INFLUENCE OF PARENTAL LEVEL OF EDUCATION AND STUDENT ENGAGEMENT ON ACADEMIC ACHIEVEMENT IN SELECTED SECONDARY SCHOOLS IN GARISSA SUB-COUNTY, KENYA

BY

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MS/R/5227/21

A RESEARCH THESIS SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF EDUCATION IN RESEARCH

MOI UNIVERSITY

2023

DECLARATION

Declaration by Candidate

I declare that this research thesis is my original work and has not been presented for any academic examination in any other university. No part of this thesis may be produced without prior written permission of the author and/or Moi University.
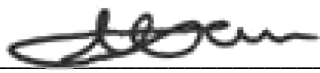
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DEDICATION

I dedicate this thesis work to my parents mr. and mrs.Nyaberi and my siblings for the continuous support, resilience and tolerance they upheld upon me in the thesis writing process. May God grant you more years of good health and prosperity.

ACKNOWLEDGEMENT

ABSTRACT

Parental level of education and student engagement are among the widely cited factors affecting student academic achievement in arid and semi-arid areas. Despite many kinds of research done, there has been a persistent low academic achievement in the Garissa sub-county and scanty literature on the parental level of education and student engagement exists. Therefore, this study sought to investigate the influence of parental level of education and student engagement on academic achievement in selected secondary schools in Garissa sub-county. The study objectives were: to determine the relationship between the parental level of education and student academic achievement; examine the relationship between the parental level of education and student engagement; determine the relationship between student engagement and academic achievement; access the mediating effect of student engagement on the relationship between the parental level of education and academic achievement in selected secondary schools in Garissa sub-county. Academic productivity theory by Walberg informed the study. Pragmatism paradigm, mixed methods approach and concurrent triangulation design were used. The study target population was 21(8 public and 13 private) secondary schools, 9726 students,200 teachers and 500 parents in the Garissa sub-county. Stratified proportionate random sampling was used to select 5 private and 3 public secondary schools proportionally. Purposive sampling was used to select 8 teachers, 8 parents, and 8 students while the 400 students were selected using simple random sampling forming the study participants. Qualitative and Quantitative data were collected using semi-structured in-depth interviews, focus group discussions, document analysis and structured questionnaires respectively. Quantitative data were analyzed using descriptives (frequencies, mean, standard deviation and percentages) and inferential statistics (Pearson correlation and linear regression) while qualitative data was analyzed thematically. The researcher found a statistically significant relationship between mother's level of education and academic achievement. Further, educated mothers were more involved in school activities and also provided support resources that enhanced academic achievement.The study revealed a negative non-significant relationship between the parental level of education and student engagement ($r = -.01$, $p<.01$). Further, the classroom environment created by the teachers and student attitude were found to influence student engagement in class activities. The study indicated a strong positive significant relationship between student engagement and academic achievement ($r =0.83$, $p<.01$). Moreover, active student participation in classroom activities contributes to higher academic achievement. Finally, the study revealed that student engagement does not mediate the relationship between the parental level of education and academic achievement. The findings will benefit stakeholders, quality assurance officers and education policymakers to improve on academic achievement. It was concluded that mother's level of education and student engagement have a great influence on academic achievement. The researcher recommends that; the secondary schools should sensitize parents on the benefits of student support and school involvement enhancing student engagement and hence improving academic achievement. Moreover, teachers should adopt strategies which enhance active student participation, motivation and change of attitude to improve academic achievement.

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ABBREVIATIONS AND ACRONYMS

CEO	County Education Office
FA	Factor Analysis
FGD	Focus Group Discussion
GOK	Government of Kenya
INGO	International Non-Governmental Organisation
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KMO	Keiser Meyer Olkin
KUCCUPS	Kenya Universities and Colleges' Central Placement Service
LLCI	Upper Limit Confidence Interval
MOE	Ministry Of Education
NACOSTI	National Commission for Science, Technology and Information
NGO	Non-Governmental Organisation
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UPCI	Lower Limit Confidence Interval

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Overview

This chapter presents the context of the study starting by providing relevant and sequential background from global to local contexts drawn from prior studies. Further, it presents the statement of the problem, the purpose of the study, research objectives, research questions, research hypotheses, justification, significance, scope, limitations, theoretical and conceptual frameworks, operational definition of terms and finally the chapter's summary.

1.1 Background of the Study

Secondary schools are to be well supervised so that learners can be fully equipped with relevant knowledge and skills to become productive members of their families, societies, nations, and the world (UNESCO, 2017). Moreover, secondary school education provides a ladder to further learning and career choice (S.Tapia,2020).In order to achieve the Kenya's vision 2030 in terms of employability, there is need to provide quality education which is established through student academic achievement. However, numerous factors have been found to influence academic achievement such as socioeconomic factors but still the problem persists (Sothan, 2019). In this study, the researcher sought to investigate the influence of parental level of education and student engagement as factors on student academic achievement in the selected secondary schools in Garissa sub-county.

In this study, parental level of education is the highest educational attainment of parents (both father and mother) ranging from no formal education to a university/college level. The level of education of the parent influences student academic achievement as illustrated by Khan (2015) who asserted that; high-level educated parents to an extent

have more influence on their children to achieve and perform well in their studies at the secondary school level. Moreover, Juma, (2016) also found that highly educated parents, appreciate the value of education thus supporting their children in studies through provision of necessary resources and setting a conducive home environment for learning.

Further, the researcher was considered student engagement as essential in addressing the problem of low academic achievement. Student engagement is the time and effort students devote to meaningful activities throughout the learning environment that are empirically linked to desired outcomes of the learning institution. (Groccia, 2018; Fredricks.2014; Martin & Torres, 2016, p.2).Moreover, student engagement is how students interact with others in the course and their motivation to learn about the topics positively or negatively (Briggs, 2015).

 Student engagement is a meta-construct that can be broken down into components such as behavioural, emotional and cognitive dimensions (Jakobsen, 2020). Behavioural student engagement comprises matters regarding the learners' conduct in class, student participation in school/class-related activities and compliance, completion of tasks and class attendance (Fredricks, 2016). In emotional engagement, the student displays a level of interest in learning that results in improved motivation and satisfaction launching a level of commitment, empathy and belonging with schools, and interest in learning such as fun or boredom, contentment, gloom, and unease (Pagan, 2018).

According to Rosario (2013), cognitive engagement is about the internal psychological qualities of the students that promote effort in learning, thinking, and understanding the knowledge and skills promoted in their academic work for instance; writing own notes, answering questions and how long they persist.

According to Sukor (2021) student engagement dimensions co-occur directing the researcher that when measuring one construct of engagement, others are undoubtedly contributing to the measurement of student engagement despite them varying from one student to another due to differences in the parental level of education and the environment they are influencing the academic achievement. According to Urquijo & Extremera (2021), actively engaged students experience improved academic achievement and satisfaction as they are more likely to persist through academic struggle hence earning higher standardized test scores as compared to the less engaged students

According to Samina (2018), student academic achievement is an exhibition of knowledge and skills attained indicated by motivation, study skills, communication skills, writing skills, and student working skills in the secondary school setting. The academic achievement is measured using continuous examinations and assessment tests which result in an awarding of a grade point average (GPA) at the end of the term varying according to circumstances and environmental conditions (Ibrahim, 2019).

When a gap between the academic achievement and the student's expected achievement occurs, it leads to a diverging achievement or unsatisfactory academic achievement which is below the expected achievement. Hence, secondary schools always set their academic achievement standards and wish to attain them due to the existence of a very big relationship between various determinant factors and students' academic achievement (Nasir, Idris & Hussain, 2020).

Globally, student academic achievement in secondary students is fairly low. For instance, in Canada domestic students' academic achievement is generally better than international students' achievement, but the gap is significantly narrowing as

international students' achievement is improving over time. Even in India, although the right to free and compulsory education for all children aged under 14 years is constitutionally guaranteed and was strongly advocated in the Right to Education Act, substantial inequality in education still exists. Desai, (2008) asserts that out of 19.4 million students who enrolled for secondary school board examinations in 2016, 4.9 million were from SC-ST (Educational Statistics at A Glance Ministry of Human Resource Development, Government of India. In 2018, the proportion of students who passed the secondary school board examinations in 2016 was lower for the SC-ST categories of students (73% for SC and 65% for ST) when compared to all students (78.7%).

In Africa, the proportion of children completing lower secondary school nearly doubled (from 22% to 40%). Efforts to measure the quality of that schooling have revealed high numbers of students who have limited literacy or numeracy skills even after several years of school (Adeniran,2020) For instance, In Ghana, average academic achievement (47.0%) of the junior high school (JHS) students in Gomoa Manso basic school is weak and their achievement in Mathematics (average score of 31.48%) and English Language (average score of 39.99%) is a fail (Abaidoo, 2018).In Zambia, there are large differences in terms of grade and region in terms of the progressive and national examinations in which about 70% of students in the candidate classes do not attain a minimum level of achievement.

In East Africa, in the case of Uganda, the introduction of universal secondary education (USE) led to an increase in admission from 62% to 86%. However, the quality of education remains still low in which the average scores and tests in Uganda's national examinations are still even below 30 % (Soigi, 2018).

In Kenya, the number of secondary schools increased from 7,834 to 10,665, while enrolment in secondary education grew from 1.9 million students in 2012 to 2.8 million in 2017. The graduation enrolment rate (GER) increased from 50.5% in 2012 to 66.9% in 2017 (GoK, 2018). Moreover, the government of Kenya through the parliament, every child has a right to free and compulsory basic education and 100% transition from primary to secondary education (Education Act 2013, 14(4a,b); sessional paper 1,2019; Momanyi,2020).

In Garissa sub-county, being among the arid regions, has since 1963 continued to exhibit lower access, participation, completion and achievement rates in education. According to the Garissa County integrated plan, 2018-2022 the proportion of the population that can read and write stands at 39.7 per cent (39.7%) while that of the population that cannot read and write is 57.9 per cent (57.9%). On average the literacy level in the County is 8.2 per cent (8.2%) while the illiteracy level stands at 74 per cent (74%). These rates are far below the average of 50%.

The Ministry of education (MOE) in Kenya in collaboration with other financial institutions such as equity bank provides Elimu and Wings to fly scholarships creating opportunities for children from the needy and vulnerable families in the Garissa sub-county to achieve their education dreams in which 1,020 students were facilitated during the year 2021. Consequently, the FDSE policy reduced user fees by allocating Ksh. 22,244 as the annual capitation per student. The capitation is released in three instalments at the ratio of 3:2:1 corresponding to term dates which reduced user fees led to increased enrolment in Public Day Secondary School (PDSS), but there was no corresponding increase in the examination grades attained in the Garissa sub-county as illustrated in table **1.1** below for a period of six years in the Kenya Certificate of Secondary Education (KCSE) examinations.

Table 1.1: Number of candidates who sat for KCSE and those who joined public universities in the Garissa sub-county from the year 2016-2021.

Year of KCSE	Number of candidates who sat for KCSE	Number of students who joined public universities	Percentage of students who joined public universities (%)
2016	3600	700	19.44 %
2017	3780	640	16.93%
2018	4100	400	23.80%
2019	4600	380	8.26%
2020	5000	365	7.30%
2021	5200	320	6.15%
Total	**26280**	**2805**	**100%**

Source: Garissa sub-county education office, KCSE analysis report, (2021)

Despite the increase in candidature enrolment for the KCSE exams, those joining public universities and colleges in Kenya is less with a corresponding decrease in percentage throughout the years. The average of 50% is not illustrated in any of the years above which is a clear indication that more than half of the students are not able to score a grade of C+ (plus) and above as the threshold to join public universities in Kenya (KUCCPS,2021; Wekesa,2021).

Besides to the government support, also Public Benefits Organizations (PBOs) such as NGOs, CBOs, INGOs and special interest groups are available in the Garissa sub-county due to the Dadaab refugee camp which also participates in supporting education among the students in the Garissa sub-county. Additionally, the United Nations agencies such as UNICEF and UNHCR participate in the education sector to ensure quality resources for children who are orphans, and those from low socioeconomic backgrounds where their parents are not able to provide essential resources for them (County government of Garissa ,2017).

Despite the government's effort to foster equity and equality for all secondary students in Kenya, the Garissa sub-county still exhibits low student academic achievement. Student achievement not only determines the human resource capacities and

employability of the students but is a reflection of the levels of knowledge acquisition, knowledge transformation, knowledge transfer, skills and attitudes picked up by the student, as well as their overall learning experience (UNESCO 2015). Hence need for this study to investigate how parental level of education and student engagement influence academic achievement in selected secondary schools in Garissa sub-county.

1.2 Statement of the Problem

There is persistent low student academic achievement in KCSE examinations in Garissa sub-county despite various government interventions and mechanism that have been made through funding of schools, offering of bursaries and scholarships, provision of teachers, and security. A low record of academic achievement in the Garissa sub-county has been witnessed for the past 6 years in which 80% of the schools recorded a KCSE mean grade of less than C+ as the minimum entry for universities, (report from CEO, 2021; KUCCPs, 2021).

Scholars have carried out research on how the parental level of education and student engagement influences student academic achievement. For instance, Idris, Hussain & Ahmad (2020) found that students of highly educated parents performed much better as compared to students of less educated parents. Moreover, Lei, Cui, & Zhou (2018) also found a moderate positive correlation between student engagement and academic achievement.

In accessing the mediation effect of student engagement, Western (2020) found that student engagement mediates the relationship between family socioeconomic status and academic achievement among secondary schools in Australia. However, despite this findings, still scanty information about student engagement as a mediator is exists.

It is in response to this finding, that this study has adopted the use of a mediation model to assess the influence of parental level of education and student engagement as a mediator on academic achievement in selected secondary schools in Garissa sub-county, Kenya. This is contrary to the traditional statistical methods that use direct effect models while ignoring mediating effect models entirely. Moreover, this study controlled for the covariates; gender and student entry behaviour, to enable the main effect and the role of parental level of education to be accurately estimated.

The net effect is well-formulated policies and intervention strategies focused on addressing the perennial problem of low academic achievement of secondary school students in the Garissa sub-county. Moreover, if the situation of low academic achievement is not addressed, the problem might worsen making it hard to achieve the sustainable development goal (4) of promoting quality education and the Kenya's vision of 2030.

1.3 Purpose of the Study

The purpose of this study was to investigate the influence of parental level of education and student engagement on academic achievement in selected secondary schools in the Garissa sub-county, Kenya.

1.4 Research Objectives

i. To determine the relationship between the parental level of education and student academic achievement in selected secondary schools in the Garissa sub-county.

ii. To examine the relationship between the parental level of education and student engagement in selected secondary schools in the Garissa sub-county.

iii. To determine the relationship between student engagement and academic achievement in selected secondary schools in the Garissa sub-county.

iv. To assess the mediating effect of student engagement on the relationship between the parental level of education and student academic achievement in selected secondary schools in the Garissa sub-county.

