statistical test: Pearson's product moment correlation coefficient.**

H_{04}. There are no significant gender differences in students' affective, motivational and self- restraint processes. **Statistical test: t-test for independent samples**.

H_{05}. There is no significant prediction equation for academic achievement from motivational, affective and self-restraint processes. **Statistical test: Multiple regression analysis.**

Outcomes from the analysis were presented by means of tables.

3.12 Logistical and Ethical Consideration

According to Creswell (2009), respecting of the site of the study and getting permission before entering is important in research. On getting an introductory letter from the University, the researcher sought for a permit from the National Council for Science and Technology to conduct a research on self-regulatory, motivational and affective

processes as predictors of academic achievement among secondary school students in Bomet County. The researcher sought for permission from CEO and then head teachers to collect data from their schools. While in the schools, the researcher introduced himself and gave a short explanation about the intention of the study. All the participants were enlightened on the purpose of the study and their right to pull out at any time without penalty. On confidentiality, the researcher used code numbers and sought for their consent before they participated in the study. All participants appended their signatures on a letter seeking for their consent. Each participant was required to sign the letter together with the parent and or guardian.

CHAPTER FOUR

PRESENTATION OF FINDINGS, INTERPRETATIONS AND DISCUSSIONS

4.1 Introduction

This chapter presents findings, interpretations and discussions of the study *vis-à-vis* the objectives, research questions and hypotheses of the study. The study was guided by the following objectives:

i. To establish the relationship between students' motivational process and academic achievement.
ii. To investigate the relationship between students' affective process and academic achievement.
iii. To find out the relationship between students' self-regulatory process and academic achievement.
iv. To test for gender differences in students' motivational, affective and self-regulatory processes.
v. To develop a predictive model of academic achievement from motivational, affective and self-regulatory processes.

The null (test) hypotheses of the study were:

H_{01} There is no significant relationship between students' motivational process and academic achievement

H_{02}. There is no significant relationship between affective process and academic achievement.

H_{03}. There is no significant relationship between self-regulatory process and academic achievement.

H_{04}. There are no significant gender differences in students' affective, motivational and self- restraint processes.

H_{05}. There is no significant prediction equation for academic achievement from motivational, affective and self-restraint processes.

The study targeted 243 respondents. All the questionnaires were completely filled representing 117 boys and126 girls. This chapter is structured into three important sections. It begins with introduction, the second section is general and demographic statistics while the third section is findings, interpretation, discussions and finally summary of the chapter.

4.2 General and Demographic Information

This section outlines the all-purpose statistics of the questionnaires return rate and demographic records which shows the sampling entities (school categories), sub counties and participants' ages.

4.2.1 Questionnaires Return Rate

The researcher went to all the nine sampled schools and presided over the administration of the questionnaires to the participants and made sure that all the questionnaires were appropriately filled and returned. For that purpose, the return rate for the students' questionnaire was 100 % (243) representing 126 girls and 117 boys. According to Dilliman (2000), a return rate of 60% and above of a research instrument is considered adequate.

4.2.2 Demographic Analysis

This section presents the demographic information of the participants in parts: section one entails data on school category and gender, section two presents data on age and gender and section three presents participants by school and sub county. The particular sample size for the students' return rate is presented in Table 4.1.

Table 4.1

School Category and Gender

N=243	Boys		Girls		Totals	
School Type	F	%	F	%	F	%
Boys boarding	63	25.9	0	0	63	25.9
Boys day	24	9.8	0	0	24	9.8
Girls boarding	0	0	47	19.3	47	19.3
Girls day	0	0	38	15.6	38	15.6
Co-educational	30	12.3	41	16.9	71	29.2
Totals	117	48.2	126	51.8	243	100

Key: F-Frequency, % - Percentage

The data in table 4.1 shows that there were more female 126 (51.8%) than male 117 (48.2%) respondents which meant there were more girls transiting to secondary schools when compared with boys.

When gender was cross tabulated with school category in table 4.1, it indicated that 25.9% (63) male students attended boys boarding secondary schools, 9.8% (24) attended boys day while another 12.3% (30) attended co-education which was more accessible as most of them are day schools and charge lower fees. Similarly, 19.3% (47) of the female students attended girls boarding, 15.6% (38 attended girls day and another 16.9% (41) attended co-educational day schools. The reason behind the equal sum of female students attending girls boarding and girls' day was that unisex schools for girls are popular.

This means that there are more female students (16.9%) attending co-educational than male students (12.3%). These outcomes indicated that the bulk of secondary students are from co-educational day schools as they are comparatively accessible to majority of the students because they are known to be charging lower fees. This finding is supported by a study by Dilliman (2000) who reported that majority of secondary school students in Kenya attends co-educational day schools.

4.2.3 Demographic Data on Age and Gender

The researcher anticipated to find the age distribution of the participants with respect to their ages. The participants' sex was cross tabulated with age in Table 4.2.

Table 4.2

Cross Tabulation of Age and Gender

	Gender					
N=243	Boys		Girls		Total	
Age	F	%	F	%	F	%
14-16	22	9.05	66	27.2	88	36.2
17-19	50	20.6	40	16.5	90	37.1
20-24	45	18.5	20	8.25	65	26.7
Total	117	48.2	126	51.8	243	100

Key: F- Frequency, %- percentage**.**

Table 4.2 shows that there were more girls (27.1%) aged between 14 to 16 years than boys (10.4%) which suggest that girls join school earlier than boys or transit faster. Approximately 14% of the boys were aged 17 to 19 years and 11% were aged between 20 years and above. This means that there were more boys (12.6%) above the age of 20 years than girls (8.2%). On the contrary, more than half of the girls were aged between 17 to 19 years.

A high number of students aged 20 years and above were from co-educational center, implying that these centers attracts and are accessible to more mature students. Majority of students were aged between 17-19 years (37.9%). Therefore, these results strengthened the ministry of education report which informed that majority of secondary school students are aged 18 years (Ministry of Education, 2008).

4.2.4 Distribution of Participants by School and Sub County

The study sought to analyze the distribution of students among the five sub counties. Table 4.3 shows a cross tabulation of the respondents by school and sub county**.** Out of 71(29.2%) students from co-educational, 10 (4.1%) were from Sotik, 19 (7.8%) were from Chepalungu, 12 (4.9%) were from Bomet central, 21(8.6%) were from Konoin while 9 (3.0%) were from Bomet East and this signified that the highest number of students were enrolled in co-educational centers.

The statistics also indicated slightly higher number of female students (51.8%) than male students (48.1%) who were registered a cross the county. Bomet Central sub county had the highest students' enrollment 31.3% (76) while Bomet East sub county had the lowest students' enrollment 15.6 % (38). Bomet Central is well endowed with economic resources and has more schools of all the categories while Bomet East lies on the marginal part of the county.

Table 4.3
Distribution of Participants by School and Sub County

N=243	Sub County					
	Bomet Central	Konoin	sotik	Bomet East	Chepalungu	Totals
School Type	Number F(%)	F(%)	F(%)	F(%)	F(%)	F(%)
Boys boarding	43(17.6)	5(2.1)	6(2.5)	4(1.6)	5(2.1)	63(25.9)
Boys day	10(4.1)	2(0.08)	3(1.2)	6(2.5)	3(1.2)	24(9.8)
Girls boarding	6(2.5)	12(4.9)	13(5.3)	11(4.5)	5(2.1)	47(19.3)
Girls day	5(2.1)	14(0.08)	8(1.2)	8(0.04)	9(3.0)	38(15.6)
Coeducational	12(4.9)	21(8.6)	10(4.1)	9(3.0)	19(7.8)	71(29.2)

Key: F- Frequency, %- Percentage**.**

4.3 Motivational Process and Academic Achievement

This section outlines data presentations, interpretations and discussions of the first objective. The study sought to establish the relationship between motivational processes and academic achievement among students in secondary schools. The results of the study are presented in accordance with the study objective. The appropriate descriptive and inferential statistics for this objective were spelled out and lastly discussions of the findings were given.

4.3.1 Description of Respondents' Motivational Process and Academic Achievement

The first objective sought to establish the relationship between motivational process and academic achievement. Data was collected through a five point likert scale (SMS). The findings are presented in table 4.4.

Table 4.4

Summary Description of Motivational Process Scores

N	Mean	Standard deviation	Range	Min.	Max.	Skewness	Kurtosis
243	69.04	21.413	49	66	115	-0.58	3.5

Key: Min- Minimum, Max- Maximum.

From the scores in the filled in SMS, statistical analysis was carried out by means of descriptive statistics as shown in table 4.4. The respondents who exhibited high levels of motivational process as measured by the school motivational scale (SMS) also demonstrated high academic achievement. The average SMS score for all respondents was 69.04 (SD = 21.413).

The majority of respondents reported as possessing high motivational process (n = 62, 59.5%). Four respondents scored the highest probable score of 130 (n = 4, 3.3%). Correspondingly, mean, standard deviation, range, kurtosis and skewness was computed and presented in Table 4.4.

The constant of skewness was established to be -0.58 and Kurtosis was 3.5. Negative skew showed that the tail on the left side of the probability density function was longer than the right side, meaning majority of students rated themselves highly on the motivational process scale.

This meant that the mean was greater than the median. Kurtosis of 3.5 indicated that the distribution was leptokurtic. The leptokurtic distribution had tail that asymptotically approach zero more slowly and therefore generates more outliers than the normal distribution. The distribution was characterized by extremely thick tail, thin and tall peak with many values not concentrated around the mean. The results also revealed that the motivation mean score was 69.04 which was above the average score (65.00).

Further statistical evaluation was done and the relevant descriptive statistics were ascertained. The respondents' motivational process score was developed to categorize the respondents as low, average or high level on motivational process. A record of 26-50 indicated that the student had low level of motivational process while a score of between 51-79 indicated an average score and 80 -130 meant high level of motivational process. The calculations are detailed in Table 4.5.

Table 4.5

*Classification of Motivational Process Scores***.**

	Motivational process			Academic Achievement
Classification	N	Mean	(%)	Mean
Low	5	45.3	2.1	7.20
Moderate	65	55	26.7	48.00
High	173	75	71.2	65.00
Total	243	69.04	100.0	47.00

Key: N- Number, % - percentage.

It is apparent from Table 4.5 that a few respondents, only five (2.1%) in number were found to be having low level of motivational process and low mean in academic achievement (7.2). Almost a quarter (26.7%) of the participants had average level of motivational process and a mean of 48.00 in academic achievement. About three quarter (71.2%) of the respondents were categorized as being high on motivational process, a group which the highest academic achievement (65.00). On academic achievement, extractions of the respondents' mean examination scores were transformed to z-scores for improved analysis and ultimately converted to T-scores. With T – scores, the range, the mean, standard deviation, skewness and kurtosis were processed. The results are presented in Table 4.6.

Table 4.6

Participants' Academic Achievement

N	Range	Max	Min	Mean	Sd	Skewness	Kurtosis
243	56	85	29	50	10	-0.35	0.6

Key: Max- Maximum, Min- Minimum, Sd- Standard deviation.