1.5 Research Questions

i. What is the relationship between parental level of education and academic achievement in selected secondary schools in the Garissa sub-county?

ii. What is the relationship between the parental level of education and student engagement in selected secondary schools in the Garissa sub-county?

iii. What is the relationship between student engagement and academic achievement in selected secondary schools in the Garissa sub-county?

iv. How does student engagement affect the relationship between the parental level of education and student academic achievement**?**

1.6 Research Hypothesis

All the hypotheses took into account the effects of the following covariates: gender and student entry behaviour.

i. There is no statistically significant relationship between parental level of education and student academic achievement in selected secondary schools in the Garissa sub-county.

ii. There is no statistically significant relationship between the parental level of education and student engagement in selected secondary schools in the Garissa sub-county.

iii.   There is no statistically significant relationship between student engagement and academic achievement in selected secondary schools in the Garissa sub-county.

iv.   Student engagement does not significantly mediate the relationship between the parental level of education and student academic achievement in selected secondary schools in the Garissa sub-county.

1.7 Justification of the Study

The main inspiration to carry out the study is to gain more insight into the phenomenon of which less is known of the influence of parental level of education and student engagement on academic achievement whose persistent realities have attracted debates among scholars (MOE, 2021).

The study was conducted on the basis that, for the past six years from 2016-2021, students in selected secondary schools in Garissa sub- county have consistently performed poorly in KCSE even though they are exposed to similar national teaching and learning resources from the central government (CEO, 2021)..

There are very few studies done in the Garissa sub-county on parental level of education and student engagement on academic achievement as many scholars focused on environmental factors, cultural factors and security (Muema,2018; Wambui,2017; Hajir,2021).Due to scanty literature this study filled in the gap by investigating on the influence of parental level of education and student engagement on academic achievement in the context of selected secondary schools in Garissa sub-county with an aim of achieving the SDG 4 of quality education and Kenya's vision 2030.

1.8 Significance of the Study

The findings of this study are hoped to provide awareness to teachers and parents on how parental level of education and students' engagement affects academic achievement. This could be done through PTA, school seminars, and annual parent meetings. The ministry of education, school stakeholders such as (teachers, parents and the parent's association chairpersons) and policymakers such as the (school administrators, and members of the board) will use the findings of this study to formulate policies, improve the available policies and provide intervention measures to solve the perennial problem of poor student academic achievement among selected secondary schools in the Garissa sub-county.

The study also contributes to the body of knowledge in general by providing direction to future researchers who may wish to further their investigation on a similar topic and also providing a theoretical, methodological, and conceptual expansion on the mediation effects of student engagement on the relationship between the parental level of education and student academic achievement.

Further, the education stakeholders and quality assurance officers be able to formulate and implement policies to improve on student academic achievement. Finally, the study contributes to a better understanding of the role of parents in the learning process of the students in selected secondary schools in the Garissa sub-county.

1.9 Assumptions of the Study

An assumption is something that you accept as true without interrogating; an unexamined belief which serves as the foundation upon which the study is based (William, 2021). This study was based on the following assumptions;

The student respondents will corporate in giving the desired information for the study and were truthful, honest, and objective in answering the questionnaires especially after being assured that the information will be confidential and only used for academic purposes.

The study population will yield a fair representation of parents in each educational category (no formal education, primary level, secondary level and university level).

The target population operates within similar environmental conditions, providing related responses that will be accurate and consistent concerning the parental level of education and student engagement in academic achievement in selected secondary schools.

Participants are aware of the influence of parental levels of education and student engagement on academic achievement, and practical policies that can be enhanced to improve academic achievement in selected secondary schools sustainably.

1.10 The scope of the Study

This study was focused on content, time and geographical area of analysis. Garissa County located in the North-Eastern part of Kenya. The justification for the area is the recurring low academic achievement in the area despite all the essential efforts put in place to enhance academic achievement among the secondary students (CEO, 2021).

In terms of content scope, the target population comprised all the form three students in the selected secondary schools in the Garissa sub-county. This is because the form four students were preparing for their Kenya Certificate of secondary education (KCSE) for the year 2021 and the form three students had adequate knowledge about their parent's level of education as compared to their counterparts in the lower classes; forms two and one students.

The study assessed the influence of parental level of education and student engagement on academic achievement in which parental level of education was conceptualized in terms of father and mother levels from no formal education to college and university level. Student engagement focused on cognitive, affective, and emotional engagement activities in class such as; writing notes on my own and ahead of the teacher, I feel interested, I attend all the lessons. Finally, students' academic achievement focused on the average of the aggregate scores in marks obtained by the form three students at the end of two terms examination results in the year 2021 as standardized grades.

In terms of time scope, the study took into consideration of students' KCSE academic achievement from the year 2016 to 2021 in Garissa sub-county in order to provide rich information on the existence of low student academic achievement as a current ongoing phenomenon to be addressed with solutions to uplift academic achievement among the students in the Garissa sub-county.

1.11 Limitations of the Study

The main limitation of the study is the limited transferability of the findings beyond the Garissa sub-county. The study was delimited to the ASAL context; therefore, the findings cannot be generalized to other counties in the country and other parts of the world. The inferences were thus limited to the selected secondary schools within the same context and similar experiences might be learnt from the study findings and conclusions.

The study was limited to assessing the influence of parental level of education and student engagement on academic achievement and the perceptions about parental levels of education and student engagement on academic achievement in selected secondary schools which excluded other issues that influence academic achievement in schools.

The opinions of the respondents were limited to their educational levels and experience in different environments. To get comprehensive data, the study sampled parents who had their children in those schools for at least two years and above.

The language barrier was another limitation, especially for some of the parents. To overcome this, the researcher used a research assistant who interviewed in a local dialect.

Some participants were reluctant to respond which caused a delay for the researcher to finish data collection in time hence limiting the time of analysis. Lastly, the attitudes and perceptions of participants would not be controlled by the researcher to obtain reliable data for analysis.

1.12 Theoretical Framework

A theory is a set of correlated variables and propositions that present a logical view of a phenomenon by identifying relations among variables to enlighten natural phenomena." (Kerlinger 1979; Creswell, 2014).

This study employed the academic productivity theory by Herbert Walberg (1981) to provide the theoretical lens to guide this study whose main objective was to analyze what causes low student academic achievement. According to Walberg , varied variables have certain effects that might cause problems to academic achievement of students if not properly guided. Further giving importance to a certain variable can mean a big influence on the student's academic achievement.

Walberg used a variety of methods to identify the factors that affect the academic achievement of a student. Further, student academic achievement is affected by 11 influential domains of which 8 are affected by socio-emotional influences such as (parental support, classroom management, student-teacher interactions, motivational

attributes, behavioural attributes, and parental interactions) while the other 3 reflect on the characteristics of the student such as Cognitive, affective and behavioural characteristics.

The home environment

The home environment is considered to be of paramount importance in child development, especially in the first years of life when children's experiences are predominantly dependent on what is provided by their parents. The home environment comprises physical (e.g. household possessions, play materials) and social (e.g. parent-child interactions, family size, and structure) components, in which the quality and influence of the home environment vary with family poverty, parental education, and other socio-economic factors such as parental income and occupation.

In this study, the parental level of education is one of the major components influencing home environment through the provision and participation of parents in the student's academic life for better academic grades. Additionally, student characteristic variables of motivation, cognitive, emotional and behavioural characteristics which are domains of student engagement hence clearly illustrate how student engagement influences student academic achievement in this study.

Walberg et al. large-scale causal modelling research were that nine different educational productivity factors were hypothesized to operate a complex set of interactions to account for school learning. Additionally, some student characteristic variables (motivation, prior achievement, attitudes) had indirect effects (e.g., the influence of the variable "went through" or was mediated via another variable). It postulates that academic achievement is based on standardized scores and the outcome

is a result of interaction between variables and the model supports the mediation of factors with other factors.

Walberg's theory provides a parsimonious model of academic achievement as it recognizes not only individualistic factors but the complexity of human learning by converging on the least number of factors that consistently predict student outcomes (Reynolds & Walberg, 1992). Consequently, the current study hypotheses factors that predict academic achievement for secondary students in line with Walberg's theory.

According to Walberg, the quantity and quality of teaching influence academic achievement. A student requires motivation and active participation in learning, many stipulated hours but one can extend them by tutoring or booster classes. Also, the commitment of parents is very essential. Parents who attend meetings and take an interest in improving their children's achievement are important points of support. However, work, relationship problems, and a range of other concerns can distract them which consequences are clear and unmotivated students may even take a few days off school. In addition, the knowledge the student already acquired, the cognitive variable, and the maturity age have a strong influence on student achievement and the assimilation of new concepts.

The justification for embracing the education productivity theory was to gain an understanding of the extent to which parental level of education and student engagement influence student academic achievement. It was assumed that the principles and assumptions of the academic productivity theory provided a suitable framework for analyzing the parental level of education and student engagement to enhance academic achievement in selected secondary schools in the Garissa sub-county.

Walberg, (2015) in a test of a model of educational productivity among senior high school students, when a set of individual variables are controlled for another and student achievement related to ability, amount of homework, sex, and student attitudes were positively related to a class environment and home environment. In addition, Shehu (2021) a study on self–perception attitude to study and academic achievement among students of tertiary institutions in Nigeria, found out that psychological factors had a greater influence on academic achievement.

In this study, a relationship between the parental level of education, student engagement, and academic achievement was carried out while controlling for gender and student entry behaviour. This theory underpins the topic of study and informs the conceptual framework since, as it's based on the psychological characteristics of individual students of cognitive, emotional and behavioural, and their immediate psychological environments, the home environment comprised of the parents while academic achievement is measured in terms of student examination scores. The relationship between the parental level of education and academic achievement is mediated by student engagement.
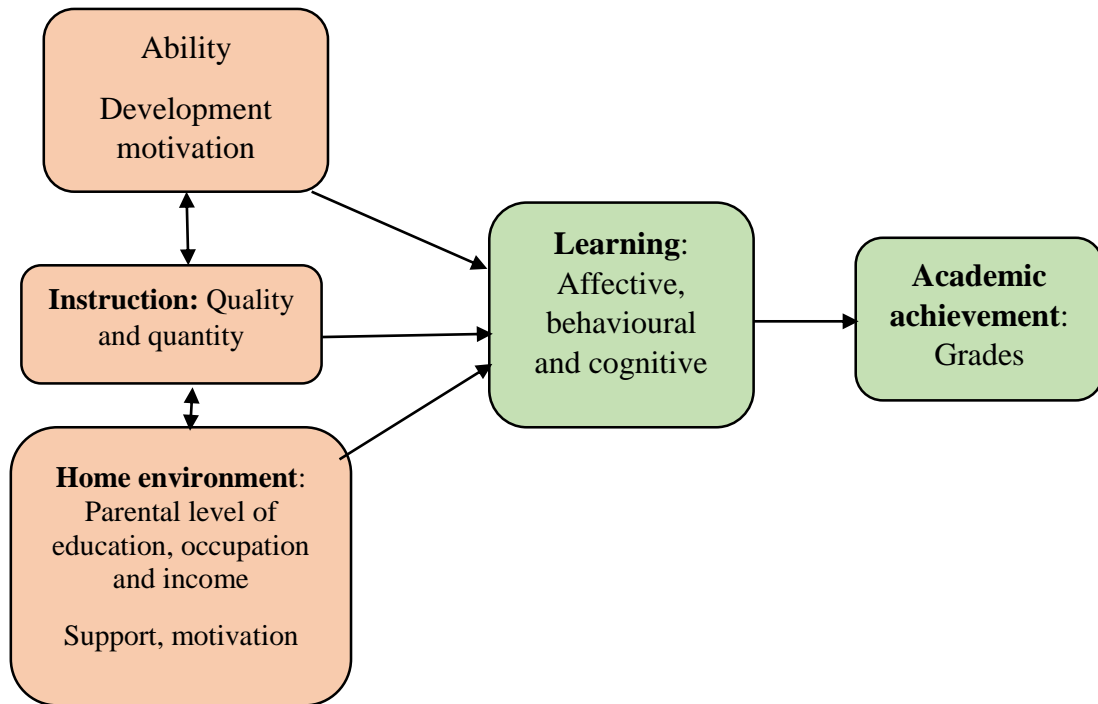
Figure 1.1: Visual schematic summary of Walberg's synthesis of major models of school.
Source: Researcher's construct (2022)

1.13 Conceptual Framework

A conceptual framework is a schematic representation showing the relationship between different types of variables involved in the study such as; the independent variables and the dependent variable. It is a logical instrument, which comprises various parts and forms (Imenda, 2014; Adom et al., 2018). From figure 2.1 below, parental level of education and students' engagement is essential in determining academic achievement.

The model was generated with reference and consideration of the theoretical framework. As indicated in the conceptual model, parental level of education is proposed to directly affect academic achievement as student engagement is held constant and covariates of gender and student entry behaviour are controlled. Student engagement was proposed to directly affect academic achievement while the parental level of education held constant and covariates controlled. Also, parental level of

education has a direct effect on student engagement. Finally, parental level of education affects academic achievement through student engagement which is the proposed mediation effect controlling for the covariates.

Independent variable **mediating variable** **Dependent variable**

Parental level of education Student engagement Academic achievement
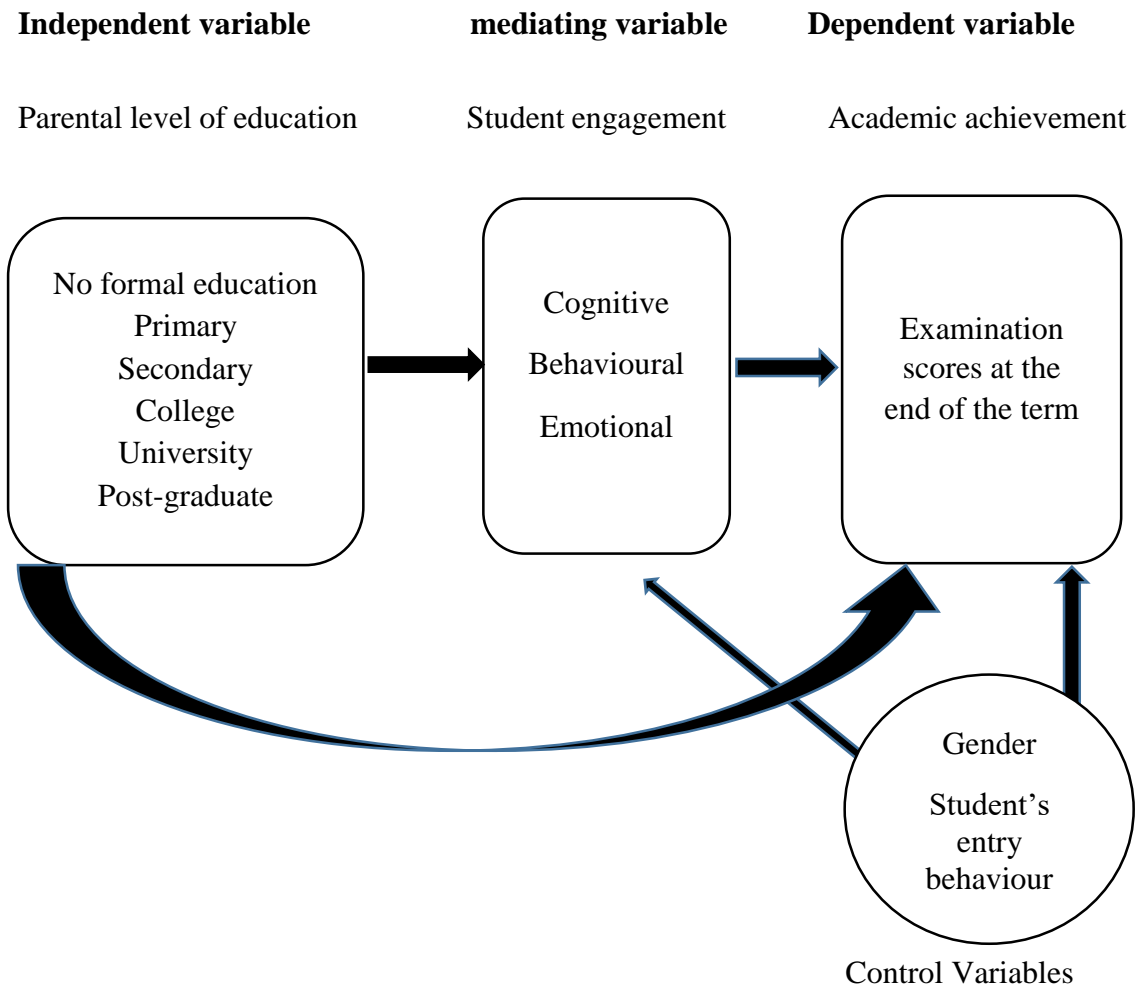
Figure 1.2: A Conceptual framework illustrating the relationship between the parental level of education, student engagement and academic achievement.