The findings in Table 4.6 revealed that the range was 56, that is to say, the extreme high and low T- records were 85 and 29 in that order. The mean of 50 and standard deviation of 10 gave suggestion that the spread of participants' academic achievement scores had been converted to standard T-scores. The first objective was to establish the relationship between motivational process and academic achievement. In order to find the relationship, the following null hypothesis was generated: H_{01}: There is no meaningful relationship between motivational process and academic achievement. To test this hypothesis, the statistics were subjected to a correlational analysis using the Pearson's product moment correlation formula and the results are presented in Table 4.7.

Table 4.7

Relationship between Students' Achievement Scores and Scores on Motivational Process Scale

Motivation	N	Pearson r	Significance
Student process and achievement scores	243	0.898*	0.000
School process and achievement scores	243	0.90*	0.000

It is evident from table 4.7 that a strong significant positive relationship exists between students' achievement scores and motivational processes scores. The study established that academic achievement was directly associated with motivational process. The magnitude of the relationship was marginally higher on school process scale (r (243)=0.983), significant correlation (p=0.000) as compared to student process scale (r (243)=0.983), significant correlation (p=0.000). The range of relationship of each scale was more than 89.8% which was quite high. The findings of this study exposed an important relationship between motivational process and academic achievement (r (243) = 0.983, $p < 0.00$). Because p value was .000 which was less than .05, it showed results were very significant, symbolizing that motivational process had great impact on student academic achievement.

Subsequently the computed r = .983 showed direct relationship between motivational process and academic achievement. It suggested that when motivational process scores increases, academic achievement increases and when motivational process scores drops, academic achievement declines. The stated null hypothesis was for that reason discarded.

Outcomes of the study realized a significant relationship between motivational processes and academic achievement of secondary students. The results from this study supported the findings by Onyango (2013) which reported a positive relationship between motivational process and academic achievement. Based on the level of education, the respondents used in Onyango (2013) study were comparable to the ones used in the present study. The study explained that secondary schools should emphasis on mentoring students in skills to educational success and students motivational strategies.

The study further discussed various measures and strategies which can be useful for students. The strategies which can be contextually applicable and useful for teachers includes; rewards, course structure, teaching styles, peer models and self-instructional training, establishing purpose, affirmation, modalities, provision of cheat sheet and study skills drill. The study concluded that when students are motivated before and during tests, they score better academically and that to effectively manage motivation, students can be helped by teachers and parents through improvement of schools and students motivational strategies. Moreover, the study is also consistent with findings by Amrai, Motlagh, Zalani and Parhon (2011) which identified an association between academic achievement and motivational process.

The finding of the study is also supported by Ozder and Motorcan (2013) who gave details of significant relationship between academic motivation and academic achievement. The study outcome is also reinforced by McGhee (2010) who indicated a low positive correlation between motivation and academic achievement. Further, the study is in harmony with such numerous researches as: Feltz (2007) concluded that academic motivation has a significant effect on academic achievement. Another study by Cokley, Bernard, Cunningham, and Motoike (2001) also established positive correlations between GPA and motivational process and is therefore in the same line of finding with the present study.

The research finding is equally supported by Robinson (2003) who inform of positive relationship between intrinsic motivation and academic achievement. Likewise, Lavender (2005) strengthens the current study by reporting positive relationship between academic achievement and the motivational process. However, the results of the current study disagreed with findings reported by Jessy (2014) who found negative relationship between pupils' motivational process and academic achievement. Nonetheless, the logic behind this variance in observation could be because Kenya is a developing country but Jessy (2014) study was carried out in a developed country. This suggested that the difference in the locale of the study may be a weighty cause that needs more investigation. Therefore, a part from cross-cultural differences, motivational process was certainly linked to academic achievement. The study established that high students' motivational process score is associated with high academic successes.

The interpretation of this finding is that motivated students are more likely to provoke themselves with more challenging tasks which enabled them to score high on academic achievement. The findings of the present study can shed light on the fact that motional process is an impetus in teaching and learning.

4.4 Affective Process and Academic Achievement

This section summarizes data presentation, interpretations and discussions of the second objective of the study. In this objective, the researcher was involved in investigating the relationship between affective process and academic achievement. The participants' affective process was measured using Weinberger Adjustment Inventory (Weinberger, 1990) scale. The results are shown in table 4.8.

4.4.1 Description of Respondents' Affective Process

The second objective of the study sought to establish the relationship between affective process and academic achievement. Data was collected through WAI scale. The findings are presented in Table 4.8.

Table 4.8

Description of Affective Process Scale.

Variable	N	Range	Mean	Sd	Skewness	kurtosis
Affective process	243	35	35.68	10.37	0.98	2.6

Key: N- Sample, Sd- standard deviation.

Systematic investigation was done by calculating the means, standard deviation, range, kurtosis and skewness of the affective process. The mean was found to be 35.68 and the coefficient of skewness was found to be 0.98 while Kurtosis was 2.6. Positive skew showed that the tail on the right side of the probability density function was longer than the left side, meaning many students rated themselves low on the affective process scale. This meant that the mean was less than the median. Kurtosis of 2.6 indicated that the distribution had the bulk of the data to the left and the right tail was longer. The distribution was accounted for by extremely tall peak with many scores not around the mean.In order to find the specific affective processes scores for the participants, the respondents' affective process score was used to point out the respondents as either low, average or high level on affective process. The scores for category of low, average and high affective processes were 15 - 25, 35 - 45 and 65 – 75 respectively. The calculations are made clear in Table 4.9.

Table 4.9

Classification of Affective Process Scores and Academic Achievement.

	Affective Process Scores			Academic Achievement
Classification	N	Mean	(%)	Mean
Low	100	10	41.15	60.00
Average	90	20	37.02	48.00
High	53	65	21.81	20.00
Total	243	35.68	100.0	47.00

Key: N- Number, % - percentage.

Table 4.9 indicates that small percentage (21.81) of respondents was evaluated as having high level of affective process. This was the group that had the lowest mean in academic achievement (20.00). Less than half of the participants (37.02) were considered as having average level of affective process, a group which had a mean of 48.00 in academic achievement and 41.15% of the respondents were regarded as being low in affective process, a group with the highest mean in academic achievement (60.00).The second objective was to establish the relationship between affective process and academic achievement. In order to find the relationship, the following null hypothesis was generated: H_{01}: There is no significant relationship between affective process and academic achievement. To put to test this hypothesis the statistics were subjected to a correlational analysis using the Pearson's product moment correlation formula and the results are presented in Table 4.10.

Table 4.10

*Relationship between Students' Achievement Scores and Scores on Affective Process Domains***.**

Dimension	N	Mean	SD	Pearson r	Sig (2-tailed)
Anxiety	243	44.23	20.986	- 0.696*	0.000
Achievement	243	49.04	8.265		
Worry	243	17.13	20.986	- 0.744*	0.000
Achievement	243	49.04	8.265		
Low wellbeing	243	18.43	20.986	- 0.673*	0.000
Achievement	243	49.04	8.265		
Distress	243	48.13	18.234	- 0.683*	0.000
Achievement	243	47.00	8.265		

It is evident from table 4.10 that a powerful negative and significant relationship exists between students' achievement scores and affective scale scores as well as on subscales scores. The study found that academic achievements are inversely associated with all the subscales of affective process. The extent of the relationship was slightly higher on worry scale as compared to other scales.

The range of relationship of each scale was more than 67.3% which was reasonably high. The Pearson correlation examines the relationship between affective process and academic achievement and showed that the highest correlation was from worry process scale (r(243)=-0.799), a significant correlation (p=0.000). The findings indicated mean and standard deviation to be (M=24.04; SD=10.37) and GPA (M=49.04; SD=8.265), a significant correlation (p=0.000).

Nevertheless, the result revealed that students who had high affective process score achieved low on academic achievement. Therefore, the study found out that there was a significant relationship between high level affective process and low academic achievement among secondary school students. The results revealed a significant negative relationship between affective process and academic achievement ($r(243) = -0.799$, $p < 0.00$). The findings showed perfect negative relationship between affective process and academic achievement. Because p value was .000 which was less than .05, it showed that result was very significant which suggested that affective process had significant influence on student academic achievement.

Then $r = -.799$ showed perfect negative relationship between affective process and academic achievement of students, implying that whenever affective process increases academic achievement drops and whenever affective process drops academic achievement increases. The stated null hypothesis was therefore rejected. These observations were consistent with most researchers' findings. Results from the study supported the findings by Soler (2005) who reported that affective process has negative effects on academic achievement. The study explained that secondary schools tests in Kenya were more structured and inflexible, thus causing high test anxiety. The students feel equally anxious in all exams. Furthermore, the study reported that pressure for recording high on exams, fear of passing a test and other demands of exams were the cause of test anxiety (affective process).

The study also indicated the main challenges students go through when getting ready for examinations. The study concluded that anxiety increases as they think more into the consequences of failing exams. Several studies reviewed have also shown that affective process was found to be negatively correlated with academic achievement, examples include Dordinejad (2011) and Atasheneh (2012) study who found that affective process is negatively related to academic achievement. The study explained that distress during examination can be regarded as negative phenomenon when student move into a cyclic, non-useful progression of speculating results centered on penalties of the exams scores.

The study also discovered that it was promising to monitor students to stop getting indulged into a cycle of distress and that teachers and parents can be of great help for students to keep them motivated to achieve higher without the anticipated effects of poor performance. Though cognitive aspects are found to be superior reason of test anxiety, the study found that distress processes also contribute significantly. Several learners reported that they feel upset, uneasy, nervous, panic and tense. Students can be taught to reduce distress by letting them do test more often. It is evident that anxiety and distress are sources of poor academic achievement. Student performance can be improved by teaching students on how to handle these situations in school. Still, the results from this study supported the findings by Shakir and Parvez (2014) which enlightened an inverse relationship between affective process and academic achievement.

Moreover, the results of the current study also reinforced finding of a study by Bethany and Benefield (2013) who revealed that high students' affective process is directly correlated with low academic success and that metacognitive strategies seemed to be more significant for the low achievers compared to the high achievers. Focused on the time of schooling, the findings in Shakir and Parvez (2014) study were similar to the present study. Owens (2012) also supported the current study by registering that affective process is related to high levels of worry (affective process) that have an effect on academic achievement. The higher level of affective processes reported by the low achievers as matched with the high achievers designated that the low achievers were worried in their readings, therefore, achieved minimally.

Though, results about the consequence of affective process on academic achievement were unpredictable and sometimes controverting, this affective variable has customarily been found in earlier research to be negative (Akin, 2010). In line with the present study, Masson, Hoyois, Pcadot, Nahama, Petit and Ansseau (2004) in their study in America reported that high affective process is directly related to poor academic achievement. In the current study, it was established that high affective process score was related to low academic achievement. Furthermore, the effect of affective process on academic achievement was found to be positive among high achievers but then was found to be undesirable among the low achievers. This indicated that among the high achievers, they succeeded better when they were slightly more bothered about their examinations.