Source: Researcher's construct, (2022)

1.14 Operational Definition of Terms

The operational definition gives an obvious, precise, and communicable meaning to a concept that is used to ensure comprehensive knowledge of the idea by specifying how the idea is measured and applied within a particular set of atmospheres (Elizabeth,

2018). The researcher operationalized the terms as used in this study away from the conceptual definition.

Parental level of education- This is the highest grade level completed by parents, measured from no formal education to university level. In this study, parental level of education has been conceptualized into fathers' and mothers' educational levels.

Academic achievement- These are examination scores attained at the end of the term measured in terms of marks and grades. However, in this study, the terms student academic achievement, academic success, attainment and student academic performance were used interchangeably to mean the same thing.

Student engagement- This is a measure of a student's level of interaction with others, the quantity of involvement, and the quality of effort directed towards activities in the classroom that lead to academic achievement. In this study, school engagement and student engagement were used interchangeably.

Cognitive engagement –Refers to student effort to construct knowledge, solve classroom tasks and monitor his or her learning habits.

Behavioural engagement-This is the observable act of students being involved in learning, participating in academic activities and efforts to perform academic tasks such as participation in class rehearsal and group participation.

Emotional engagement- These are students' affective reactions such as interest, and enjoyment in participating in classroom activities. For instance, how do students feel about the lesson? Do they have fun about it?

Selected secondary schools- a fair representation of both private and public secondary schools to form a sample in the Garissa sub-county.

Mediating variable-This is a third variable that links the independent and the dependent variables, and whose existence explains the relationship between the other two variables. In this study, student engagement mediates the relationship between the parental level of education and academic achievement.

Socioeconomic status- is the social standing or class of an individual or group often measured as a combination of educational level, income level, and occupational level.

Covariates-These are continuous variables whose presence is expected to change or correlate with the outcome variable of interest. In this study, gender and student entry behaviour are covariates and hence were controlled for a valid outcome.

1.15 Chapter Summary

This chapter unpacked the phenomenon under study through the background of the study, the statement of the problem, the purpose, research objectives, the justification of the study, significance as well as the theoretical and conceptual framework of the study ending with the operational definition of terms as operationalized in this study. The next chapter dealt with the review of relevant literature about the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter provides the conceptual meaning of research constructs as used in this study and further reviews empirical literature as per the research objectives as follows: the relationship between the parental level of education and academic achievement; the relationship between the parental level of education and student engagement; the relationship between student engagement and academic achievement, and finally the mediating effect of student engagement on the relationship between the parental level of education and academic achievement.

2.2 Conceptualization of Study Constructs

Concepts are abstract ideas of phenomena under study in which turning them into measurable variables and indicators leads to operationalization study (Amanda, 2011).In this study, the researcher focused on the parental level of education, student engagement and academic achievement constructs that were conceptualized in the context of this study.

2.2.1 The Concept of parental level of education

Operationally, the parental level of education is the uppermost level of education attained by the mother and father as either no formal education or uneducated, primary level, secondary level or tertiary level. The parental level of education determines the occupation and income earned by the parents. Consequently, these concepts are interrelated and were therefore not overlooked in this study. For instance, the education of the father directly affects the level of income for the family which has a direct and strong relationship with the facilities available for children at home influencing

children's academic achievement (Suleman, Aslam, Shakir, Akhtar, Hussain & Akhtar, 2012).

In the sustainable development goals (SDGs) of the vision 2030 agenda, a family is the centre of social life that plays a significant role in the welfare of its members in terms of education and socialization for children including young people (United Nations, 2015). Several scholars have come into agreement that mothers with higher levels of education expose higher quality interactions and express better parenting to children as compared to mothers with lower education levels. Besides, fathers with a high level of education have better emotional control over their children than those with low education (Martino, 2020).

Moreover, the parental level of education influences parental support and involvement in the children's academic activities which range from the provision of a conducive learning environment, setting high expectations of education, providing motivational support and also playing a fundamental role in controlling and monitoring the development of children (Durisic, 2017). This indicates that parents are the most influential individuals to children, however, families are unique because of the diverse circumstances and experiences they go through in terms of the various levels of education attained by the parents have an influence on the well-being of the children (Murati,2016).

According to Miksic (2022) educated parents know the value of education and hence encourage, guide and also motivate their children to be more focused for better grades. Similarly, providing a favourable home environment for the students as the provision of basic needs such as food, shelter and clothing .In this study, the researcher focused on the concept of parental level of education due to its numerous effects on other

variables used to explain the influence on student engagement and academic achievement.

2.2.2 The Concept of student engagement

Student engagement refers to an individual's time and effort committed to studying in terms of objectives of participation in academic activities (Schreiber, 2016; Sousa, 2016 p.17). Several scholars regard student engagement as multi-dimensional in terms of cognitive, behavioural and emotional engagement in which students reveal characteristics of being either actively or passively engaged in classroom activities (Kuh 2016). For active engagement, students engage in writing, raising their hands, answering a question, or talking about a lesson while for passive engagement, students listen to the teacher, read silently, or look at the instructional material (Shapiro, 2004).

Fredricks et al (2016) describes student behavioural engagement as matters concerning the students' conduct of in-class activities. This study focused on the influence of student behavioural engagement on academic achievement. Further, emotional engagement is a level of interest portrayed by the students in learning that affects improved motivation and enjoyment establishing a high level of commitment to learning (Darlene, 2018).

According to Rosario (2019), cognitive engagement involves non-visible traits that promote effort in learning, understanding, and mastering the knowledge and skills promoted in their academic work such as; writing their notes, and asking and answering questions. The researcher took into account of the three dimensions and how they influence academic achievement.

Kahu (2016) asserts that student engagement is influenced by a wide array of student and institutional factors, as well as by the socio-political context within which the

students and institutions are situated. In this study, student engagement is viewed as a composite latent construct of both cognitive, emotional and behavioural engagement and their effect on student academic achievement as illustrated in this chapter.

2.3 The Concept of Student Academic Achievement

Student academic achievement is knowledge acquired and assessed using marks and grades that a teacher, student and school have achieved over a specific period of time (Narad & Abdullahi, 2016). Also, Lamas (2015) emphasizes that academic achievement is a product given to the students measured in terms of standardized grades as a result of learning prompted by teaching activity either by the teacher or the student. Thus, the significance of students' achievement is not only evident to the students but also the secondary schools as a measure of the success of their education process.

Despite Students' academic achievement being determined by several factors (Eze et al. 2020), students' efforts are reflected in examination results. In this study, academic achievement was measured using cumulative average marks of the previous terms converted into standardized grades. Moreover, the determining factors of student achievement have attracted the attention of academic researchers from many areas who have tried to determine which variables influence student achievement in a positive and negative direction.

 In this study, parental level of education and student engagement are the variables used to determine the effects on student academic achievement obtained by calculating the aggregate average mark of the end of term one and term two examinations which were translated into standardized grades. For instance, grade letter E was the lowest and grade letter A (plain) was the highest grade attained by the students.

2.4 The Parental Level of Education and Student Academic Achievement

From the reviewed literature, the parental level of education influences their knowledge, beliefs, values, and goals about giving birth and raising children (Boi, 2020). Additionally, behaviours learnt by children and their intelligence have more weight than a single cause for predicting academic achievement (Choi & Rhee, 2014; Nichols & Islas, 2016).

The parental level of education influences the parental level of involvement in student academic activities which in turn affects student engagement (Yusuf and Turham, 2018). In addition, Hernandez & Napierala, (2014) argued that the type of occupation of the parents and the income earned by them are a result of the parental level of education.

A study by Sare, Nicholson and Stein (2017) in Ghana took 469 undergraduate students through quota sampling to see the role of parents in academic achievement was through continued financial, social support and monitoring. Further, support in terms of resources needs to be provided and also continuous supervision of the activities students do while in school. The current study focused on secondary school students taking a sample of 400 students selected using simple random sampling.

Globally, scholars have conveyed their findings to address the issue of low student academic achievement in secondary schools. For instance, in Pakistan, Rana and khan, (2015) in their study about the parental level of education and academic achievement asserted that, highly educated parents convey more influence on their children to attain and perform well in their studies. This is because such parents show great interest and concern by guiding them in the subject and career choice pushing for high academic achievement. In support, Abu Bakar,(2017) affirmed that parents with high educational

levels have higher academic expectations from their children as they attach importance to education as a key to unlocking greater possibilities. This clearly illustrates that parents have a very key role to play in a child's education in which highly educated parents understand the value of education by taking part in guiding and motivating students on how to attain higher grades for better careers in future.

Moreover, Soharwardi, Fatima, Nazir and Firdous (2022) argue that a mother's level of education greatly determines the academic outcomes of a student as equated to a father's level of education due to the early educational planning done by the educated mothers. Contrary, Alsumalin, (2020) study indicated a significant positive correlation between both mother's and father's level of education with student scores with r=.28; r=.16 at p<.05.This indicates that both parents' education level has an impact on the academic scores attained by the students.

Augustine (2017) emphasized that educated parents are aware of the value of education, therefore, taking the role of encouraging, guiding and motivating the children to be more focused for better grades. Similarly, educated parents can provide a favourable home environment and provide the basic needs compared to less educated parents. This shows the roles parents play while with the students at home in the realization of academic goals.

Rana (2015) examined the association between parents' level of education and kids' academic achievement in South Punjab town, Pakistan demonstrated a positive connection between the parent's level of education and the kids; achievement. Azhar (2014) confirmed that parental level of education positively affects student academic grades.

In Malaysia, Norsuhaily (2017) whose main objective was to analyze how parental educational qualification affects students' academic achievement in Kuala Terengganu, the descriptive research design was used in which data was collected from 200 students from 4 selected secondary schools selected using a stratified sampling technique. Self-administered questionnaires were used to collect data and analyzed using regression models. The findings indicated that students from parents with high education qualifications perform well than those from parents with lower educational qualifications.

The above study employed a descriptive research design only collecting objective data from a sample size of 200 students. This does not sufficiently and exhaustively explain the validity of the finding generated. Therefore, the current study bridges the methodological gap by employing a mixed method approach of collecting both the quantitative and qualitative data from 400 students,8 teachers and 8 parents sampled purposively from 12 selected secondary schools employing semi-structured interviews and focused group discussions to collect data. The views generated were analyzed thematically to support and corroborate the findings from the quantitative data analysed using the Pearson correlation coefficient method.

A study by Idris, Hussain & Nasir, (2020) to explore the relationship between parents' education and their children's academic achievement in the Mardan district, revealed that highly educated parents contribute positively to the academic achievement of the children. A sample size of 510 comprising the tenth class of 34 government high school students chosen using systematic random sampling filled out the self-developed questionnaires. Data were analyzed using mean, standard deviation and simple linear regression. The study above focused only on the government high schools and only self-reported questionnaires to generate data. For this reason, in this study interviews

and FGDs were used to collect data and also focused on selected secondary schools (both public and private schools) filling in the methodological gap.

Khan, Iqbal and Tasneem, (2015) in District Rajanpur, South Punjab a study on the influence of parents' educational level on students' academic achievement at the secondary level of education. A sampled 200 students in Grade 10th randomly in which oral interviews, observation, and a questionnaire were used for data collection. The null hypothesis was tested using independent Z-test analysis while the descriptive empirical data was tested to correlate with the described variables. The findings illustrated a significant positive relationship between parents' education level and the academic achievements of students. This illustrates how the parental level of education is essential for higher grades. The study was done in the Pakistan Rajanpur district hence the current study was conducted in the Garissa sub-county in Kenya filling in the contextual gap.

In sub-Saharan Africa, scholars have illustrated how the education level of the mother and father influence the student's academic achievement. For instance, in Nigeria, Amoo, Adeyinka and Aderibigbe (2018) in the study about perceived effects of the parental socioeconomic status on students' academic achievement found a significant relationship between the parental level of education and student academic achievement. The above study looked at various socio-economic factors which affect achievements such as parental level of education, parental level of income and parental occupation, however this study focused on the parental level of education and its influence on student academic achievement carried out in Garissa sub-county, Kenya.

Moreover, Ukap and Bhatia (2019), in a study to determine parental educational background and study facilities of academic achievement among secondary school

students in Calabar, using a sample of 240 students from 6 schools were selected randomly. Data was collected by the use of questionnaires in which a reliability coefficient of 0.72 was obtained and data was analyzed by use of t-tests. Findings indicated a significant difference between the academic achievement of students with parents with high educational backgrounds and those from low educational backgrounds. The study has categorically shown the influence of both the low and high education levels of parents on academic achievement using t-tests. The current study employed Pearson correlation and linear regression to demonstrate the influence of parental level of education on student academic achievement by collecting more data using interviews and focus group discussions which were not used in the study above.

Similarly, Abdu-Raheem, (2015), carried out a study on parents' socioeconomic status on secondary school student's academic achievement in Ekiti State confirmed in the study that there was a relationship between parents' socioeconomic status and the academic achievement of secondary school students. In addition, Akpan (2020) in a study on academic achievement in biology in public secondary schools in Akwa Ibom estate in Nigeria, found that parental level of education has a significant positive effect on the academic achievement of 11 students in senior secondary in biology. This indicates that the parental level of education is not only essential in the final cumulative grade but also in the individual subjects that are done by the students. In this, the academic achievement focus was on all the subjects amounting to the end-term grade. This is because some students pass in some subjects and fail others which cannot aid them in transit to the next level. In the Garissa sub-county, the problem of low average academic achievement among the students which is still persistent.

In East Africa, for instance, in Tanzania, Madegwa (2019) data reported from the interviews and focus group discussions, employing a case study research design,

purposively selected 60 participants who included parents, teachers and students reflected that parental level of education significantly influences on student academic achievement. This study a mixed method approach was used involving the collection of both the qualitative and quantitative data to provide a comprehensive insight into the research problem.