The study finding is also in conformity with results of Science Daily (2009), which inform that effect of affective process on academic achievement is not always obvious but new research by the Economic and Social Research Council suggests that there may be hidden costs. Similarly, Mohammad (2012) study found that anxious individuals find it harder to avoid distractions and take more time to turn their attention from one task and thereby lower their academic achievement. Further, the study was supported by Eysenck (2015) who recounted negative relationship between affective processes and academic achievement. In addition, the study revealed that anxious individuals often performed at a comparable lower level to non-anxious ones but only do so at a greater cost in terms of effort or perhaps long term affective processes.

Consistent with the current study, Soler (2005) and McCraty (2007) studies have found a negative correlation between high levels of affective processes and low academic achievement. Likewise, although Ormord (2000) reported that affective process and academic achievement have been a difficult relationship to clearly elucidate, he reported that academic achievements are inversely related to affective process. Comparably, another research conducted by Oli (2014) found that affective process decreases attention span, memory and concentration and lead to low academic achievement.

Oli (2014) reported that affective process creates irrelevant thoughts, preoccupation, and decreased attention and concentration and may not lead to academic difficulties. However, this observation could be because Kenya is a developing country but Oli (2014) study was carried out in a developed country. This suggested that a part from different study locale, affective process were realized to be surely associated with academic achievement. Further, Studies by Ozlem (2014), Safure (2016) and Guney (2016) disagreed with the current study and they reported that although when attention and concentration is impaired by distress it disrupts memory but does not lead to low academic achievement. The findings of the current study can clarify the fact that distressed students withdraw from school work and do not conform to normative behavior. The implication of this outcome is that low emotional well-being, depression, low self-esteem and anxiety negatively affects academic achievement.

4.5 Self-regulatory Process and Academic Achievement

This section contains data presentation, interpretations and discussions of the third objective of the study. The study sought to find out the relationship between self-regulatory process and academic achievement. The participants' self-regulatory process was measured using Weinberger Adjustment Inventory (Weinberger, 1990) scale. The results are shown in table 4.11.

4.5.1 Description of Respondents' Self-regulatory Process and Academic Achievement

The third objective of the study sought to establish the relationship between self-regulatory process and academic achievement. Data was collected by use of WAI scale. The results are presented in Table 4.11.

Table 4.11

Description of Self-regulatory Process

Variable	N	Range	Mean	Sd	Skewness	Kurtosis
self-regulatory process	243	35	49.46	8.65	-0.64	3.1

Key: N- Sample, Sd- standard deviation.

An investigation was carried out by calculating their means, standard deviation, range, kurtosis and skewness. The mean was 49.46, the constant of skewness was found to be -0.64 and Kurtosis was 3.1. Negative skew showed that the tail on the left side of the probability density function was bigger than the right side, meaning mainstream of students rated themselves highly on the self-regulatory process scale. This indicated that the mean was greater than the median. Kurtosis of 3.1 specified that the distribution was leptokurtic. The leptokurtic distribution had tail that asymptotically approach zero more slowly and therefore generates more outliers than the normal distribution. The distribution was characterized by extremely thick tail, thin and tall peak with many values not concentrated around the mean.

To find the specific self-regulatory processes scores for the participants, The respondents' self-regulatory process score was used to highlight the respondents as either low, average or high on affective process. The scores for category of low, average and high self-regulatory processes were 15 - 25, 35 - 45 and 65 – 75 in that order. The calculations are made clear in Table 4.12.

Table 4.12

Description of Self-regulatory Process and Academic Achievement Scores.

	Self-Regulatory Process Scores			Academic Achievement
Classification	N	Mean	(%)	Mean
Low	88	30.00	36.21	34.00
Average	140	58.00	57.61	52.00
High	15	83.92	6.17	76.60
Total	243	49.46	100.0	47.00

Key: N- Number, % - percentage.

Table 4.12 shows that small percentages (6.17%) of respondents were evaluated as having high level of self-regulatory process. This was the group that had the highest mean in academic achievement (76.60). More than half of the participants (57.61%) were measured as having average level of self-regulatory process, a group which had a mean of 52.00 in academic achievement and 36.21 % of the respondents were considered low in self-regulatory process and also low in academic achievement mean (38.00).

This group of low self-regulatory process score had the lowest academic mean of 38.00. The third objective was to establish the relationship between self-regulatory process and academic achievement. To find the relationship, the following null hypothesis was generated: H_{01}: There is no meaningful relationship between self-regulatory process and academic achievement. To test this hypothesis the statistics were subjected to a correlational analysis using the Pearson's product moment correlation formula and the results are presented in Table 4.13.

Table 4.13

Relationship between Students' Achievement Scores and Scores on Self- regulatory Process Domains

Motivation	N	Pearson r	Significance
Setting goal and achievement scores	243	0.75	0.000
Seeking assistance and achievement scores	243	0.65	0.000
Suppress aggression and achievement scores	243	0.82	0.000
Controlled impulses and achievement scores	243	0.73	0.000
Empathy and achievement scores	243	0.90	0.000

It is noticeable from table 4.13 that a strong positive significant relationship exists between students' achievement scores and self-regulatory scores. The study found that achievements were absolutely associated with self-regulatory process.

The degree of the relationship was a bit higher on empathy process scale (r (243)=0.90), significant coefficient (p= 0.000) as match up to other process scales. The range of relationship of each scale was more than 65% which was high. The results exposed a direct significant positive relationship between self-regulatory process and academic achievement (r (243) = 0.963, p < 0.00). Because p value was .000 which was less than .05, it indicated that result was very significant which indicated that self-regulatory process influences academic achievement.

The Calculated r =0 .963 shows perfect positive relationship between self-regulatory process and academic achievement. The results displayed strong positive relationship between self-regulatory process and academic achievement. It means that when self-regulatory process scores increases, academic achievement increases and when self-regulatory process scores diminish, academic achievement drops. The results of this study are in agreement with the findings by Roohani and Asibani (2015) who reported a positive relationship between self-regulatory process and academic achievement. The study explained that teachers should lay emphasis on training students on: goal setting, seeking assistance, controlled impulse, empathy and suppress aggression. The study further recorded various procedures and strategies which help students to better their self-regulatory processes.

The strategies which are useful for students includes: team building, target setting and compassion in pastoral programs. The study concluded that when students are self-regulated they perform better academically. Likewise, Baris (2015) inform of a positive relationship between self-regulatory process and academic achievement among secondary students in Chicago schools, USA. The study findings is also authenticated by Ekhlas and Shangarffam (2013) study which established positive relationships between self-regulatory process and reading, writing, speaking, listening, language experience (academic achievement). The study is similarly coherent with Heikkilä and Lonka (2006) study which identified a significant relationship between academic achievement and self-regulated learning process.

Carolina, Lucia and Rossana (2014) study findings are also in agreement with the current findings by concluding that self-regulatory processes and motivational processes had positive effects on academic achievement. Other studies which lend support to the current study includes: Rizwan and Nasir (2016) who confirmed that social support and self-regulation skills are imperative for academic achievement. Equally, Gaythwaite (2006) found an important association between final academic achievement scores and self-regulatory processes. Another study by Kosnin (2007) reported significant correlation between academic achievement and self-regulated learning and is therefore in the same line of findings with the present study.

The study result is also in conformity with findings by Ning and Downing (2012) who reported that self-regulation and motivation have effects on the academic performance and learning process. This study implied that high students' self-regulatory process was associated with high academic successes. Moreover, the result of the current study is also supported by Shaine (2015) who reported a positive relationship between pupils' self-regulatory process and academic achievement. Similar findings is reported by Jarvela and Jarvenoja (2011) who in common to the specified observations in relation to self-regulated learning and academic achievement confirmed that self-regulation is essential for the academic outcomes.

In agreement with the current study, Harris, Friedlander, Sadler, Frizzelle and Graham (2005) reported that students produce better learning practices (support their study skills) and apply learning process which improves academic outcomes. However, contrary to the present findings, Fowler (2013) found that self- regulatory processes have no relation with academic achievement. Moreover, contrary with the present study, De Bruin, Thiede and Camp (2011) found that self- regulatory process has no direct relation with academic achievement. The insinuation of this finding is that the capacity to control impulses, aggressive behavior, empathy and setting of goals is very important in promoting academic achievement. The results of the present study can explain the fact that self-restraint should be integrated in teaching and learning in schools.

4.6 Gender Differences in Motivational, Affective Process, Self-regulatory Processes and Academic Achievement

This section outlines data presentations, interpretations and discussions of the fourth objective of the study. In this objective, the researcher was involved in testing for gender differences in students' motivational, affective, self-regulatory process and academic achievement.

4.6.1: Description of Gender Disparities in Motivational Processes

The study sought to test for gender differences in scores of motivational processes. Data was collected through SMS scale. The findings are presented in Table 4.14. Data was analyzed by calculating the mean and standard deviation and the results are detailed in Table 4.14.

Table 4.14

Gender Differences in Motivational Processes

Variable	Gender	N	Mean	Std. Deviation	Std. Error Mean
Motivational Process	Female	126	50.327	9.26937	1.11744
	Male	117	47.767	14.3450	1.56391

Key: N-243, Std-standard

Table 4.14 shows that the motivational process mean scores were 47.76 and 50.32 for boys and girls respectively.

The standard deviation was 14.34 and 9.26 for boys and girls correspondingly. This was a large standard deviation and this reflected a large amount of variation in the group that was being studied. The results indicated that motivational processes mean scores were higher for girls than boys. However, further analysis of motivational processes scores were done by cross tabulation of the levels with gender. The results are presented in Table 4.15.

Table 4.15

Contingency Table for Levels of Motivational Processes and Gender

	Gender of participants		
Levels of Motivational Processes	Boys	Girls	Total
Low Occurrence	21(8.6)	30(12.3)	51(21)
Average Occurrence	28(11.5)	48(19.8)	76(31.3)
High Occurrence	68(27.9)	48(19.8)	116(47.7)
Total Occurrence	117 (48)	126(52)	243(100)

N =243, ()- percentage.

Results in Table 4.15 shows that fewer boys than girls were found to be covered by all categories except high occurrence of motivational processes. The Girls were in the same way spread in the average and high categories.

Slightly less than three quarter of the boys was distributed in the category of high occurrence. For the purpose of this study, it was also necessary to examine the gender differences in the dominions of school and student motivational strategies (processes). The outcome of this investigation is given in Table 4.16.

Table: 4.16

Cross Tabulation of Motivational Strategies and Gender

	Motivational Processes		
Gender	School Mean	Student Mean	Total
Boys	47.72	48	47.76
Girls	51	49.64	50.32

N =243

Table 4.16 indicates a higher mean of girls than boys on student strategies and school motivational strategies. The results also meant that girls are more motivated by school strategies than boys. The study revealed that female students had significantly high level of school motivational process (50.32) when compared with their male counterparts (47.76).

4.6.2: Description of Gender Disparities in Affective Processes

The study sought to test for gender differences in scores of affective processes. Data was collected through WAI scale. The findings are presented in Table 4.17.

Table 4.17

Gender Differences in Affective Processes

Variable	Gender	N	Mean	Std. Deviation	Std. Error Mean
Affective Process	Female	126	30.25	11.24	2.15564
	Male	117	18.23	9.50	1.98322

Key: N-243, Std-standard.

Table 4.17 shows that the affective mean scores were 30.25 and 18.23 for girls and boys respectively. This portrayed that girls were more affected by affective process than boys. The standard deviation was 9.50 and 11.24 for boys and girls respectively. This indicated that the distribution of affective process scores were more for girls than boys. Nevertheless, for both gender this was a large standard deviation and this reflected a large amount of variation in the group that was being studied. Further investigation of affective processes score was done by cross tabulation of the levels with gender. The results are presented in Table 4.18.

Table 4.18

Contingency Table of Levels of Affective Processes and Gender

	Affective level (M,SD)					
	High		Average		Low	
N=243	F (n=126)	M (n=117)	F (n=126)	M (n =117)	F (n=126)	M (n=117)
Anxiety	38.7	40.1	37.0	36.55	34.1	31.8
Distress	35.2	37.2	33.9	32.6	30.7	29.4

Key: F- Female, M-Male

Results in Table 4.18 shows that the percentage for low affective process of girls was 30.7 and was more than that of boys who scored 29.4. For average affective process, the girls had 33.9 and were more than boys who had 32.6. The variance between the numbers was found to be significant. Specifically, girls were more distressed mostly than the boys. The Girls were in the same way enlisted in the average and high classifications. Fairly, a higher number of the boys were distributed in the category of high occurrence.

4.6.3: Representation of Gender Dissimilarities in Self-regulatory Processes

The study sought to test for gender differences on self-regulatory process scores. Data was collected by use of WAI scale. The findings are presented in Table 4.19.

Table 4.19

Cross Tabulation of Self-regulatory Process

Variable	Gender	N	Mean	Std. Deviation	Std. Error Mean
Self-regulatory	Female	126	167.3946	10.4569	2.94532
Process	Male	117	154.5687	9.8250	3.65312

Key: N-243, Std-standard.

The participants' self-regulatory process scores were investigated in order to find the mean and standard deviation. Results in Table 4.19 showed that the mean self-regulatory process score for girls was (167.3946) higher than that for boys (154.5687). The self-regulatory process score was used to categorize the participants in self-regulatory processes domains. Further exploration of self-regulatory processes score was done by cross tabulation of the self-regulatory processes domains with gender. A cross-tabulation of these self-regulatory processes domains with gender was completed and the findings are presented in Table 4.20

Table 4.20

Self-regulatory Process Domains and Gender

	Ability level (M,SD)					
	High		Average		Low	
N=243	F (n=126)	M (n=117)	F (n=126)	M (n =117)	F (n=126)	M (n=117)
Setting goal	39.8	42.4	39.2	37.84	39.3	39.6
Seeking assistance	36.1	40.9	38.3	39.4	35.2	36.1
Suppress aggression	37.9	41.8	37.6	38.8	38.7	37.5
Controlled impulses	36.8	39.4	39.2	37.5	39.6	38.8
Empathy	37.7	41.2	38.23	38.84	40.11	37.5

Results in Table 4.20 reveal that boys were scoring highly (42.4) on setting of goals as compared to girls (39.8). For average self-regulatory processes girls (39.4) were doing well than boys (37.5). The difference between the numbers was found to be significant.

4.6.4: Testing Gender Differences in Motivational, Affective and Self-regulatory Processes

The fourth objective of the study was to test for gender differences in students' motivational, affective and self-regulatory processes. The corresponding null hypothesis was generated as follows:

H_{03}: There are no significant gender differences in students' motivational, affective and self-regulatory process.

To test this hypothesis, three auxiliary null hypotheses were stated. These are:

H_{03}.1 There is no significant gender differences in students' motivational process.

H_{03}.2. There is no significant gender differences in students' affective process.

H_{03}.3. There is no significant gender differences in students' self-regulatory process.

i Putting to Test the First Auxiliary Hypothesis.

Statistics obtained from the respondents on motivational process was exposed to independent samples t-test to examine this null hypothesis. The hypothesis $H_{03}.1$ was stated as there is no significant gender difference in students' motivational process. A number of common statistical actions assume that variances of the populations from which different samples are drawn are equal. Levene's test was used to assess this assumption. It tests the null hypothesis that the population variances are equal (*homogeneity of variance* or *homoscedasticity*). Since the resulting *p*-value of Levene's test was less than significance level (0.05), the obtained differences in sample variances was unlikely to have occurred based on random sampling from the population with equal variances. The scores are presented in Table 4.21.

Table 4.21

The Differences on Motivational Process between Male and Female Students.

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Motivational Process	Equal variances assumed	63.97	0.000	-9.399	241	0. 000	-10.804	1.1494
	Equal Variances Not assumed			-9.292	210.67	0. 000	-10.804	1.1627

Table 4.21 shows that the F value for Levene's test was 63.976 with a significant (p) value of .000 ($p < .001$). Since the significant value was less than alpha of .05 ($p < .05$), null hypothesis was rejected (no difference) for the supposition of homogeneity of variance and the study deduced that there was a significant difference between girls' and boys' variances. This was because the assumption of equality of variance was not met. Therefore the study used the statistics associated with the "Equal variances not assumed," which took into consideration the Cochran & Cox (1957) adjustment for the standard error of the estimate and the Satterthwaite (1946) adjustment for the degrees of freedom.

Since the t value ($t(241)=-9.399$, $p<0.05$) which indicated that girls were higher than boys resulted in a Significant (p) value that was less than alpha of .05 ($p < .05$), which positions the attained t in the tail – the study rejected the null hypothesis in support of the alternative hypothesis, and interpreted that males and females contrasted significantly on their motivational processes. By observing the group means for the sample of subjects the study found that girls (mean of 50.327) achieved significantly higher on the motivational processes than did boys (mean of 47.767). However, this finding was not comprehensive since gender differences in the student and school motivational processes were necessary to be investigated (Motivational processes domains).

The post hoc results got from student and school motivational processes domains were therefore put to the independent samples t-test. The outcomes are shown in Table 4.22.

Table 4.22

Post hoc results of Gender Differences in Motivational Processes Domains

	t	Df	Sig. (2-tailed)
Student motivational processes	-9.299	241	0.05
School motivational processes	- 9.432	241	0.05

N=243

Table 4.22 shows substantial gender differences with regard to all motivational processes: school motivational process (t= -9.432, df = 241, $p < 0.05$), this difference was in preference of girls, student motivational process (t= -9.292, df = 214, $p < 0.05$) and this difference was in support of boys. Results from this analysis found girls to be doing well on motivational processes than boys. Based on the results, the null hypothesis was consequently discarded. Many studies are in support of the current study, for example Roohani and Asibani (2015) inform that girls had higher motivational process scores than boys.

However, the present study contradicts the findings by Baris (2015) who reported that motivational process scores were high in precisely male students, notwithstanding ability/performance level as compared to female students. Furthermore, these observations are similar with those of other researchers; for example, Reisberg (2010) who reported in his study of sex differences in motivational process that female students had considerably higher motivational convictions than their male colleagues. This result might be due to the fact that females mostly show motivational process symptoms compared to males. More so, the study finding was also in support of earlier studies for example, Herman (2015) who reported in his study of effects of students' motivation on academic achievement in physical education that girls score higher than boys on motivational processes. The implication of this finding is that girls are more extrinsically motivated than boys and boys are more intrinsically motivated than girls. The finding of the current study can explain the fact that school motivational strategies are more essential for girls while student motivational processes are vital for boys.

ii. Putting to Test the Second Auxiliary Hypothesis.

The study sought to test gender differences on affective processes. Statistics obtained from the respondents on affective process were subjected to independent samples t-test to investigate this null hypothesis. The null hypothesis was stated as: There is no gender difference on affective processes. Levene's test was used to evaluate this postulation. It tests the null hypothesis that the population variances are equal. The records are presented in Table 4.23.

Table 4.23

Independent Samples t-test for Gender Differences in Affective Process

		Levene's Test for Equality of Variances		t-test for equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Affective Process	Equal variances assumed	112.6	0.000	12.627	241	0. 000	15.311	1.2125
	Equal Variances Not assumed			12.392	181.657	0. 000	15.311	1.2356

Table 4.23 reveals that the F value for Levene's test was 112.6 with a significant (p) value of .000 ($p < .001$). Since the significant value was less than alpha of .05 ($p < .05$), null hypothesis was rejected because of no difference for the assumption of similarity of variance and the study inferred that there was a significant difference between girls' and boys' variances. This was because the supposition of equality of variance was not attained. Since the t value ($t(241)=12.627$, $p<0.05$) which indicated that females scored higher than boys resulted in a significant (p) value that was less than alpha of .05 ($p < .05$), the study rejected the null hypothesis in support of the alternative hypothesis, and interpreted that males and females compared significantly on their affective processes.

By observing the group means for the sample of subjects, the study found that females (mean of 30.25) registered higher on the affective processes than did males (mean of 18.23). However, this finding was not complete since gender differences on affective process domains were necessary to be investigated. The results got from affective processes were therefore put to the independent samples t-test. The outcomes are shown in Table 4.24.

Table 4.24

T-test for Student Affective Process Domains

	t	Df	Sig. (2-tailed)
Distress	12.93	241	0.000
Anxiety	12.11	241	0.000

N=243

Table 4.24 shows substantial gender differences with regard to the two affective process domains. Distress for independent samples was ($t= 12.93$, $df = 241$, $p < 0.05$). This difference was in preference of girls. Anxiety for independent samples was ($t= 12.11$, $df = 241$, $p < 0.05$). This difference was in support of boys. The Present study found that female students recorded significantly high level of affective process when compared with boys. Based on the results, the null hypothesis was subsequently rejected.

Several studies are in support of the present study, for example Fowler (2013) reported that female students had higher affective process than male students. Another similar study by Mona (2013) supported the current findings by reporting that affective process influences girls more than boys. However, this observation was challenged by those of other researchers; for example, Barret (2014) who reported in their study of sex differences in affective process that male students had considerably higher affective process than their female colleagues. The inference of this finding is that girls, when distressed can easily disengage from academic goal pursuit or academic task related demands than boys. The finding of the current study can explain the fact that boys can accommodate affective processes better than girls.

iii. Testing the Third Auxiliary Hypothesis

The study sought to test gender differences on self-regulatory process. Data obtained from the respondents on self-regulatory process was subjected to independent samples t-test to assess this null hypothesis. The null hypothesis was stated as: There is no gender difference on self-regulatory processes. Levene's test was used to appraise this possibility. It tests the null hypothesis that the population variances are equal. The results are presented in Table 4.25.