In Ethiopia, Gobena (2021) found out that a statistically significant family education level contributed to 40.96% of students' academic achievement. In support of Brew, Nketiah and Koranteng (2021) also asserted that highly educated parents their children are above average academically as compared to less educated parents. The 40.96% it's nearly half of the percentage provides a moderate significant contribution to student academic achievement. The parental level of education is an important factor not to be overlooked. Therefore, this current study bridged the contextual gap as it was conducted in the Garissa sub-county in Kenya.

In Uganda, Onzima (2011) in a study on primary pupils' educational attainment using a case study approach of St. Jude Malaba primary school, found that both father and mothers' levels of education have a significant effect on the pupils' educational attainment. The current study focused on secondary school students in the Garissa sub-county using selected 12 schools hence filling the methodological and contextual gaps.

In Kenya, in Tana-river County, Juma (2016) asserted that parents' level of education influences positively students' academic achievement. Also, Kiboi (2018) in a study in Bungoma County found that children from learned parents performed better than those from families with low levels of education. In addition, parents who are educated appreciate the value of education and hence support their children in studies through assistance with homework and setting a conducive home environment for learning. It

should be noted that educated parents can involve themselves in student activities such as helping with the assignments given and also provides a sound and favourable learning environment at home.

Moreover, Caroline and Ababu (2019) in a study done in primary schools in Bungoma central sub-county illustrated that students with educated parents can obtain higher scores in the Kenya certificate of primary education as compared to those students with less educated parents. In support, a study by Ogweno, Kituri and Obara (2014) on the academic achievement of 754 agriculture form four students found a positive correlation between the level of education of the mother and students' achievement. The current study focused on 400 students, 8 teachers and 8 parents in the Garissa sub-county.

On the contrary, Koskei and Ngeno (2015) uncovered that parental educational achievement did not fundamentally influence students' scholarly achievement in Kuresoi Sub-area. However, Bumgarner and Brooks-Gunn (2013) established that the education of mothers was an authoritative display of physical condition and knowledge at home. Koskei (2015) discovered the relationship between parents' education with children's scholarly accomplishments was intervened by the home condition. The findings obtained in this investigation demonstrate a positive connection between parental education level and the scholarly achievement of students in schools.

In the Garissa sub-county, a study by Yassin (2020) on the effect of parental level of education on secondary students' academic achievement showed that there was a 95% significance of the mother's level of education and how a student performed at school, in difference to the father's level of education where there was no significance. Further, the majority of top performers (51.9%) came from families whose mothers had

secondary education and above which is in contrast to 25% of top performers from a background of no maternal education.

From the highlighted text, it's evident that a mother's level of education leads to higher grades, However, the study does not clearly show the relationship and the effect parental level of education has on student academic achievement, due to the identified gaps and scanty literature in Garissa sub-county, the study was conducted based to assess the effect and relationship parental level of education on student academic achievement using mixed method approach to gain in-depth insight about the phenomenon and also for valid and reliable findings to solve low student academic achievement in Garissa sub-county.

2.5 The Parental Level of Education and Student Engagement

Globally, scholars assert that student engagement is associated with personal and contextual factors (Abreu & Veiga, 2014; Raftery, Grolnick, & Flamm, 2012). For instance, AL-Alwan, (2014) revealed that educated parents show interest in their children, contribute to community building within the school and speak recurrently with their children about school-related topics, they directly influence students' perceptions of self, encourage students' level of school engagement and contribute to students' sense of empathy with the school resulting to motivated and more engaged students both academically and behaviorally. On the contrary, the less educated parents of their children are less engaged due to a lack of motivation and encouragement in classroom activities.

Tomaszewski, Xiang & Western, (2020), found out that, students from parents with low education levels are significantly more likely to have behavioural issues such as being bullied and bullying others, and absent from school, and less likely to like their school

and feel that they belong to their school. On the cognitive dimension, these students are more likely to adopt goals and strategies that typically lead to lower achievement such as mastery-avoidance goals. This study expresses the effects attained on the three dimensions of student engagement with the low levels of parental education. Positive behavioural characteristics automatically lead to active student engagement in classroom activities with a lot of discipline. In support, Covas and Veiga (2021) established important differences in student engagement in the affective, behavioural and cognitive domains depending on the parental level of education. Similarly, Erol and Turham (2019) affirmed that parental education is positively associated with student engagement. This shows the differences in terms of intensity of student engagement upon the influence of parental level of education, more especially fathers. The current study conducted employed a mixed method approach to measuring student engagement using self-assessment questionnaires based on a 1-5 Likert scale.

Monteiro, Fernandes, Torres, & Santos, (2017) argues that mothers who attended Higher Education, undoubtedly pass on to their child an affective ambient, which promotes the desire to belong and to feel more integrated with the academic group of orientation. Furthermore, Filomena (2021) asserts that high maternal education, results in a positive behavioural dimension, unlike mothers with low levels of education. This implies that highly educated mothers convey a set of values of discipline and respect for school norms, connected to the idea that academic achievement is associated with good behaviour in school, which can positively influence the results of their child, in the behavioural dimension. This shows how educated mothers instil good morals and values in their children which activates active and proper engagement in school and academic achievement. The current study gave an equal focus to both the parents to

ascertain their influence on student engagement, unlike the above study which focused mainly on the mothers.

2.6 Student Engagement and Academic Achievement

A 2018 Gallup study on student engagement found out that engaged students are 2.5 times more to get excellent grades and do well in school, and also 4.5 times more likely to be optimistic about the future than their actively disengaged peers. The exponential increase in terms of grades attained illustrates how student engagement is an important predictor of student academic achievement.

In a global context, in Pakistan Abid and Akhtar (2020) investigated the link between student academic engagement and achievement. A study population of 800 10th-grade pupils was chosen at random from 20 high schools in the Lahore district. The findings revealed a weak and negative relationship between students' academic engagement and their accomplishment (r = -.088, p>0.01). Besides, Chen, Yang, Bear, and Zhen (2013) also discovered that student engagement and the academic accomplishment of students have no relationship. This shows that some students can be disengaged in-class activities and still perform well in their exams, in this case, student engagement is not a significant predictor of student academic achievement.

In China, Lei, Cui, and Zhou (2018) in their meta-analysis study on the relationship between student engagement and academic achievement, comprised 69 independent studies (196,473 participants). They found a moderately strong and positive correlation between overall student engagement and academic achievement. The current study filled the contextual knowledge gap as the study was conducted in the Garissa sub-county in Kenya.

In the Philippines Delfino, (2019) in a study to determine the extent of student engagement at Partido State University and analyzed the factors affecting student engagement. The findings of the study revealed that the level of student engagement along behavioural, emotional, and cognitive engagements was high with a mean of 2.84. Also, the academic achievement of the respondents was very good (GWA=1.83). Furthermore, he concluded that behavioural, emotional, and cognitive engagements were positively correlated to the academic achievement of the students. Actively engaged students in terms of cognitive, behavioural and emotional engagement portrayed high levels of academic achievement. The current study focused on secondary school students in Kenya.

In Spain, Carolina (2021) Students with high engagement had the best grades and managed their time and study surroundings better, were the most strategic in seeking information, and showed less maladaptive regulatory behaviour. In support, numerous studies have shown that students' general student engagement is significantly associated with the nature of their achievement goals (Sommet & Elliot, 2017). This depicts that the goals also set by the students trigger the level of student engagement to attain the set goals which can be through time management and being well behaved. The current study bridged the contextual gap, the study was conducted in the Garissa sub-county.

Thomas and Chiu, (2021) in a study explaining the role of student engagement on academic achievement during covid-19, self -the determination theory of Deci and Ryan (1985) was used which suggests that all individuals possess three universal and psychological needs of autonomy (feeling self-governed and self-endorsed), competence (feeling competent and effective), and relatedness (feeling connected, loved, interacted) that move them to act or not to act. This theory did not put forth the

cause of autonomy and how it interacts to yield an outcome. This study employed Walberg's theory of education productivity (1981) which explains that the psychological needs for self-determination are interrelated with other factors such as home environment including the parental level of education to attain academic achievement to yield academic achievement.

In sub-Saharan Africa, Orji and Vassileva, (2020) explored the relationship between student engagement and Student Achievement and supervised (Random Forest) and unsupervised (Clustering) machine learning approaches were used in exploring the relations. The approaches identified an interesting pattern in student engagement and show that engagement and assessment scores are good predictors of student academic achievement. Hence in this study, the researcher focused on collecting data from selected secondary schools from three students using self-assessment questionnaires focusing on the daily classroom activities carried out by the students.

A dissertation by Hayam,(2016) examined the relationship between engagement and achievement, and whether there was a causal effect, two points of data collection over one academic year (before and after) were included from student self-report questionnaires and students' achievement from the school database. The sample comprised three urban secondary schools (1,617 students from Year 7 to Year 9). The findings suggested that student engagement is positively associated with academic achievement, but they did not support evidence for causal effects. Those findings remained regardless of whether or not selected, potential confounders such as teacher support, peer support, school environment, and background variables of the student were considered. The current study took into account both rural and urban schools with a sample size of 400 while controlling for gender and student entry behaviour to achieve a causal effect of the variables.

In Sri Lanka, Glapaththi, Dissanayake, Welgama, Somachandara and Sachinthana, (2019) focused on student engagement and academic achievement in the state (ABC) and non-state (XYZ) universities. The findings of the study acknowledged a positive relationship between student engagement and academic achievements. This study focused on secondary schools in the Garissa sub-county.

In Kenya Wara, (2018) revealed a statistically significant moderate positive correlation ($r=.35$, $N=31$, $p<.05$) between emotional engagement and academic achievement among the students, with an increase in emotional engagement occasioning an improvement in academic achievement. The study shows that one aspect of engagement was found to be significant, illustrating a direct variation that an increase in emotional engagement leads to high student achievement.

However, the highlighted text lacks empirical studies limited literature is available in Kenya and no study done in the Garissa sub-county on student engagement and student academic achievement. Hence this study sought to assess the effect of student engagement on student academic achievement.

2.7 The Mediating Role of Student Engagement on the Relationship between the Parental Level of Education and Academic Achievement

Globally, Ribeiro, Rosário, Núñez, Gaeta and Fuentes (2019) in their study on mediating the role of student engagement on the relationships between students' background variables (students' academic preparation and sociocultural status), student's cognitive and behavioural engagement, and an outcome variable (academic achievement). Findings indicated that cognitive and behavioural engagement mediated the relationship between students' background variables and their academic

achievement. This student's background factors included parental level of education. The current study focused on secondary students in the Garissa sub-county, Kenya.

Moreover, in Australia, Tomaszewski, Xiang and Western, (2020), a study on Student engagement as a mediator of the effects of socioeconomic status on academic achievement among secondary school students. The study participants comprised the focal child, their parents (both resident and non-resident), carers, and teachers, who were surveyed using face-to-face and telephone interviews, paper questionnaires, and computer-assisted self-interviewing. Findings showed that Low-SES students are significantly more likely to have behavioural issues and more likely to adopt goals and strategies that typically lead to lower academic achievement such as mastery-avoidance goals, and less likely to adopt strategies that contribute to higher achievement. Hence this study focused on students, class teachers and parents as the main participants in collecting data using structured questionnaires and FGDs while analyzing data using multiple linear regression models.

In Hong Kong, Juli chi–Gen (2010) found that parental support and student perceived support are significant to academic achievement as mediated by student school engagement. The study used 290 adolescents and data collected using structured questionnaires was analyzed using structural equation modelling. Further, Azman and Ahmed (2016) also found out that cognitive and behavioural engagement s mediate the relationship between learning support and student academic achievement. This study employed multiple linear regressions for testing the mediation with 375 students.

Additionally, Su, M. (2021) in a comparative study with china, Finland, Korea and Us found that student engagement significantly mediates the relationship between school climate, socio-well-being and academic achievement. Jian, (2022) asserted that student

engagement fully mediates the learning agility of music students and academic achievement. This clearly shows that student engagement effect variables influencing student academic achievement.

In sub-Saharan Africa, for instance in Ghana, on the mediation effect of student engagement on the role of parent and academic achievement, parental support influenced greatly the emotional and behavioural engagement of learners leading to improved academic achievement. Further, Poon, (2020) argued that child engagement is an important mediator in the relationship between parental socioeconomic status and academic achievement.

 In East Africa specifically in the Kenyan context, no literature exists on the mediation effect of student engagement on the relationship between the parental level of education and student engagement.

The foregoing literature illustrates the availability of scanty literature to explain the mediation effect of student engagement. In the Garissa sub-county, persistent low student academic achievement still exists, the problem resolved for this study is to access the mediating role of student engagement on the relationship between the parental level of education and student academic achievement.

2.8 Summary of Literature Reviewed and Research Gaps

From the preceding literature, parental level of education and student academic achievement have been reviewed and highlighted. In all the studies highlighted above, the aspects of parental level of education and academic achievement were not adequately covered illustrating gaps in literature ad bridged below.

Studies have highlighted that highly educated parents have a statistically positive effect on student academic achievement. The highly educated parents are declared to value

education, provide a conducive home environment, encourage the students and guide them in their future life and career. The majority of the works reviewed were conducted in higher institutions and least in secondary schools. The studies came up with the effect of parental level of education in which data were analysed using t-tests, z-tests and linear regression but a gap in the relationship between the parental level of education and academic achievement was not clearly defined. Therefore, presenting a contextual, methodological, theoretical and empirical gap perused to be filled by this study.

A review of literature on the parental level of education, student engagement, and academic achievement has yielded several research gaps.

The foregoing studies highlighted that parental level of education affects student engagement in terms of the level of engagement either cognitively, emotionally or behaviorally. Students whose parents are less educated show signs of less engagement since they don't monitor the practices of the student while at school and also provide a favourable home environment in terms of resources to motivate them. Most reviewed studies were biased on mother's level of education unlike focusing on both parents hence creating an empirical gap. Also, most reviewed studies collected data using quantitative methods only by administering of self-assessment questionnaire in which little has been done on FGDs and the use of interviews, creating a methodological gap. The present study consequently pursued to fill these gaps.

The foregoing studies have highlighted that active student engagement leads to an increase in academic achievement. The studies have also revealed that students who miss school and don't do assignments are mostly undisciplined and their grades are low as compared to students who are time conscious and are self-directed. Most studies reviewed illustrated academic achievement only in a subject which cannot translate to

the overall student academic achievement creating an empirical gap. Furthermore, the reviewed studies also focused on universities, on a positivist paradigm and constructivist paradigm respectively. The current study pursued to fill this gap.

The foregoing studies have employed goal theory which emphasizes intrinsic motivation and setting of goals to be achieved. The theory does not clearly explain how the factors which contribute to intrinsic goal setting are covered by Walberg's theory.

The foregoing studies highlighted that student engagement mediates the relationship between the parental level of education and student academic achievement. Moreover, some studies illustrated that educated parents increase the level of student engagement and hence achieve higher grades. Limited literature was pointed out in the global context while no literature in Africa and Kenya on the mediation of student engagement. This study was consequently pursued to fill this gap. Therefore, the concern of this study was to determine the influence of parental level of education and student engagement on academic achievement in selected secondary schools in the Garissa sub-county.