Table 4.25

Independent Samples T-test for Gender Differences in Self-regulatory Process

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Self-regulatory Process	Equal variances assumed	62.09	0.000	-9.518	241	0. 000	-9.6361	1.0124
	Equal Variances Not assumed			-9.412	211.976	0. 000	-9.6361	1.0237

Based on Table 4.25, it reveals that the F value for Levene's test was 62.009 with a significant (p) value of .000 ($p < .001$). Since the significant value was less than alpha of .05 ($p < .05$), null hypothesis was rejected (no difference) for the assumption of similarity of variance and the study concluded that there was a significant difference between girls' and boys' variances. This was because the assumption of equivalence of variance was not achieved. The t value ($t (241) = -9.518$, $p<0.05$) suggested that girls were higher than boys in self- regulatory processes with a Significant (p) value that was less than alpha of .05 ($p < .05$), the study rejected the null hypothesis in support of the alternative hypothesis, and interpreted that males and females contrasted significantly on their self-regulatory processes. By examining the group means for the sample of subjects, the study found that females (mean of 167.3946) achieved significantly higher on the self-regulatory processes than did males (mean of 154.5687).

However, this finding was not complete since gender differences in self-regulatory process domains were essential to be investigated further. The post hoc results got from self-regulatory process domains were therefore put to the independent samples t-test. The outcomes are shown in Table 4.26.

Table 4.26

Post hoc results for Gender Differences in Self-regulatory Process Domains

	t	Df	Sig. (2-tailed)
Setting goal	-9.11	241	0.05
Seeking assistance	-9.22	241	0.05
Suppress aggression	-9.32	241	0.05
Controlled impulses	-9.44	241	0.05
Empathy	-9.55	241	0.05

N=243

Table 4.26 exhibits substantial gender differences with regard to all self-regulatory processes, for example seeking assistance ($t= -9.22$, $df = 241$, $p < 0.05$). This difference was in support of boys. Results from this analysis found girls to be doing well on self-regulatory processes than boys. Based on the results, the null hypothesis was consequently discarded. However, this finding was disputed by Herman (2015) study who reported that male students had higher self-regulatory processes than female students. Nevertheless, these findings are in consistent with a study by Tobias (2013) who reported that girls outpaced boys on self-regulatory processes.

Another study by Mukuru (2013) supported the current findings by reporting that girls are better on self-regulatory process when contrasted with boys. The implication of this finding is that girls are better than boys on goal setting, empathy and controlling of impulses. The result of the current study can clarify the fact that girls are better than boys on suppressing aggression and articulating feelings of social support.

4.7 Prediction Equation for Academic Achievement from Motivational, Affective and Self-regulatory Processes.

4.7.1: Description of Motivational and Affective Processes' Levels

The fifth objective sought to assess the interaction between motivational, affective and self-regulatory processes in predicting academic achievement. Data was collected through contingency table for the levels of motivational, affective and self-regulatory processes. The findings are presented in Table 4.27, 4.28 and 4.29.

Table 4.27

Levels of Motivational and Affective Processes

Motivational Process	Affective Process			Total
	Low	Average	High	
High	75(30.8)	41(16.8)	5(2.1)	121(49.7)
Low	55(22.6)	43(17.7)	34(14)	122(50.3)
Total	130(53.4)	74(30.5)	39(16.1)	243(100)

Key: ( ) - Percentage

Table 4.27 indicate that slightly more than quarter of the respondents were categorized as high in motivational processes and were low on affective processes. However, those who were categorized as being high in motivational processes and high in affective processes were less than one sixteenth. Furthermore, majority of the participants who were categorized as being low in motivational processes, were also found to have high level of affective processes as shown on table 4.28.

Table 4.28

Levels of Motivational and Self-regulatory Processes

Motivational Process	Self-Regulatory processes			Total
	Low	Average	High	
High	45(18.5)	61(25.1)	22(9.1)	128(52.7)
Low	46(18.9)	42(17.3)	37(15.2)	115(47.3)
Total	91(37.4)	103(42.4)	59(24.3)	243(100)

Key: ( ) – Percentage

Results in Table 4.28 reveal that almost half of those who were classified as high in motivational processes had an average score on self-regulatory processes. A quarter of the respondents in the range of high self-regulatory processes, were however found to be low on motivational processes.

Moreover, about half of those respondents who were ranked low on motivational processes were also found to be in the category of low on self-regulatory processes. Further, results on levels of affective and self-regulatory processes are shown in Table 4.29.

Table 4.29

Levels of Affective and Self-regulatory Processes

Affective Process	Self-Regulatory Process			Total
	Low	Average	High	
High	43(17.6)	31(12.8)	0(0)	74(30.5)
Low	55(22.6)	66(27.2)	48(19.6)	169(69.5)
Total	98(40.3)	97(39.9)	48(19.6)	243(100)

Key: ( ) - Percentage

Results in Table 4.29 shows that no respondent was categorized as high in affective processes and high on self-regulatory processes. Though, those who were classified as being high in self-regulatory processes and low in affective processes were less than a quarter. In addition, majority of the participants were found to have low level of affective processes and almost half of the respondents were found to be having low self-regulatory processes ratings.

4.7.2: Development of Prediction Equation for Academic Achievement from Motivational, Affective and Self-regulatory Processes.

To develop a prediction model for academic achievement from motivational, affective and self-regulatory processes, the following null hypothesis was advanced: H_{05}: There is no significant prediction model of academic achievement from motivational, affective and self-regulatory processes. It was the concern of the researcher to investigate whether self-regulatory, motivational, and affective processes would meaningfully predict academic achievement of the secondary students. To achieve the objective of the study, simple and multiple regressions analysis was used. Academic achievement as a dependent variable was regressed on motivational, affective and self-regulatory processes as independent variables. The purpose of the study was to investigate whether self-regulation, motivation, and affective processes would significantly predict academic achievements. A regression analysis was conducted and the results are shown in Tables 4.30, 4.31 and 4.32.

Table 4.30

Descriptive Statistics by School, Motivational, Affective, Self-regulatory Processes and Academic Achievement.

School	Gender	Motivational Process		Affective Process		Self-regulatory		Academic achievement	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Boys Boarding	Male	15.36	4.38	16.27	4.74	38.91	10.75	69.68	8.56
	Female	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boys day	Male	15.32	3.99	16.16	4.60	40.62	10.84	70.43	8.66
	Female	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Girl	Male	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boarding	Female	17.13	4.64	18.05	4.35	43.57	7.44	69.48	7.13
Girl Day	Male	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Female	16.92	4.71	17.34	4.87	42.57	10.44	68.80	9.30
Co-	Male	15.36	4.38	16.27	4.74	38.91	10.75	69.68	8.56
educational	Female	17.19	4.84	17.47	4.87	42.86	10.39	68.49	9.28

Table 4.30 shows the descriptive assessments of motivational, affective, self-regulatory processes and academic achievement for male and female students in different schools. It was apparent from the data that for motivational process, mean score is ranging between a minimum of 15.32 for male students of boys boarding to a maximum of 17.19 for female students of co-educational center. Similarly, male students of boys' day posted a minimum mean score of 16.16 on affective process and a maximum of 18.05 for female students of girls boarding.

For self- regulatory process scores, the mean value was ranging between a minimum of 38.91 for male students of co-educational Centre to a maximum mean score of 43.57 for female students of girls boarding. With respect to students achievement scores, female students of co-educational center were at lowest level (mean=68.49) to a maximum of 70.43 for male students of boys day. To establish motivational process predictive weight, simple regression was used and the results are shown in table 4.31**.**

Table 4.31

Beta Coefficient for Motivational Processes

Model	Standardized coefficients	Sig.	Model R square
	Beta		
Constant	2.322	0.00	0.966
Motivational processes	0.983	0.00	

Key: sig.- significance

Results from Table 4.31 define the model of academic achievement as:

$\hat{y}$= 2.322+0.983MP $p<0.05$ (Adjusted/ Model R^2 =0.966), where MP- Motivational Process, $\hat{y}$- Model of Academic Achievement. The results showed that finding was highly significant. Analysis of this model indicated motivational processes had significant positive predictive weight of 0.983 on academic achievement.

The adjusted R^2=0.966 signifying a variation of 96.6% and Beta coefficient of (β= 0.983, p = 0.00). It shows that 96.6% of variance is expounded by the regression model which shows that motivational process affects students' achievement.

It is more so evident from the table that motivational process scores are the main contributors with respect to the difference in students' achievement scores. From the results in table 4.31, independent variable only predicted 0.966(96.6%) of the criterion variable. This aggregate represented the addition of variables and other aspects that affect academic achievement but was not part of the research. To determine affective process predictive weight, simple regression was used and the results are shown in table 4.32**.**

Table 4.32

Beta Coefficient for Affective Processes

Model	Standardized coefficients	Sig.	Model R square
	Beta		
Constant	84.173	0.00	0.639
Affective processes	-0.691	0.00	

Key: sig.- significance

Results from Table 4.32 give a model of academic achievement as:

$\hat{y}$= 84.173 -0.691 AP $p<0.05$ (R^2 =0.639), where $\hat{y}$- Academic achievement model, AP- Affective Processes. The results disclosed that finding was highly significant. Analysis of this model point out that affective process had significant negative predictive weight of -0.691 on academic achievement. The adjusted R^2=0.639, suggesting a variation of 63.9% and Beta coefficient of (β= -0.691, p = 0.00). It shows that 63.9% of variance is explained by the regression model which shows that affective process affects students' achievement. It is noticeable from the table that the affective process scores are the main contributors with respect to the difference in students' achievement scores. From results in table 4.32, independent variable only predicted 0.639(63.9%) of the criterion variable. Meaning that the score represented the other variables and other factors that affect academic achievement but was not included in the study. To ascertain self-regulatory process predictive weight, simple regression was used and the results are shown in table 4.33**.**

Table 4.33

Beta Coefficient for Self-regulatory Processes

Model	Standardized coefficients Beta	Sig.	Model R square
Constant	-2.036	0.00	0.928
Self-regulatory processes	1.096	0.00	

Key: sig.- significance

Results from Table 4.33 give a model of academic achievement as:

$\hat{y}$= -2.036+1.096SP $p<0.05$ (R^2 =0.928) , where $\hat{y}$- Academic achievement model, SP- Self Regulatory. The results exposed that finding was highly significant. Analyses of this model designated that self-regulatory processes had significant positive predictive weight of 1.096 on academic achievement. The adjusted R^2=0.927, indicating a variation of 92.7% and Beta coefficient of (β= 1.096, p = 0.00). It shows that 92.7% of variance is expounded by the regression model which indicates that self-regulatory process impacts on students' academic achievement. It is more so clear from the table that self-regulatory process scores are the main determinants of students' achievement grades. Results from table 4.33 shows that self-regulatory process predicted 0.927(92.7%) of the dependent variable. This value represented the addition of variables and other issues that affect academic achievement but was not included in the investigation.

It was the concern of the researcher to investigate whether combined self-regulatory, motivational and affective processes would significantly predict academic achievement. To achieve this objective, multiple regression analysis was used. Academic achievement as a dependent variable was regressed on self-regulatory, motivational and affective processes as independent variables. Correlation coefficients were found for each of the independent variables and academic achievement as shown on Table 4.34.

Table 4.34

Zero- order correlations of Independent Variables

Variable	1	2	3
Motivational	1.000		
Affective	0.733**	1.00	
Self -regulatory	0.407**	0.235**	1.000
Academic achievement	-9.399**	12.627**	-9.518**

Correlation significant =0.03

The findings from table 4.34 showed that academic achievement had significant correlations with all the variables; motivational, affective and self-regulatory processes. As shown on table 4.34, greater levels of motivational process ($r=-9.399$, $p<0.05$) and self-regulatory process ($r=-9.518$, $p<0.05$) were associated with higher academic achievement. Affective process was negatively correlated with academic achievement ($r=12.627$, $p<0.00$). Since p value was .05 which was less than .05, it showed results were very significant which denoted that all the three independent variables had significant influence on student academic achievement.

However, it was important to look at adjusted R-squared instead of R-squared and find the standard error of the regression rather than the standard deviation of the errors. These are unbiased estimators that rectified for the sample size and numbers of coefficients estimated. Adjusted R-squared is always smaller than R-squared, but the difference is usually very small unless one is estimating too many coefficients from too small a sample. Adjusted R-squared was an unbiased estimate of the fraction of variance explained, taking into account the sample size and number of variables. The calculations of adjusted R-squared was equal to 1 minus (n - 1)/(n – k - 1) times 1-minus-R-squared, where n was the sample size (243) and k was the number of independent variables (3). The results are shown in table 4.35.

Table 4.35

Model R^2 of Motivational, Affective and Self-regulatory processes on Academic Achievement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.986	.973	.972	1.74502

Table 4.35 shows that 97.3% of variance is explained by the regression model which shows that motivational, affective and self-regulatory process influences students' achievement.

The model R square value (0.973) represents the addition of variables and other factors that affect the academic achievement but is not incorporated in this research. The coefficient of adjusted R^2 suggests that 97.2% of the variance is due to the linear and combined influence of the three independent variables. Thus, it can be said that motivational, affective and self-regulatory processes contribute significantly to the prediction of academic achievement. To find out the goodness of fit, regression multivariate analysis of variance (ANOVA) was used according to the results of the table 4.35 and the results are shown in table 4.36.

Table 4.36.

Analysis of Variance

	Sum of square	Df	Mean square	F	P	Sig.
Between Groups	4785.65	3	675.54	24.43	0.05	0.01
Within Groups	13653.21	240	28.78			
Total	18438.86	243				

Findings from table 4.36 and 4.37 indicated that the null hypothesis stated as: H_{05}: There is no significant prediction model of academic achievement from motivational, affective and self-regulatory processes was therefore rejected. Table 4.37 displays the prediction of all the three independent variables to the dependent variable. Specifically, the academic achievement of the secondary school students correlated with the three predictor variables.

The table also shows a coefficient of multiple correlations (R) of 0. 986, and a multiple R square of 0.973. This indicates that 97.3% of variance in academic achievement of secondary school students was accounted for by the three predictor variables when taken together. Table 4.36 shows that the significance of the combined contribution was tested at $p< 0.05$ using the F- ratio at the degree of freedom (df= 3, 240). Further, the table also displays that the analysis of variance for the regression generated F – ratio of 24.43 (significant at 0.01 levels). This indicates that the combined contribution of the independent variables to the dependent variable was significant and that other variables not included in this model may have accounted for the remaining variance. This suggests that the combined effect of the independent variables to the dependent variable was important and that extra variables not contained in this model may have accounted for the remaining variance (2.7%). However, further analysis was needed so as to determine significance of the regression coefficient. Results of the findings are shown in table 4.37.

Table 4.37

Comparative Contribution of the Independent Variables to the Dependent Variable (Test of Significance of the Regression Coefficient)

Model	Standardized coefficients	Unstandardized coefficients			
	Beta	Beta Standard error	t	P	Sig.
Constant	1.152	1.590	.725	0.05	0.469
Motivational Process	0.710	.707 .038	18.72	0.05	0.00
Affective Process	-0.012	.014 .016	-7.99	0.05	0.425
Self-regulatory Process	0.315	.277 .041	7.66	0.05	0.00

Key: sig.- significance

Findings in Table 4.37 revealed the comparative effect of the three independent variables to the dependent variables stated as regression weights. The significant value of the results of motivational, affective and self-regulation processes indicated that the academic achievement was in fact controlled by corroboration of these three variables. By using the unstandardized regression coefficients to establish the relative effects of the independent variables on the dependent variable, motivational process (B=.707, t=18.72,p<0.05) was found to be the most powerful contributor to the prediction equation trailed by self-regulatory process (B = 0.277, t = 7.65, p<0.05) and affective process (B = -0.014, t = -.799, p<0. 05) respectively. Therefore, the academic achievement of secondary schools students are determined by the three variables. Table 4.37 described the academic achievement model as:

$\hat{y}$= 1.152+0.71(MP) -0.012(AP) +0.315(SP) p<0.05 (R^2 =0.973),

where $\hat{y}$- Academic achievement model, MP- motivational process, AP- Affective process, SP- Self regulatory process.

The model also displayed that motivational processes had the uppermost positive extrapolative weight on academic achievement ($\beta = 0.71$, $p < 0.05$) as compared to self-regulatory processes ($\beta = 0.315$, $p < 0.05$) and affective processes ($\beta = -0.012$, $p < 0.05$). Therefore only affective process is inversely related to academic achievement but motivational and self-regulatory processes are directly related to academic achievement. The stated null hypothesis was therefore rejected. Findings from this study showed that motivational process was the most powerful contributor to the prediction of academic achievement of secondary school students. This outcome confirms the findings of other studies like Busari (2007) and Shaine (2015) who reported that students high in motivational process surpass students with low motivational process.

Similarly, results from this study supported findings by Shirley (2013) who reported that motivational, affective and self-regulatory processes have different predictive values on academic achievement and that motivation is a better predictor of academic achievement. Furthermore, this finding is consistent with results from another study by Trang (2012) who reported that motivational process had high predictive value on academic achievement when compared with self-regulatory process.

Moreover, some studies on achievement goals have shown that academic achievement is mediated by affective processes. For example, Baris (2015) reported that motivational processes has the highest predictive weight than affective and self-regulatory process and that the R^2 value (R^2= 0.973) which is the compound constant of the whole disparity in students' academic achievement and was described by the combined effect of students motivational, affective and self-regulatory process.

The effect of motivation on academic achievement was straight more than triple that of self- regulated learning. Contradicting to the present study was Onyeizugbo (2010) study who found that students with higher affective process had no effect on academic achievement. The present study finding is also supported by a number of other studies: for example Ebrahimi and Khoshsima (2014) who reported the negative predictive weights for affective process on academic achievement. Similarly, Mohsen and Mansoor (2009) in their study revealed that there is inverse relationship between affective process and academic achievement.

However, the findings contradict an earlier study by Zimmerman (2010) which reported that motivational, affective and self-regulatory processes have same predictive weights. Furthermore, result from the present study was contradicting to Cheraghian(2008) who found no meaningful relationship between affective process and academic performance. On further fact-finding analysis, the respondents were considered based on age category.

The participants were grouped into 14 - 16, 17 -19 and 20 -24 categories. The researcher investigated the mean differences in motivational process, affective process and self-regulatory process scores in relation to their ages. The statistics were exposed to post hoc examination using Tukey's Honest Significant Difference (HSD) approach and the outcomes are detailed in Tables 4.38, 4.39 and 4.40.

Table 4.38

Age Cluster and Dissimilarities in Means of Motivational Process Scores

(I)Age (years)	(J)Age (years)	Mean Differences (I-J)	Sig.
14-16	17-19	0.01	0.100
	20-24	-0.03	0.100
17-19	14-16	-0.01	0.100
	20-24	-0.04	0.100
20-24	14-16	0.03	0.100
	17-19	0.04	0.100

N = 243
Key: Sign.-significance

Results in Table 4.38 show that the mean differences in motivational process across the age categories were not significant (Sign.>0.05,). Nevertheless, the mean difference between the respondents aged 20-24 and other age categories were positive and also between 14-16 &17-19 were positive. This means that these participants did well on motivational process.

The mean difference between the respondents aged 17-19 and other age categories were negative and also between 14-16 & 2024 were also negative. This means that these participants recorded lower on motivational process. Accompanying assessment on affective process scores are shown in Table 4.39.

Table 4.39

Age Cluster and Dissimilarities in Means of Affective Process Scores

(I)Age (years)	(J)Age (years)	Mean Differences (I-J)	Sig.
14-16	17-19	0.02	0.025
	20-24	-0.05	0.043
17-19	14-16	-0.02	0.032
	20-24	-0.06	0.050
20-24	14-16	0.05	0.042
	17-19	0.06	0.023

N = 243
Key: Sign.-significance

Results in Table 4.39 reveal that the mean differences in affective process across the age categories were significant (Sign.<0.05,). More so, the mean difference between the respondents aged between 20-24 and other age categories was positive and also between 14-16 &17-19 was positive. This means that these participants scored higher on affective process and that these are adolescence and often influenced by anxiety and distress (affective process).

The mean difference between the participants aged 17-19 and other age category was negative and also between 14-16 & 2024 was negative. This means that these participants did poorly on affective process. Further investigation on self-regulatory process scores are shown in Table 4.40.

Table 4.40

Age Cluster and Dissimilarities in Means of Self-regulatory Process Scores

(I)Age (years)	*(J)Age (years)*	*Mean Differences (I-J)*	*Sig.*
14-16	17-19	0.56	0.10
	20-24	-15.0	0.22
17-19	14-16	-0.56	0.15
	20-24	-23.89	0.32
20-24	14-16	15.0	0.55
	17-19	23.89	0.41

N = 243
Key: Sign.-significance

Results in Table 4.40 show that the mean differences in self-regulatory process across the age categories were not significant (Sign.>0.05,). Nonetheless, the mean difference between the respondents aged 20-24 and other age categories was positive and also between 14-16 &17-19 was positive. Therefore, older and more knowledgeable students in suitable level of schooling will use more self-regulated learning strategies.

The mean difference between the participants aged 17-19 and other age category was negative and also between 14-16 & 2024 was also negative. This means that these participants did poorly on self-regulatory process. It was also observed that the mean differences increased with age, whereby the older respondents registered higher motivational, affective and self-regulatory processes scores. This outcome is conforming to Cubukcu (2015) who reported that motivational, affective and self-regulatory processes are dependent on age. Concurring with Bandura (1986), a student's individual motivational, affective and self-regulatory processes are expected to increase with age. The implication of this finding is that as students advance in age (18 years and above), they tend to understand how to cope with challenges which may affect their study habits. For example, social media, peer pressure and drug abuse.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter covers an overview of the study entitled, ‘’ motivational, affective and self-regulatory processes as predictors of academic achievement among secondary school students in Bomet county, Kenya.’’ The first section consists of summary of the results according to the study objectives. The second section comprises of conclusions drawn from the study. The third section provides policy recommendations and suggestions for more research.