2.9 Summary of the Chapter

This chapter presented a review of the concept of parental level of education, student engagement and academic achievement were reviewed, and the related literature on the parental level of education and academic achievement, parental level of education and student engagement, student engagement and academic achievement and finally, the mediating role of student engagement on the relationship between the parental level of education and academic achievement The gaps in the existing body of knowledge have also been identified and presented. The next chapter deals with the methodology used in the study to fill the knowledge gap.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Overview

This chapter presents the inclusive methodology that associates research approaches with conclusions. It designates the study's methodological techniques applied in data collection and analysis precisely; the research paradigm, the research approach, research design, study target population, sample size and sampling techniques, data collection and data analysis techniques, validity and reliability of the research instruments for quantitative data and trustworthiness for qualitative data, the ethical considerations and the summary of the chapter.

3.2 Research Paradigm

A research paradigm is a composition of abstract beliefs and principles that shape how the researcher perceives, interprets and acts within the world (Kivunja, 2017). The study was reinforced by the pragmatism research paradigm which provides an occasion for wider, multiple worldviews and dissimilar assumptions as well as diverse forms of data collection and analysis (Creswell, 2018). Further, it accommodates the use of both qualitative and quantitative research methodologies to collect data and make inquiries about the complex phenomenon from their social and natural contexts (Creswell, 2007; Morgan, 2009)

3.3 Research Approach

A research approach is an assemblage of procedures and plans that adopt the overall process of research (Solanki, 2022). This study was positioned in a mixed methods research approach which incorporates the use of various foundations of evidence to permit an assertion (Tashakkori & Teddlie, 2011: Creswell & Clark, 2018).

The rationale is triangulation of both qualitative and quantitative data aims at gaining more comprehensive material and a stronger evidence for conclusions and recommendations due to the compliment about the phenomenon than using a single approach (Creswell & Clark, 2018).

3.4 Research Design

A research design is a scheme that guides the researcher in the collection, analysis, and transformation of interpretations (Creswell & Clark, 2018; Cohen, 2018). The researcher adopted a concurrent triangulation research design in which both the quantitative and qualitative data were given equal weight, collected at the same time separately, analysed separately and then the results of the two databases were merged at the interpretation stage (Creswell & Clark, 2018). The rationale is the qualitative data was intended to support the quantitative results and provide a comprehensive understanding of the research problem resulting from collecting both the quantitative and qualitative data. (Creswell & Clark, 2018; Cohen, 2018).

Data collection was done in one phase (as illustrated in figure 3.1 below), both the quantitative and qualitative data were given equal weight and integration of the results was done in the interpretation section (as indicated in chapter 4) (Teddlie & Tashakkori, 2014: Creswell, 2018). In the interpretation section, quantitative statistical results were presented first then followed by qualitative results.
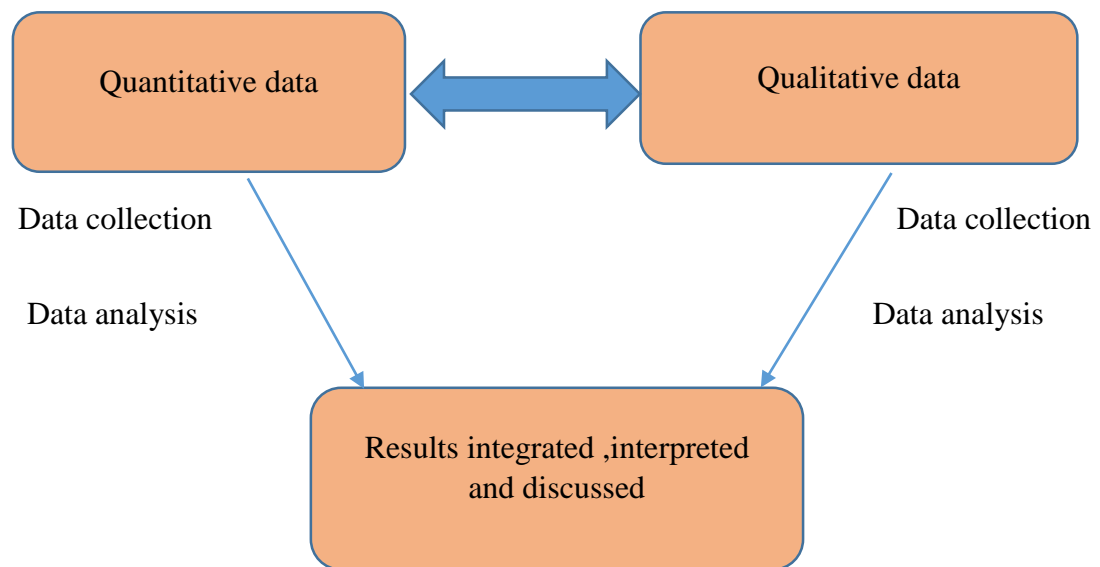
Figure 2.1: A visual model of data collection, a concurrent triangulation design
(Adapted from Creswell, J.W & Creswell, J. D (2018). Research Design: Qualitative, Quantitative & Mixed Methods Approaches. 5th Edition. Sage)

3.5 The Study Area

The research was carried out in the Garissa sub-county, an arid and semi-arid area, located in Garissa County the North-Eastern part of Kenya. The Garissa sub-county is bounded by four other sub-counties namely; Fafi, Dadaab, Lagdera, and Balambala sub-counties. The Garissa sub-county has twenty-one (21) (8 public and 13 private) secondary schools (GOK, 2016). The Garissa sub-county was purposively selected for the following reasons; Firstly, the majority of the schools comprised in this region are secondary schools compared to the other learning institutions and similarly, from the reviewed empirical studies, research has been done in various contexts other than the Garissa sub-county on the study phenomenon as indicated in (Juma, 2016) in Tana River County.

Moreover, the key research findings might be transferable to other sub-counties with comparable contexts for the parental level of education and student engagement to

enhance their academic achievement due to the availability of scanty literature on the parental level of education and student engagement in selected secondary schools.

3.6 Target Population

A target population is a group of interest who display clear characteristics of significance that the researcher intends to study and where the sample will be drawn from (Majid 2018; Creswell & Creswell, 2018). In this study, the target population comprised all secondary schools, secondary students, parents and class teachers in Garissa sub-County. (A total population of 10426, comprising 9726 students, 200 teachers and 500 parents).

3.7 Sampling Procedure, Sample Size and Sampling Techniques

Sampling is the process of selecting components from the population in such a way that the sample elements selected represent the entire population (Kumar, 2019). The Secondary schools in the Garissa sub-county were selected by the use of stratified proportionate random sampling which involves the researcher dividing a population into homogeneous sub-populations called strata based on specific characteristics such as school type, gender identity, and location. Every member of the population studied should be in exactly one stratum. The secondary schools were classified into four strata namely; national schools, extra county, county, and sub-county schools. This was to ensure that every school is fairly represented in the study sample despite the differences in their rankings in status.

Further, schools from each stratum were selected using simple random sampling, allowing the researcher to estimate statistical measures for each sub-population, also, more important in getting into the schools represented in each stratum. The technique was suitable since each school had an equal chance of being selected with no bias to

form the sample size. Therefore, 50% of the schools in each stratum were selected comprising 50% national level, 50% extra-county level, 50%county level, and 50% sub-county level forming 8 selected schools out of 21 schools.

The form three classes were selected systematically ensuring the sample consisted of only form three students from the 8 randomly selected secondary schools. Subsequently, from the form three classes sampled, the various streams to participate were selected using simple random sampling to ensure that equal chances were given to the number of streams of form three classes in selected secondary schools to participate in the study.

From the selected form three streams above, simple random sampling was employed to select 400 respondents from a target population of 9676 students to participate in the study. The researcher employed simple random sampling as it provides a generalization of the findings from a sample to the whole population under study (Taherdoost, 2016). Nevertheless, the 8 teachers from a total of 200, 8 students from 50 and 8 parents from 500 selected secondary schools were sampled purposively to ensure that only form three class teachers, from three students (not among the 400 selected using simple random sampling) and form three parents participated in the study. The rationale of purposive sampling guarantees the researcher discovers individuals with precise features to participate in a research study (Palinkas, 2015).

Students were determined by the available sampling frame (class lists) using a simple random technique. The selection of the research respondents is summarized in Table 3.1. The sample size was calculated using the Kothari, (2004) formula as shown below.

$$n = \frac{z^2 . p. q. N}{e^2(N-1) + z^2. p. q}$$

Where ;

(N) = Target population.

(Z) = Z-score at confidence level 95%, 1.96

(e) = Margin of error 5%

(p) =50% population portion

(q) =1- p = 0.5

The calculated sample size was given by;

$$400 \text{ students} = \frac{\textbf{1.96X1.96}.(\textbf{0.5}).(\textbf{0.5}).\textbf{9676}}{(\textbf{0.05X0.05})(\textbf{9676}-\textbf{1})+(\textbf{1.96X1.96}).(\textbf{0.5}).(\textbf{0.5})}$$

Table 3.1: Summary of the sampled participants, sampling method and data collection method

	Category	Target Population	Number sampled	Sampling method	Data collection method
1.	Students	9676	400	Proportion Simple Random	Questionnaire
2.	Parents	500	8	Purposive	Interview
3.	Teachers	200	8	Purposive	Interview
4	Students	50	8	Purposive	FGDs
	Total	10426	**424**		

Source: Researcher's data, (2022)

3.8 Data Collection Methods and Instruments

The researcher employed a questionnaire survey in quantitative data collection because it gives more accurate and objective data (Lindlof & Taylor, 2016). The qualitative data were collected using semi-structured in-depth interviews and focus group discussions (FGDs) to gather the participants' perceptions concerning the research phenomenon.

The structured questionnaires were administered to form three students while the semi-structured in-depth interviews and focus group discussions were administered to class teachers, parents and form three students respectively. The researcher used these instruments to obtain rich data for the study as discussed below.

3.8.1 Structured questionnaire

The questionnaire was structured with certain, real and pre-arranged questions. The questions had restricted responses from which students selected the most suitable response. Further, the questions were standardized and all the respondents were asked the same questions in the same order to establish the reliability of the research instrument. The justification of a structured questionnaire is that; it enabled the researcher to collect data from a large number of participants to reduce the marginal error, it was simple to administer and relatively expensive to analyze, saved time and provided valid and objective data.

The self-administered student questionnaires were used to determine the relationship between the independent variables (parental level of education and student engagement) and the dependent variable (academic performance). The research instruments used were modified and established using measures from preceding studies (Gobo & Mauceri, 2014).

The researcher developed the questionnaire questions in line with the study objectives and the respondents were anticipated to answer them as per the procedures given. The period of answering the questionnaire was 30 minutes. The questionnaire comprised of two sections namely; the demographic section and the other section collecting numerical data to test the research hypothesis

The first section of the instrument requested respondents to provide demographic information. The next section that followed asked respondents about statements on the parental level of education in terms of the highest levels attained by the parents. The statements required the respondent to tick the appropriate level of the parent as presented measured as parent uneducated/no formal education, primary level, secondary level, college level and university level.

Statements on student engagement were measured on a 5-point Likert scale of never (1) to always (5) covering all the aspects of cognitive, emotional, and behavioural engagement. Student academic achievement was collected in terms of marks at the end of the term for the two subsequent examinations administered (terms one and two) were obtained while the identity of the student remained unidentified which were converted in standardized grades by the researcher as grade A (1) being the highest and grade E (5) being the lowest .

3.8.2 Semi-structured in-depth interviews

The interview guide was used to collect qualitative data from the purposively selected class teachers and parents who were free to provide their sentiments on the semi-structured open-ended questions which were inquired as per the research objectives. Their views were audio recorded after the participant's consent was guaranteed which were later transcribed for analysis and interpretation (Leedy & Ormrod, 2014). The rationale for using semi-structured in-depth interviews was due to its flexibility and relevance that the researcher was able to construct new knowledge through probes and interactions with the interviewee for knowledge is being created and negotiated.

The interview took 45-60 minutes covering issues such as what is the relationship between the parental level of education and academic achievement. What is the

relationship between the parental level of education and student engagement? What is the relationship between student engagement and academic achievement and finally? How does student engagement mediate the relationship between the parental level of education and academic achievement?

The researcher embraced Kvale's stages in conducting in-depth interviews as shown in figure 3.2 below.
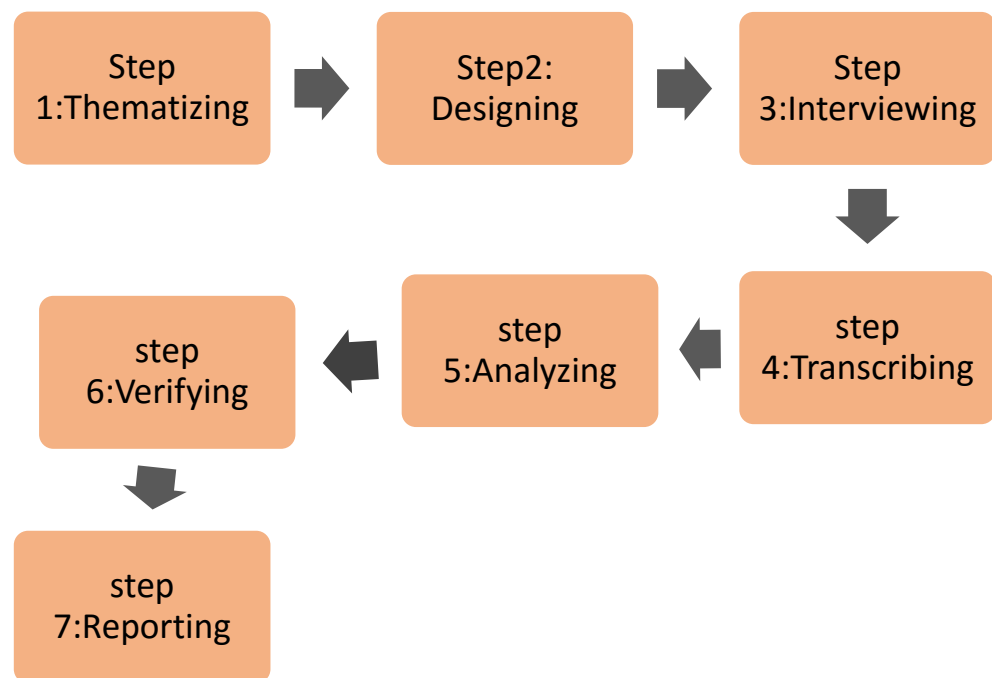
Figure 3.2: Steps of interviewing
Adapted from (Kvale, 2007; 2018)

Step 1: Thematizing- Before going to the field, the researcher reviewed the purpose of the study and formulated the research questions that will assist in measuring the variables of interest in the study.

Step 2: Designing-it involves the planning procedures and techniques. The researcher established a guideline for interviews with the school principals to introduce the

researcher and also contacted the respondents to agree with the schedule as per the reviewed ethical considerations.

Step 3: Interviewing-The researcher was prepared with a tape recorder, consent forms and information for briefing and debriefing. Moreover, she dealt with the information in the interview guide.

Step 4: Transcribing- The audio-recorded interviews were transcribed. More details in the analysis section

Step 5: Analysis- The researcher generated preliminary verbatim which were used to inform the transcribed information

Step 6: Verifying-After analysis, the researcher checked if the verbatim are coherent with the raw data by checking meanings and how the final interpretation can be affected.

Step 7: Reporting-The results were presented in a distinct report as per the study objectives.

3.8.3 Focus group discussions

A focus group discussion is a collection of 8-12 people from analogous backgrounds or experiences to discuss a shared interest (Baral, 2016). The intent of using FGDs is that they provide a free and open forum for discussion resulting in the generation of new ideas essential for problem-solving.

In this study, one FGD was purposively developed comprising eight form three students from selected secondary schools in the Garissa sub-county whose aim were to provide views as per the research questions. The course of the discussion was planned to ensure that all the concepts of interest are all covered. Further, the researcher ensured that the

environment of discussion was favourable for free talks and honest opinions. The following steps were followed in conducting the FGD.
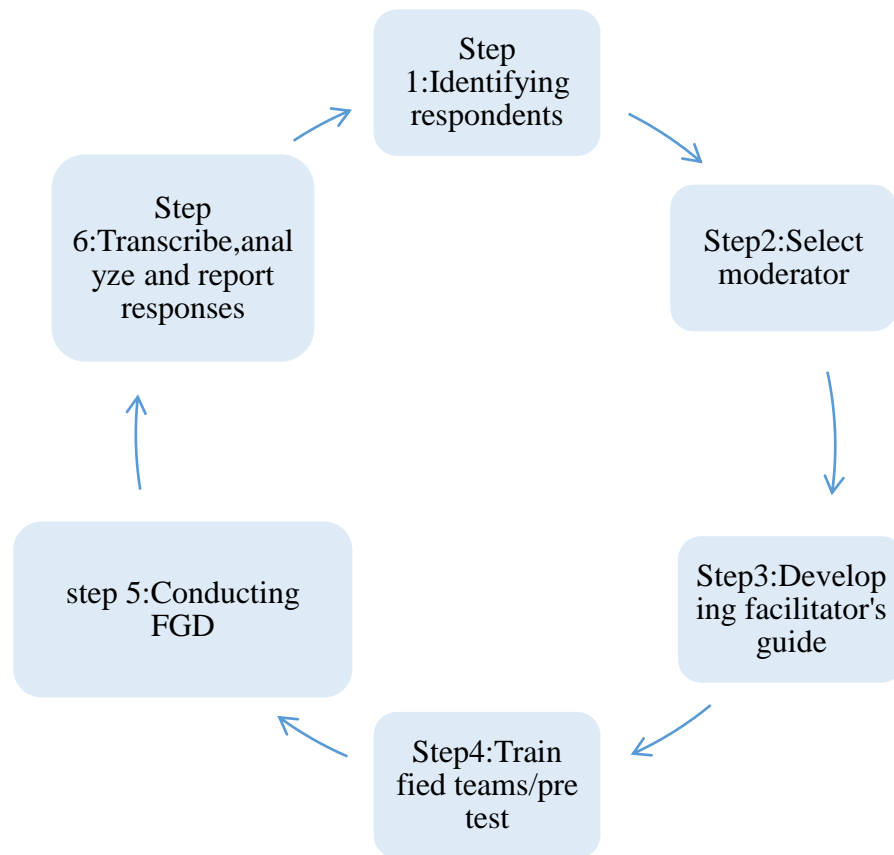
Figure 3.3: Steps in conducting FGDs
Source: (Gibbs, 1997)

3.8.4 Document Analysis

Document analysis is the logical collection, documentation, analysis and interpretation and organisation of information relevant to the area of study (Bretschneider et al, 2017). Analysis of documents helps to triangulate other methods of data collection. In this study, document analysis as a method and a source was used to provide student academic achievement (average marks/grades at the end of the term) in the year 2021 and also the student entry behaviour (Kenya certificate of primary education (KCPE) marks attained) in the year 2019. The justification for document analysis is that; student

entry marks and end-of-term scores obtained are accurate as compared to the students filling in their marks by themselves which would be biased.

With the help of a document checklist, the main documents accessed were the student's admission file from the admission office for collection of student's entry marks and form three end-of-term analysis from the examinations office to collect end-of-term grades in term two and three examinations.

3.9 Data Collection Procedure

In advance, the researcher structured a timetable demonstrating actual dates and time framework for respective activities in the study. Subsequently, an ethical clearance was obtained from Moi University, an introductory letter was obtained from the dean, school of education, a research permit from the National Commission for science, technology and innovation (NACOSTI), and a letter to collect data from the Garissa sub-county education office which were presented to the principals in the selected secondary schools.

Before embarking on data collection, the researcher carried out a reconnaissance study in the selected schools for familiarity. Further, sought appointments with school principals who were the gatekeepers to the selected schools in the sub-county. The school principals introduced the researcher to different class teachers and the students in the school on the appointed dates.

The researcher requested for teachers' lists and student class lists which were obtained from the principals and class teachers respectively. The lists were used as sampling frames to select the participants in each school. The researcher ensured that all the selected participants were briefed on the purpose of the study, the meaning of the study

variables, the researcher's expectations, and ethical considerations such as the anonymity of the participants and confidentiality.

The consent to participate was sought from the participants aged below 18 years who were given consent forms before data collection, to take to their parents and were advised to brief their parents on the study. Participants had the freedom to participate or not and were not expected to put their names on the questionnaire for confidentiality and were guided on how to fill in the structured questionnaires. Finally, the questionnaires were given out to the participants, and they were asked to fill them under the guidance of the researcher herself. Once, the participants completed filling in questionnaires, the researcher asked them to crosscheck to ensure that they have responded to all questions. The completed questionnaires were received from the participants immediately at the end of every session by the researcher, after which they were counted for accuracy in terms of numbers.

3.10 Validity and Reliability of Research Instruments

Validity and reliability are two important aspects to take into account when developing and testing any research instrument (questionnaire). This helps to ensure the quality of measurement in data collected for use in a study (lie, 2016). This study took into consideration of content, construct and face validity while measuring the consistency of the research instrument using internal consistency as discussed below.

3.10.1 Validity

Validity is concerned with establishing whether a research instrument is measuring what is intended to measure. For the questionnaire; face, content and construct validity were measured.

In face validity, the researcher was interested in whether the measures appear to measure at face value what it claims to measure and whether it covers the concepts of the study (Middleton. 2019). This was achieved by supervisors and other research experts in the department checking if the survey questions were relevant and can answer the research objectives.

In construct validity in determining the degree to which a group of items measure a latent construct adequately, principal component factor analysis and correlation tests were used. Where, items with a correlation coefficient value greater than 3(>3) were retained and those less than 3 (<3) were dropped .Further, cross-validation was carried out which allows the researcher to test how stable the measure is in different contexts and samples (Middleton, 2019).

The researcher used content validity to determine the extent to which a set of provided items are relevant and a representative sample of the domain tasks under consideration (Saiful & Yusoff, 2019). The researcher computed content validity index (CVI) as per the guidelines of Yusoff as summarized in the following steps below.

Step 1: prepare content validation form → step 2: Select review panel → Step 3: Conducting content validation

Step 6: Calculate content validation index ← Step 5: Score each item ← Step 4: Review domain and items
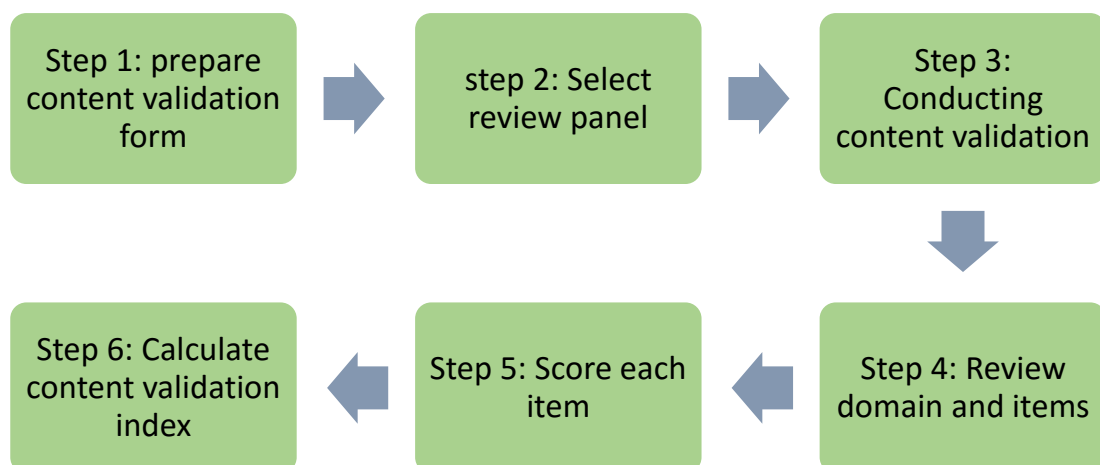
Figure 3.4: Content justification procedure
Source: (Yusoff, 2019)

Step 1: Preparing a content validation form-The evaluation panel comprised of research experts on my study area were given guidelines by the researcher which included the questionnaire rating form with a relevance scale of 1-4 for each item.

Step 2: Select review panel-Two experts on student engagement were selected to rate the items which included teachers who had a teaching experience of more than 10 years and who had to critique the questionnaire items based on their experiences with students during classroom activities.

Step 3: Conducting content validation-An email was sent to the two experts in which clear instructions also were attached. This method was considered cost-effective and took into account time.

Step 4: Review domains and items-The experts reviewed the items based on their definitions and later provided comments which helped to improve the research items.

Step 5: Score each item-The experts allocated their rating based on the scale That is, 1= not relevant to the measured domain, 2 somewhat, 3= relevant, and 4= highly relevant.

Step 6: calculate content validity index- The content validity index was calculated as the sum of the item validity index out of the number of items. In which the item validity index was calculated as agreed-to items out of the number of experts. As the formula above (17/22 items) indicates score results were .78 for both the Item validity index and scale content validity index which implied that items and the scales were relevant in measuring the variables of the study (Yusoff 2019).

3.10.2 Reliability

Reliability is how consistent a method measures something when applied to the same sample under the same conditions yielding the same results (Middleton, 2019). The

researcher employed a test re-test reliability for internal consistency in which the interrelated items were measured if they are assessing the same construct. The Cronbach's alpha values of 0.7and above are recommended to be reliable (Griethuijsen et al., 2015; Taber, 2018; Hair et al, 2019). Additionally, factor analysis was used to identify the underlying dimensions of the items of which if alpha is too high may suggest that some items are redundant as they are testing the same question but in a different appearance. A maximum alpha value of 0.90 has been recommended (Strainer, 2018).

3.10.3 Pilot Test

A pilot study was carried out in the Ijara sub-county in January 2022, which has similar environmental conditions as Garissa sub-county to ensure that the research instrument has appropriate content validity. Two schools were randomly picked from a list of six secondary schools in the Ijara sub-county. The researcher sampled 160 respondents randomly for pre-testing the instrument. Items identified as sensitive, confusing, or biased in any way were modified or removed to increase the content validity of the instrument. Using test-retest reliability, results designated that all items were consistent with Cronbach Alpha .79 (Yussof, 2019) see appendix L.

3.11 Trustworthiness

According to Lincoln and Guba (1985) trustworthiness is a way in which researchers persuade themselves that the readers will find it worth their findings to gain attention. Qualitative research becomes distinguished and valued when conducted rigorously and methodologically to ensure the quality of the research process and findings. The researcher considered the following measures of trustworthiness; credibility, transferability, dependability and Confirmability (Guba, 1985).

3.11.1 Credibility

Credibility refers to whether the researcher captured what is intended to be captured in the study (Korstjens, 2018). The researcher used crystallization to ensure credibility through construction of multiple and dependent interpretations of participants' perspectives. Moreover, the use of multiple data generation methods (the interviews and FGDs) that supports the arguments and findings for crystallization since the phenomenon was viewed at multiple angles as a crystal. Further, the researcher conducted adequate referencing which involved checking the findings against the raw data and finally peer interviews to obtain a further outlook for considering and interpreting the research findings that emerged from the data after the collection process. The findings were then supported with other information gathered and relevant literature.

3.11.2 Transferability

Transferability involves generalizing the research findings to other contexts with similar conditions as the study area (Devault, 2015). In this study, the new ideas generated from teachers, students and parents' perceptions on the influence of parental level of education and student engagement to enhance student academic achievement in selected secondary schools can be broadly applied to other similar contexts.

To ensure transferability the researcher used thick descriptions achieved through the use of probes to gather more information, multiple data sources and also member checking soon after completing the initial data analysis with some students, parents and class teachers.

3.11.3 Dependability

Dependability is the extent to which the data generated and findings would be similar if the study is replicated (Lincoln & Guba, 1985).In this study, dependability was attained by maintaining the rigour of the research process and providing the audit trail of the findings. With the guidance of the supervisors, I followed all the necessary steps of the research process and further, all the data files used are kept for verification if required.

3.11.4 Confirmability

Confirmability is aimed at ensuring that the researcher's interpretations and findings are derived from the data (Nowell et al., 2017). It's achieved after credibility, transferability and dependability have been achieved, (Guba, 1985). This was achieved through an audit trail in which the researcher kept all the data materials used in the field which were kept in a manner that they are easily traced, interview recordings transcribed studied through checking and crosschecking with the participant's responses. They were aimed at providing evidence for the interpretations and findings to confirm their trustworthiness (Creswell, 2014).

3.12 Data processing and analysis

A researcher needs to carry out data processing and analysis once collected as per the initial outlined purpose during the development of a research plan**.**

3.12.1 Data processing

The researcher first coded and organized quantitative data to facilitate input into the statistical analysis software and be screened before undertaking further statistical analysis. This was to ensure that the data was valid and reliable for analysis. Further, the process helped to check for multivariate outliers and inconsistencies in the database.

3.12.2 Data analysis procedures

Before carrying out the actual analysis, the researcher performed a pre-data analysis by checking the missing data, typos and errors. Afterwards, actual data analysis followed. In this study, data analysis employed a mixed methods approach in which analysis was carried out separately (quantitatively &qualitatively) and the results mixed at the interpretation stage for triangulation purposes (Creswell & Plano Clark, 2018).

3.12.3 Data Analysis Techniques

Quantitative and qualitative data were analyzed separately. In quantitative analysis, descriptive statistics and inferential statistics were carried out while the qualitative data were analyzed using thematic analysis.

3.12.4 Quantitative data analysis

This analysis involved the computational and use of statistical methods that deal with the analysis of numerical datasets. The researcher employed descriptive and inferential statistics to obtain the quantitative results as discussed below.

3.12.4.1 Descriptive Statistics

After data collection and pre-data analysis was carried out, descriptive statistics used were frequencies, mean and standard deviation which assisted to summarize ordinal data (Kothari, 2004). The standard deviation as a measure of dispersion gave the distribution of scores away from the mean. The results were presented in form of tables and bar charts in chapter 4.

3.12.4.2 Inferential Statistics

Parametric tests such as Pearson product-moment correlation, r, were used to determine the direction and strength of the relationship between two variables in the assumption that there is a linear relationship between them and they are casually related (Chee,

2015). Additionally, linear regression was used to test how a variable predicts another variable at a 5% marginal error and 95% confidence level.