5.2 Summary of the Study Findings

The purpose of this study was to explore motivational, affective and self-regulatory processes as predictors of academic achievement. The sample of the study was 243 form three students drawn from 9 schools in Bomet County, Kenya. This section is classified in accordance with the five objectives of the study.

The first objective was to establish the relationship between students’ motivational process and academic achievement. The study compared scores from students’ motivational process and academic achievement. Outcomes indicated that students with high mean score on motivational process also had high mean scores on academic achievement. To confirm whether or not there was significant correlation between students’ motivational process and academic achievement, Pearson product moment correlation statistic was calculated.

From these findings it was evident that there was a significant correlation between motivational process and academic achievement. The mean and standard deviation was (m=69.04, sd=21.413) and which was significant with r(243)= 0.983, p=0.000). Hence, the null hypothesis was then rejected.

The second objective was to investigate the relationship between students' affective process and academic achievement. The study related scores from students' affective process and academic achievement. Analysis of data disclosed that students with high mean score on affective process had low mean scores on academic achievement. To substantiate whether or not there was significant relationship between students' affective process and academic achievement, Pearson product moment correlation statistic was computed. From these findings, it was clear that there was a significant negative relationship between students' affective process and academic achievement. The mean and standard deviation was (m=24.04, sd= 10.37) and which was significant with r(243)= -0.799, p=0.000). The null hypothesis was therefore rejected.

The third objective was to find out the relationship between students' self-regulatory process and academic achievement. The study scrutinized the scores of students' self-regulatory process and academic achievement. Findings discovered that students with high mean score on self-regulatory process also had high mean scores on academic achievement.

To confirm whether or not there was significant relationship between self-regulatory process and academic achievement, Pearson product moment correlation statistic was calculated. From these findings it was distinct that there was a significant relationship between self-regulatory process and academic achievement. The mean and standard deviation was (m=49.46, sd= 8.65) and which was significant with r(243)= 0.963, p=0.000). The null hypothesis was consequently rejected.

The fourth objective was to test for gender differences in students' motivational, affective and self-regulatory process. The study looked at levels of students' motivational, affective and self-regulatory process. Results showed that boys and girls had differences in mean score on motivational, affective and self-regulatory process. To prove whether or not there were significant differences among students in motivational, affective and self-regulatory process, t-test was calculated. The results indicated that there was a significant difference in the levels of motivational process (t=-9.399, df=241, $p<0.05$) and F value for Lavene's test was 63.976 with p value of 0.000($p<0.001$) in favour of girls, affective (t=12.627, df=241, $p<0.05$) and F value for Lavene's test was 112.6 with p value of 0.000($p<0.001$) in favour of boys and self-regulatory process (t=-9.518, df=241, $p<0.05$) and F value for Lavene's test was 62.009 with p value of 0.000($p<0.001$) in favour of girls. The null hypothesis was then rejected.

The fifth objective was to develop predictive model of academic achievement from motivational, affective and self-regulatory process. The study correlated scores from students' motivational, affective and self-regulatory process and academic achievement. This study was undertaken to investigate the combined effect of motivational, affective and self-regulatory processes on academic achievement. Simple regression analysis revealed that students' motivational process had the highest predictive weights than affective and self-regulatory process. To scrutinize which among the three variables was a better predictor, multiple regression analysis was calculated.

The results showed that there was a significant difference in predictive weights with motivation having the highest weight. The model was represented as: $\hat{y}= 1.152+0.71(MP) -0.012(AP) +0.315(SP)$, $p<0.05$ ($R^2 =0.973$). The model showed that motivational processes had the uppermost positive predictive weight on academic achievement ($\beta= 0.71$, $p < 0.05$) as compared to self-regulatory processes ($\beta= 0.315$, $p < 0.05$) and affective processes ($\beta= -0.012$, $p < 0.05$). Thus, the null hypothesis was rejected. From these findings it was evident that educationalists, instructors and parents play a key role in students' academic achievement by cherishing provisions of opinions which successively improve learning.

5.3 Conclusions of the Study

The study resulted in five main conclusions which are as follows:

Firstly, based on the findings that there was significant positive correlation between motivational process and academic achievement at 0.05 level of significance, it is logical to conclude that students who recorded high motivational process, were more self-assured and more motivated to study and therefore were more successful in academic achievement. Students who had low motivational process were not confident in their studies and therefore scored poorly on academic achievement.

Secondly, based on the results from the second objective that there was significant negative relationship between affective process and academic achievement, it is reasonable to conclude that whenever students had higher affective processes, their academic achievement were low. Students who had low affective processes had high scores on academic achievement. This study therefore concluded that affective process negatively influences academic achievement of the students.

Thirdly, findings from the third objective showed that there was significant positive relationship between self-regulatory process and academic achievement. It is therefore imperative to conclude that each time students had higher self-regulatory process scores, their academic achievement was high.

This study also concluded that highly self-regulated students are more motivated to seek assistance, set goals, suppress aggression, control impulses and empathy than poorly self-regulated students. Further, it can be concluded that students' motivation and self-regulated strategies are inspired by the self-regulated learning approach which views the student as capable of monitoring and regulating his or her own academic achievement. This is in line with the wish of various teachers who believe "schooling should teach scholars how to learn." Definitely, a curriculum toward training "how to learn" may improve students' skills in using self-regulatory processes.

Centered on these outcomes, it is concluded that helping students in the attainment of confidence by creating classroom situations that enable learners to regulate their learning is important. Thus, students' judgments of a learning-focused on classroom structure are clearly linked with better academic achievement. This study therefore concluded that self-regulatory process positively influences academic achievement of the students.

Fourthly, the outcomes from the fourth objective indicated that there were significant gender differences in motivational, affective and self-regulatory processes. It is therefore important to conclude that girls scored higher on motivational, affective and self-regulatory processes than boys and therefore gender differences in the three variables was distinctive.

Significant differences existed between motivational, affective and self-regulatory processes. The findings showed that girls scored better in self-regulatory processes than boys and more so girls were better than boys on motivational process scores. The conclusion drawn was that girls used more self-regulatory processes and persisted more at challenging and uninteresting educational tasks. This study therefore concluded that motivational, affective and self-regulatory processes strongly influence academic achievement of students differently.

Fifthly, based on the finding that motivational process was a better predictor of academic achievement than affective and self-regulatory processes, it is logical to conclude that motivational process should be simplified so as to improve students' academic achievement. The findings associated with parents' education indicated that there was a significant difference between their students' motivational processes (except intrinsic value). It is therefore imperative to conclude that parents' education impacts students' motivational, affective and self-regulatory processes. With multiple assessments of mean scores of different group of parents' education, it is logical to conclude that parents with high level of education had students with high motivational process, low affective processes and high self-regulatory processes scores.

Further, it is important to conclude that parents with professional degree and post graduate level had children with high level of motivational process, self-regulatory process and high academic achievement. However, it is also concluded that affective process is not narrowed to students with poor academic achievement. Students of all academic achievement levels are affected by academic anxiety. Just as students who do well on classwork and homework can suffer from affective process and do poorly on tests, regularly poor academic achievement can increase affective process levels. Nevertheless, it is concluded that achievers can still suffer from fear of failure and this may cause high levels of stress.

5.4 Recommendations of the Study

This section consists of policy recommendation and suggestion for further research.

5.4.1 Policy Recommendations

Based on the findings of the study, the following recommendations are made:

i. Affective process is inversely related to academic achievement in all the sampled secondary schools. Based on this finding, teachers and parents should make sure that schools and homes provide students acceptable emotional support and reassurance needed for their learning. Thus, schools and homes play a key role in assisting students cope with their worries, uncertainties and emotional flare-ups. All stakeholders should provide for an opportunity for each student to study and mature at his/her own pace.

School/home environment should be supportive for the emotional growth and mental health of students and that student should be at liberty to express their feelings. Teachers should be reachable and they ought to provide for emotional care to students

ii. The study established that teachers and parents force students for achievements beyond their intellectual capacity. Based on this finding, students centered and holistic curricula should be implemented in schools so as promoting children's academic achievement.

iii. The researcher found that aggressive competitions causes anxiety in all the nine schools and based on this finding, competitions among students for highest achievement should be discouraged and only healthy competition mixed with teamwork should be encouraged.

iv. The study revealed that the present rank system is one of the factors associated with stress and distress. Based on this finding, grade system can be used to assess children's academic achievement. It can do a lot in reducing and controlling the anxieties of students about their academic achievement.

v. The study observed that majority of secondary school teachers are not trained in the basics of Guidance and Counseling. Based on this finding, Guidance and Counseling training in-services for teachers should part of the school programs.

When not possible to have trained teachers, school administrators can make use of professional counselors on hire. Further, students should be encouraged to seek Guidance and Counseling help in schools. Parent-Teacher Association (PTA) should be encouraged to look into the general and academic problems facing students.

vi. The study found that motivational process is a better predictor of academic achievement. Because of this, there is need to develop teacher in-service programs that focus on motivation. It is also important to replicate the current study on larger sample size using a combined quantitative and qualitative research approach to better understand the factors leading to test anxiety among students.

vii. The study established that there is significant model of academic achievement from motivational, affective and self-regulatory processes. Based on this, there is need to encourage students to prepare for the examinations in advance so that they may develop confidence and reduce distress. Likewise, parents should recognize the school as an institution that inculcates into students societal values, norms and appreciate them so as to contribute to its prosperity.

viii. The study found out that there is significant relationship between self-regulatory, process and academic achievement. Based on this, there is need for academic programs on self-regulated strategies in secondary schools before examinations and this may reduce test anxiety.

In addition to encouraging students to share their strategies for learning the course description, teachers should contemplate on developing self-regulated strategies for use in class.

ix. The study established that planning for examination is very important in managing distress. Based on this finding, examinations and continuous assessment tests as well as assignments should be well planned to avoid undue stress on the students which may trigger anxiety.

x. The study found that students should be encouraged to compare their academic achievements with their personal targets, not with the academic achievements of others. In the light of this, instruction should be as individualized as much as possible, and teachers should be given individualized feedback on a regular basis. This approach should take into account social economic status, gender, age differences and tutor instructional methods.