Hypotheses that examine the relationships between parental level of education and student academic performance, parental level of education and student engagement, student engagement, and academic achievement were tested using correlation, in particular, Pearson's correlation coefficient, r, to check for common underlying dimensions and multiple linear regression models.

Hypothesis testing enabled the researcher to have sufficient evidence to make valid and reliable conclusions and to rule out chance as an explanation of an observed effect. The mediating effect of student engagement on the relationship between the parental level of education and academic achievement was analyzed using process macro and boots strapping. All the hypotheses took into account the effect of covariates namely; gender and student entry behaviour by controlling them in the analysis. The researcher tested for the following underlying assumptions of the regression model namely, multivariate outliers, normality, linearity and multi-collinearity before carrying out a regression analysis.

Table 3.2: Summary Steps for Quantitative Data Analysis

Analysis	Statistics	Decision Point
Demographic and profile characteristics of the respondents	frequencies, SD,% mean	N/A
Data Reduction: student engagement construct	Principal component factor analysis with varimax rotation	KMO >.5 Eigenvalue greater than 1,
Summarize data	Frequency, means, minimum, maximum, standard deviation	N/A
	Pearson's product-moment correlation coefficient r	R-value (+1 to -1)
Degree and strength of relationships		
Hypothesis testing		
Testing for Covariates (controls variables)	linear regression model	Sign. at $p \leq .05$,
HO$_1$ There is no significant relationship between the parental level of education and student academic achievement.	Linear regression model	Sign. at $p \leq .05$,
HO$_2$: There is no significant relationship between the parental level of education and student engagement	linear regression model	Sign. at $p \leq .05$,
HO$_3$: There is no significant effect of student engagement on academic performance	linear regression model	Sign. at $p \leq .05$,
HO$_4$: Student engagement does not significantly mediate the relationship between the parental level of education and academic performance	linear regression model	Sign. at $p \leq .05$,

Source: Researcher's data, (2022)

3.12.5 Qualitative Data Analysis

The qualitative data collected from semi structured in-depth interviews and FGDs were

subjected to thematic analysis using the steps by (Braun, 2006). First, the data collected

from the class teachers, parents and students were coded to develop categories which

finally led to the generation of themes. Furthermore, data were interpreted to outline what secondary schools can do to improve their academic achievement.

3.12.5.1 Data Analysis Procedures

The generated data from the interviews and FGDs were analyzed thematically involving identifying, analyzing, organizing, describing and reporting themes found within a data set (Braun & Clarke, 2006). It involves identifying patterns from the transcribed data and generating categories and themes. The process of thematic analysis is represented in the figure 3.5 below.
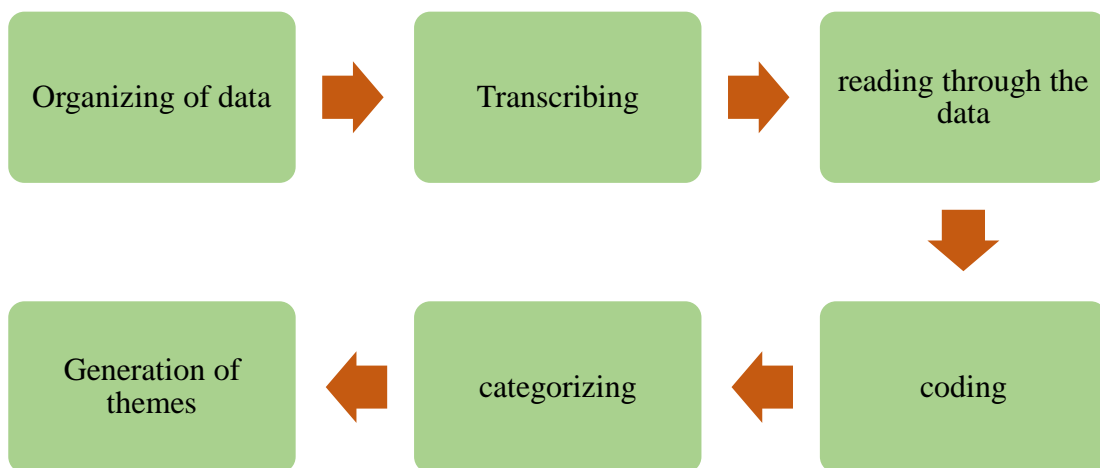
Figure 3.5: Representation of the thematic analysis procedures
Source: Adapted from (Braun & Clarke, 2006)

Creswell (2014) points out that since data is dense and rich from the field, there is a need to reduce the data by considering the relevant data and discarding the rest. This is to ensure that the researcher focuses on the significant data.

Data from the interviews and FGDs were transcribed word by word from the voice recordings into written text. The written texts were coded by bracketing the word chunks and giving a name or writing at the margin, all were captured keenly to best represent the words said by the participants.

Similar quotations related to the research question were grouped, leading to similar codes in the interviews and FGDs. Further, the similar codes were grouped to form categories and the similar categories formed themes. In this study, four themes emerged as discussed in chapter 4 using quotations to maintain trustworthiness. Interpretations of the findings were compared with information collected from the literature.

Table 2.3: Summary of data collection methods and analysis techniques for the respective objectives of the study.

Task	Objective	Independent variable	Dependent variable	Collection Method	Analysis technique.
Obj.1	Determine the relationship between the parental level of education and academic achievement in selected secondary schools in the Garissa sub-county.	Parental level of education	Academic achievement	Interviews FGDs. Questionn aires	Pearson correlation Thematic analysis
Obj.2	To examine the relationship between the parental level of education and student engagement in selected secondary schools in the Garissa sub-county.	Parental level of education	Student engagement	Interviews FGDs. Questionn aires	Pearson correlation Thematic analysis
Obj.3	To determine the relationship between student engagement and academic achievement in selected secondary schools in the Garissa sub-county.	Student engagement	Academic Achievement	Interviews FGDs. Questionn aires	Pearson correlation Thematic analysis
Obj.4	To assess the mediating effect of student engagement on the relationship between the parental level of education and student academic Achievement.	Parental level of education and student engagement	Academic Achievement	Questionn aires	Multiple linear regression

Source: Researcher's data, (2022)

3.13 Ethical Considerations

Ethical issues are a set of values, standards and institutional guidelines that regulate the researcher and research process for validity and reliability (Deborah &Nancy 2017).

The researcher respected the rights, needs, values and desires of the participants. Further, obtaining research permission from academic institutions and research boards were considered (Creswell, 2014). The researcher sought approval and consent from the department of education management and policy studies, school of postgraduate studies, Moi University. Research permission too from the National Commission for science and innovation (NACOSTI) and the Garissa sub-county education office (See appendix **K**).

Interviews and FGDs were carried out in areas the participants felt were conducive and safe. Consent was obtained from the parents, teachers and students to participate in the study which they signed voluntarily. To ensure privacy and confidentiality of the information and participants, pseudonyms were used to protect their identity and the data was stored to the reach of the researcher alone.

Finally, I safeguarded against plagiarism by proper citation and referencing according to the American Psychological Association (APA, 7th edition, 2019)

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND

DISCUSSION

4.1 Overview

This chapter centres on the presentation, analysis, interpretation and discussion of the generated data through a mixed method research approach. The researcher intended to investigate the influence of parental level of education and student engagement on academic achievement in selected secondary schools in the Garissa sub-county, Kenya. Both quantitative and qualitative methods were employed in this study for triangulation purposes.

Furthermore, the chapter includes response rate, data screening, the accuracy of data files, examining missing data, assessment of outliers, presentation of demographic features for the respondents and presentation, analysis, interpretation and discussion of both quantitative and qualitative findings as per the research objectives.

4.2 Quantitative and Qualitative data analysis

In this section, analysis and presentation of the qualitative and quantitative data were put forth. The success of quantitative analysis was carried out through descriptive and inferential statistics as well as thematic analysis for the responses of the teachers, parents and students presented from the semi-structured in-depth interviews and focus group discussions findings. The section is arranged according to the constructs and variables measured beside the research objectives which include; determining the relationship between the parental level of education and student academic achievement, examining the relationship between the parental level of education and student engagement, establishing the relationship between student engagement and academic achievement and finally, to access the mediation effect of student engagement on the

relationship between the parental level of education and student academic achievement in selected secondary schools in Garissa sub-county.

The data generated from the structured questionnaires are presented in percentages, tables and bar charts while the data collected from the semi-structured in-depth interviews and FGDs were presented in themes and categories. The numerical quantitative analysis was achieved with the help of the statistical package of social sciences (SPSS) description 22.0 and the outcomes were specified to 2 decimal places except if the number is small such as .001 based on American Psychological Association (APA) manual 2019.

4.3 Response rate

Response rate is the percentage of the number of questionnaires retrieved out of the total number of questionnaires issued (Fincham, 2008). Four hundred (400) questionnaires were distributed to the form three students with 100% retrieval (all four hundred were retrieved from the students). Similarly, from the retrieved questionnaires, none was superfluous for being incomplete. A response rate of 70% and above is reflected as excellent, acceptable and appropriate for making a study conclusion (Kothari, 2004; Creswell et al 2018; & Frey 2018).

Moreover, in interviews and FGDs conducted, participants cooperated in giving the required information indicating a 100% response rate.

4.4 Data screening

As a researcher, it's sensible to carry out data screening first as a procedure of ensuring that data is clean and ready for use before conducting further statistical analysis (Subramanian, 2020). The researcher screened the data for missing data, multivariate outliers, and unsuitable entries comprising similar ratings which were unengaged and

negatively worded items which were reverse coded to avoid deletion between the negative elements.

4.4.1 Accuracy of the data file

The researcher cross-checked the data file alongside the original data on the structured questionnaire for confirmation of the items entered.

4.4.2 Examining the missing data

Missing data are individual observations in the measuring instrument that have not been put into the database or were documented but lost (Garcia, 2018). According to Streiner and Watkins (2018) failure to address missing, data influence negatively the research findings by reducing the statistical power, increasing type I and II errors and also limiting the reliability of the confidence levels. In this study, the researcher minimized missing values right from the field by scrutinizing and ratifying that all the questions in the questionnaire were appropriately answered by the participants. The Participant's responsiveness was drawn on the identification of overlooked question (s) and requested to complete filling conferring to the works of (Aminu & Shariff, 2014)

4.4.3 Assessment of outliers

An outlier is a case with an unexpected random value (univariate outlier) or a combination of extreme scores on two or more variables (multi-variate outlier) (Chinaka, 2023). The researcher's rationale to access for outliers before proceeding with further statistical analysis is that; the presence of outliers alters the statistical conclusions as well as their assumptions. Outliers in this study were catered using multivariate perspectives based on Mahalanobis distance in which cases which demonstrated exceptionally large values as compared to D Square (D^2) were considered as outliers and therefore deleted. Mahalanobis distance was appropriate because it

allows the identification of unusual combinations of two or more variables (Xli, 2019).

Using this method, data was cleaned for further statistical analysis with N=375 in which

twenty-five (25) cases were deleted from the dataset since they were identified as

outliers.

4.5 Respondent's Demographic Information

The demographic information of the respondents is vibrant since it gives more insight

into their nature and ability from which interpretation would be justifiably made. An

examination of the structured student questionnaire responses for each of the 375

participants constituted gender, age, school type, county of residence, parental marital

status, parental occupation and family size as revealed in the bar charts and tables

below.

4.5.1 Respondents' gender

Table 4.1 below indicates the gender distribution of the respondents in which the

majority were males, representing **53.3 % (n=200)** while females were **46.7 %,**

(n=175). These findings show a gender parity ratio of **0.9** which is very closer to **1**

which is a reflection of effective government gender policy implementation at lower

levels of the education structure (Werner, 2021)

Table 3.1: Showing respondents' gender

Variable	Category	Frequency	Percentage (%)
Gender	Male	200	53.3
	Female	175	46.7
	Total	**375**	**100**

Source: (Research data, 2022)

4.5.2 Respondents' Age

The findings in table 4.2 below designate that majority of the respondents are those

whose ages ranged from 16-18 years, **(n=226)** equivalent to **(60.3%)** followed by those

aged 18 years and above with **28.8%,** equal to (**n=108**). Finally, the least age group were those below the age of 16 years representing **10.1% (n=41**). This signifies that perceptions of different age groups were evenly captured which is vital in the context of this study.

Table 4.2: Respondents' age

Variable	Category	Frequency	Percentage (%)
Age	Below 16 years	41	10.9
	16-18 years	226	60.3
	Above 18 years	108	28.8
	Total	**375**	**100**

Source: (Research data, 2022)

4.5.3 Respondents' school type

The findings in figure **4.1** below indicate that most respondents nearly half of the population were in boarding boys' schools 46.4%,(n=174), second are those from boarding girls and mixed day and boarding with 20.0(n=75) respectively, third was in mixed day 5.3%,(n=20), followed by a mixed boarding with 2.9%,(n=11) and the least being respondents from boys day and girls day with 2.7%(n=10) respectively. This illustrates a comprehensive representation of all school types in the study.
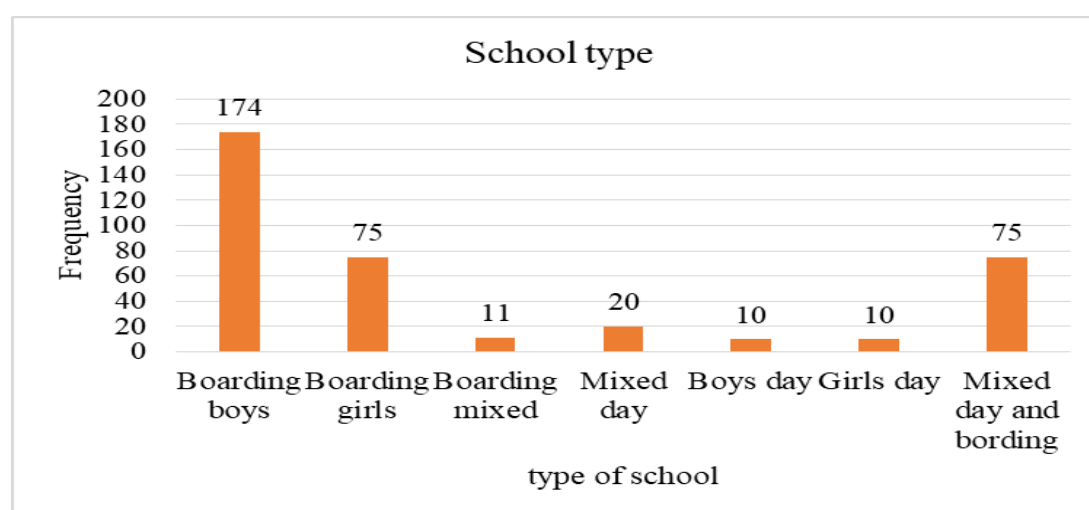
Figure 4.1: Respondent's school type
Source: Research data, (2022)