5.4.2 Suggestions for further Research

The researcher recommends that further studies be done in the following areas:

i. For purposes of comparison, this study can be replicated elsewhere in and outside Kenya.

ii. Studies should be carried out on the correlation between teachers motivational, affective and self-regulatory processes and students' academic achievement.

iii. Supplementary research should be done on the use of case studies instead of self-report questionnaires. This may bear vital additional information.

iv. This study targeted only form three students, a replication should be done at another level such as pre-school, college and also other forms in high school so as to compare results.

v. As observed, parents are very central in their children's motivational, affective and self-regulatory processes so other variables associated with parents such as having both parents at home, their expectation, socio-economic status and parental participation in the school can help for further study.

vi. Teachers also play a very important role in developing self-regulatory process and promotion of motivation in their students. As such, a study needs to be undertaken to examine some variables affecting teachers such as how well they know about different methods for instruction, job contentment, salary, skills and teachers' security to retain his/her job.

vii. Cross-cultural research will help explain how motivational beliefs and self-regulated learning are generated and established as a result of diverse cultural practices as well as how these dissimilar observations affects students' achievement.

It is recommended that a comparative study be undertaken to determine whether differences exist between rural and urban settings regarding the variables explored in this study.

viii. Related studies can be conducted in non-profit schools, private schools or public schools so as to establish similarities or differences.

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APPENDICES

Appendix I

Questionnaire for Students

Dear Student,

Through the information collected in this study, the researcher hope to help students improve on their academic achievement. Your response to the items in this scale is confidential. It should take approximately 15-25 minutes to complete the questionnaire. Please read carefully the following instruction before you complete the scale.

(i) Do not write your name and registration in this form
(ii) Respond by circling a numerical value for each item on this scale.
(iii) Do not mark more than one numerical value for each item in this scale.

Part A: Background Information

The following are some items about your background information tick (√) in the brackets where appropriate.

1. School type: Girls Boarding ( ) Boys Boarding ( ) Boys Day ( ) Girls Day ( ) Co-educational ( )

2.Gender: Female ( ) Male ( )

3. Age:

A	B	C
14-16years	17-19years	20 -24

4. Parents educational level:

KCPE Certificate ( ) KCSE Certificate ( ) Diploma ( ) Degree ( ) Masters and PhD ( )

5. Parent occupation:

Self-employed ( ) employed ( )

Part B: Motivational Processes Learning Scale

Using the scale below, Please tick (√) whichever is sufficient in your opinion. Strongly Disagree (SD), Disagree (D), Undecided (UD), Agree (A), Strongly Agree (SA).

		SD	D	UD	A	SA
1	I am always assigned tasks that are neither too easy nor too difficult.					
2	I find it easy to learn the structure of the course content.					
3	Completing an assignment always leaves me to want to do more.					
4	By using supportive teaching styles my teachers always appreciate my strengths and weaknesses.					
5	I am always helped to find meaning and value in the material taught.					
6	I enjoy the teaching methods used by my teachers because they are interactive.					
7	I enjoy learning in the open and positive school environment.					
8	I am assign to a role model/peer model.					
9	I want to study all I need to study.					
10	completing an exam first leaves me scared that I made mistake or missed out something.					
11	Whether I like or hate a class, I struggle to study from it.					
12	When doing a challenging exam, I anticipate not to do well before I expect to do well.					
13	I join classes that my associates sign up for.					
14	I know challenging task can be Important learning opportunities.					
15	School work are the last thing that I want to talk about when with my acquaintances.					
16	When I perform poorly on an exam, I hide it from my friends.					
17	I brag and feel inspired when others do not understand contents which is clear to me.					
18	I enjoy challenging tasks so that I can learn new ideas.					

		SD	D	UD	A	SA
19	I know it is vital for me to study what is being taught in this class.					
20	I enjoy what I am studying in this class.					
21	I believe I will use what I learn in this class in subsequent classes.					
22	I study basically for the sake of studying.					
23	I like very difficult chores as opposed to less challenging chores.					
24	I never pride myself on my good grades.					
25	I am not among the bright students in my class.					
26	As long as I learn from my negligence, I am always contented with an average score.					

Part C: Affective Process Learning Scale

Using the scale below, Please tick (√) whichever is sufficient in your opinion. Strongly Disagree (SD), Disagree (D), Undecided (UD), Agree (A), Strongly Agree (SA).

		SD	D	UD	A	SA
1	I always worry during exams because I cannot recall details I have studied.					
2	I feel uneasy and upset when doing an exam					
3	I fear a great deal about examinations.					
4	When doing an exam I take time to reflect on how badly I am doing.					
5	I frequently feel so miserable or ill-fated.					
6	I am always not hostile to persons I don't like.					
7	Individuals who get me annoyed should better watch out.					
8	I always worry a great deal on issues /things that aren't essential.					
9	I am always careless and I do things without giving them serious thought.					
10	I am often fearful if I think someone may hurt me.					
11	I occasionally feel not free in school.					
12	I cheat if I know i will not be discovered.					
13	I occasionally become 'rough' and 'irrational' and do things other people may dislike.					
14	I am in school because of my parents					
15	I frequently become moody and that I feel like just staying around and being idle.					

PART D: Self-regulated Learning Scale

Using the scale below, Please tick (√) whichever is sufficient in your opinion. Strongly Disagree (SD), Disagree (D), Undecided (UD), Agree (A), Strongly Agree (SA).

1	I often ask questions to be sure I know the content I have been studying.	SD	D	UD	A	SA
2	When doing challenging tasks I either give up or do only the less challenging parts.					
3	I keep on doing exercises and end of chapter questions even when I don't have enough time.					
4	No matter how dull and uninteresting the content is I keep studying to the end.					
5	I always plan about the things I will need to do to study.					
6	I know I have been reading in class but I don't know what it is all about.					
7	when the teacher is teaching I find myself thinking of other things and don't really concentrate on what is being said.					
8	When I'm studying I often stop and reflect on what I have read.					
9	1 study very hard to get a good grade even when I hate my class.					
10	I organize an inventory of the things to do.					
11	When faced with a difficulty, I seek for assistance.					
12	Quite often, I use resources from library.					
13	I am not easily distracted when I am studying.					
14	I ensure that I complete my assignments in time.					
15	I stick to my study program.					

Appendix II

Work Plan

TIME (MONTH)	ACTIVITY
January-March 2016	Proposal development
June 2016	Proposal presentation at the Department.
July 2016	Pilot study
September 2016	Data preparation, analysis and report writing.
October 2016	Revisions
January 2017	Final thesis presentation and defence
March 2017	Corrections.
June/ July 2017	Completion/ Graduation.

Appendix III

Research Budget

Item	Ksh.
Proposal development (printing, Photocopy & Binding)	10,000.00
Research permit	2,500.00
Pilot study	15, 000.00
Data Collection transport cost (Researcher and assistant)	10,000,.00
Data analysis	10,000.00
Report (writing, binding)	10,500.00
Internet charges	20,000.00
Overheads	10,000.00
Total	96, 500.00

Appendix IV

Letter of Consent

I accept to participate in the study entitled Motivational, affective and self-regulatory processes as predictors of academic achievement among secondary school students in Bomet County. I have had many enquiries answered to my gratification. I accept that, upon application, I may have a report of the results of the study after its completion. I know that the researcher is set to publish the outcomes of the study. I realize that participation is professional, and that I am at liberty to withdraw from this study at any time without undesirable consequences. I have read and understood this consent form and I agree to Participate in the study.

Please sign one copy of this consent form and return to:

Gilbert Soi , Department of Educational Psychology, Kenyatta University, Nairobi.

Retain the second copy for your records.

Student's name ----------

Signature of Student:----------

Date:----------

I have understood this consent form and I assent to my sons'/daughters' participation in the study.

Signature of parent/guardian----------

Date----------

Appendix V

Research Permit

Appendix V

Tukey's HSD (Honest Significant Difference) Test

$$HSD = \frac{M_1 - M_2}{\sqrt{MS_W \left[\frac{1}{n}\right]}}$$

Where

HSD Honest Significance Difference.

M_1, M_2 Are Mean Values.

MS_w Mean Square Width

n Number per Mean

Appendix V

Academic Achievement Score Card

School Name: Sub County: School Category:

Gender: Boy ( ) Girl ( )

Code Number	Mean Score	Grade

Appendix V

Bomet County Map

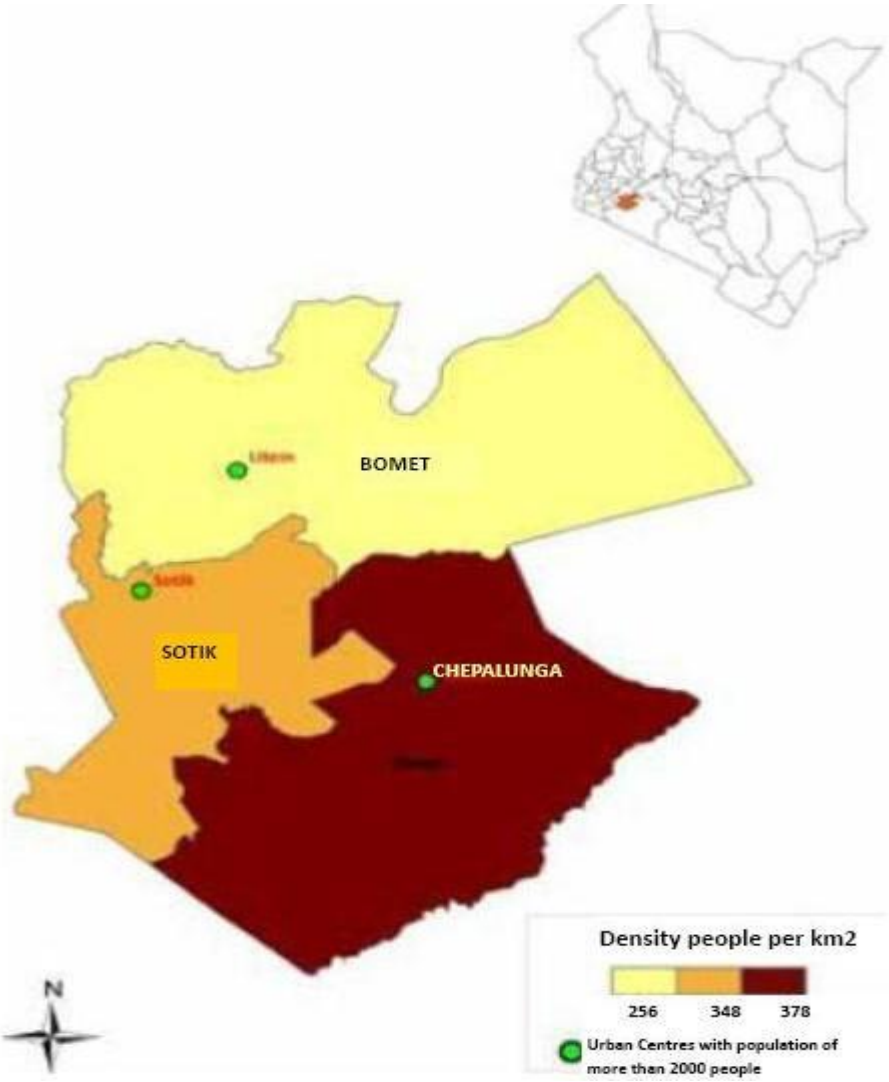

Figure 1: BOMET COUNTY MAP