4.5.4 Respondents' County of residence

The distribution of the respondents according to their county of residence is illustrated in figure 4.2 below specified that 59.0%,(n=226) were from Garissa county, 11.8%, (n=42) were from other counties outside the ones stated in the questionnaire, 10.0%, (n=30) were from Tana-river county, 9.3%, (n=37) Wajir county, 6.8 %, (n=27) reside in Mandera and the least were from Isiolo county 3.3%,(13). The majority of the respondents came from Garissa County, which is the research study area. The distribution is a reflection of participants that were evenly distributed across the Northeastern counties as those from Garissa County comprised the majority.
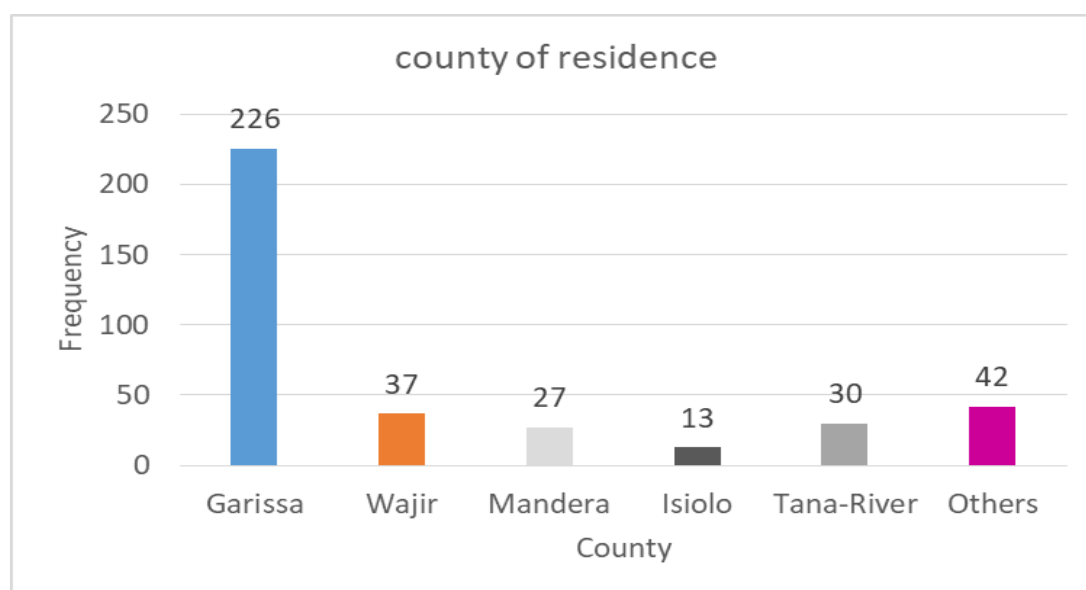
Figure 4.2: Respondent's county of residence
Source: (Research data, 2022)

4.5.5 Respondents parent's marital status

Findings in table 4.3 below displayed that respondents whose Father was alive and mother was not were 7.8 %,(n=31), mother alive and father not alive was 18.3 %,(n=73), and father and mother alive was 71.3 %,(n=285) and those with mother and father not alive were 2.8 %,(n=11). Over three-quarters of the respondents had both parents alive, while the rest fell into the various categories in which students who are

orphans recorded a percentage of less than 5. This shows that participants can interact with their parents as they are part of their immediate environment.

Table 4.3: Showing respondents' marital status

Parental marital status	Frequency	Percentage (%)
Father is Alive and the mother is not alive	31	7.8
Mother Alive and father not alive	73	18.3
Father and mother alive	285	71.3
mother and father are not alive	11	2.8
Total	**375**	**100**

Source: (Research data, 2022)

4.5.6: Respondents' Family size

In table 4.4 below, the family size was represented according to the number of children (both boys and girls) available in the family. Those with a composition of below 5 children were 32.3 %,(n=129), 5-10 children were 44.0 %,(n=176) and those with above 10 were 23.8 %,(n=95).The majority of the respondents came from a family size of between 5 to 10 children. This shows how parents have a greater role to provide the necessary resources for all for equality purposes.

Table 4.4: Respondents' family size

Family size	Frequency	Percentage (%)
Below 5	129	32.3
Between 5-10	176	44.0
Above 10	95	23.8
Total	**375**	**100**

Source: (Research data, 2022)

4.5.7: Respondents' parents' occupation

Figure 4.3 below illustrates that the occupation of the parents was divided into the mother and father's occupations. Mothers who were small scale traders formed the majority by 28.7%,(n=115), large scale traders were 12.0%, (n=48),those with professional occupation such as lawyer were 7.5%, (n=30), semi-professional occupation such as teacher were 5.0%, (n=20), farmers were 21.5%, (n=101) and those

with no occupation comprised of 25.3%,(n=101). This shows that a good number of mothers work so hard to generate necessary resources for the family however the majority have no occupation which can be a result of other factors.

Small scale fathers were the majority at 22.8%(n=91) , large scale traders were 10.8%,(n=43),professional occupation were 8.3%(n=33),semi-professional occupation 10.0%,(n=48), farmers were 30.5%,(n=122) and finally those with no occupation were 15.8%,(n=63).This shows that the majority of the fathers do cattle rearing. Being an arid and semi-arid region, pastoralism is highly embraced by the residents of this region.
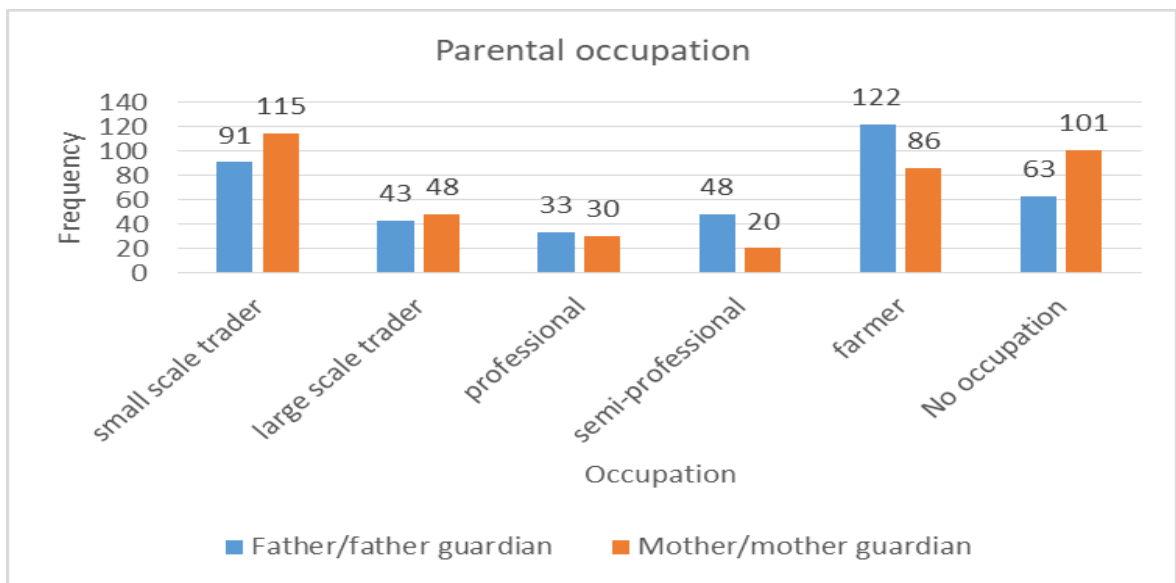
Figure 4.3: Parental level of occupation
Source: (Research data, 2022)

4.6 Data Reduction and Test for Statistical Assumptions

The quality of the output in multivariate analysis depends on the initial data screening and management (Hair et al, 2011; 2017). The researcher used factor analysis (FA) to test for the unidimensionality of the student engagement construct for visualization and subsequent analysis by reducing the initial data into a new composite smaller grouping of factors that highly associate with each other and also developing new labels for each group of variables formed.

4.6.1 Data reduction using Factor analysis

Factor analysis (FA) is a statistical procedure used to determine the organization of the interrelationships among the bulky number of items in a construct and reduce them into a reduced set of factors that are highly interconnected to signify the aspect inside the data (Hair et al,2017). In this study, Student engagement items were subjected to factor analysis as discussed in section **4.6.4**.

4.6.2 The Overall measure of inter-correlation

The researcher used Kaiser-Meyer-Olkin (KMO) which consists of measuring Sampling Adequacy and Bartlett's Test of Sphericity was computed (Yong & Pearce, 2013). A sample size of 375 was used to extract commonalities above 0.5 which is acceptable and a threshold of 15: 1 per 10 observations, the study employed a ratio of 22:1 which is above the threshold of conducting a factor analysis.

The inter-correlation between the items was carried out using a correlation matrix and items that did not correlate were excluded. The KMO and Bartlett tests are shown in **Table 4.5** below.

Table 4.5: The KMO and Bartlett's Test result

Variable			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.85	
Bartlett's Test of Sphericity Approx. Chi-Square		2019.29	
Df		153	
Sig		.000	
Component	**Initial total**	**Eigenvalues % of the variance**	**Cumulative %**
Behavioural engagement	.03	81.76	81.76
Cognitive engagement	.01	18.24	100.000

Source: Researcher's data, (2022)

Table **4.5** above indicates that the KMO measure of sampling values was above **0.6** (**0.85**) and Bartlett's Test of Sphericity was significant at **p < 0.05**. This indicates that

the correlation matrix was not an identity matrix and is hence suitable for factor generation.

4.6.3 The principle for the number of factors to be extracted

After the generation of the correlation matrix and specification of variables, the researcher used the latent root criterion method of extracting the factors and also the number of factors to be extracted. Factors comprising latent roots greater than **1** were considered significant (Young, 2013).

4.6.4 Factor analysis of student engagement construct

The independent variable student engagement had eighteen (**18**) items from the structured questionnaire in which the items were exposed to extraction using factor analysis and four (**4**) items were dropped. Further, employing the Varimax rotation method items below the threshold of **0.5** and above were dropped also conferring to Hair et al, (2010). The retained Fourteen (14) items were exposed to further analysis after the items indicated with (*) were deleted as illustrated in **Appendix L.** The factor loading scores on the extracted factors ranged from **.53 to .73** indicating a strong correlation between the items and the factors of student engagement.

Similarly, the researcher emphasized that items that had high factor loadings were significant and allocated a label to a factor that correctly replicated the variable loading dimension.

Therefore, Two (2) factors were generated from the fourteen items whose labelling was automatically developed based on their appropriateness for indicating the underlying proportions of a certain factor. Of the two factors, one component was labelled behavioural engagement with eight (8) items loading onto it with a score ranging between **.53 and .78** while the second component was cognitive engagement with six

(6) factor loading scores ranging between **.53 and .755.** Factor loadings of the items are indicated in appendix **L**.

Further, a KMO of .85 and Bartlett's test of Sphericity was significant with a Chi-square of 2019.30, at DF = 153 and a significant level of p= .000. The results indicated an enhancement in the variance explained by the variable with an initial Eigenvalue of the factor increased from .026% to 2.48% and the cumulative variance also improving from 81.76% to 82.78% as indicated in table **4.5** above.

4.6.5 Data Transfiguration

Transfiguration of data was performed after factor analysis with the remaining fourteen (14) items. The researcher computed the average score of the multi-items for each factor for the final analysis of correlation and multiple regression analysis.

Student's behavioural engagement which is the dimension of a mediating variable of student engagement had eight items transformed as (ENG 16+ENG 17+ENG 18+ENG 15+ENG 7+ENG 9+ENG6+ENG 10)/8. The second variable cognitive engagement had six items (ENG 13+ENG 14+ENG 12+ENG 3+ENG 4+ENG 11)/6. Student engagement had an aggregate of fourteen items from both cognitive and behavioural engagement (ENG 16+ENG 17+ENG 18+ENG 15+ENG 7+ENG 9+ENG6+ENG 10+ ENG 13+ENG 14+ENG 12+ENG 3+ENG 4+ENG 11)/14. The researcher used ENG to represent engagement.

4.7 Testing Assumptions of Regression Analysis

The researcher confirmed several of the regression models on the assumptions before carrying out further statistical analysis. The basis was to ensure that results were reliable and free from the misinterpretation of effect size(s). The researcher looked at

assumptions of linearity, normality and multi-collinearity as discussed in the sections below.

4.7.1 Testing for Linearity

The researcher examined the linearity through the use of a simple P-P plot of the scores characterized by a straight line (Pallant, 2013; 2020) and also validated through the coefficient of determination (R^2) as indicated in **Figure 4.9** appendix L. The regression equation also indicated is very useful for making predictions since the value of R^2 is close to 1 (Garson, 2012). Figure **4.9** illustrates that $R^2 = .997$ indicating that 99.7% of the variation in students' academic achievement is accounted for by the two variables of this study (parental level of education and student engagement) thus the assumption of linearity has been satisfied.

4.7.2 Tests of Normality

The researcher carried out normality tests by ensuring the integrity of the four research objectives by employing the Shapiro-Wilk test. In a parametric statistic, a significant value of the Shapiro-Wilk greater than **0.05** is considered to be normal (Rozali & Wah, 2011).

Table **4.6** below demonstrates the Shapiro-Wilk values in which student academic achievement, parental level of education and student engagement were statistically significant, at $p <$ **0.05,** implying a statistically significant difference between the variables and the normal distribution. Therefore, the data were normally distributed and reliable for further regression computations.

Table 4.6: Tests of Normality

Variable	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Father's level of education	.31	375	.000	.74	375	.000
Mother's level of education	.38	375	.000	.64	375	.000
Behavioural engagement	.12	375	.000	.92	375	.000
Cognitive engagement	.09	375	.000	.96	375	.000
Student Engagement	.07	375	.000	.95	375	.000
Academic achievement	.21	375	.000	.89	375	.000

Source: Researcher's data, (2022).

4.7.3 Testing for Multi-collinearity

Multi-collinearity is a random level of inter-correlation between the independents whose conclusions cannot be renowned (Kim, 2019). The researcher tested multi-collinearity through analysis of tolerance and variance inflation factor (VIF) using regression results provided by the collinearity diagnostics results. With a tolerance value less than the cutoff value of .20, the independent variable should be dropped from the analysis due to multi-collinearity. The results are illustrated in table **4.7** below.

Table 4.7: Variation Inflation factor (VIF) and Tolerance

Predictor variables	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
(Constant)	1.04	.30		3.44	.001		
Engagement	5.88	1.29	.16	4.54	.000	1.000	1.000
Father	-.027	.029	-.03	-.91	.36	.91	1.09
Mother	.14	.033	.16	4.13	.000	.91	1.09

Source: Researcher's data (2022), **Dependent variable**; Academic achievement

From Table **4.7** above**,** the tolerance values range between **.91** and **1.00** and VIF ranges from **1.00** to **1.09**, thus, it is accepted as being less than 4.0 (Shariff,2014). These results illustrate that multi-collinearity does not occur in this study, since tolerance values are above .20 and VIF values are less than 4.0. The research data satisfied the regression assumptions and hence, further statistical analysis of correlation and regression were computed as discussed in the sections that follow.

4.8 Testing and Controlling for Covariates in the study

Covariates in this study were characteristics of participants which affect the direct relationship between variables (responsive variable) but were not of interest in the study. As a researcher, it is important to examine the influence of the covariates on the study variables so that the outcome can be used to control for them before analysis for direct effect hypotheses. In this study, the researcher controlled for Gender and student entry behaviour as the covariates. To determine their influence, a regression analysis was carried out and the results indicated that gender with, β = -.08, p =.04 and Student entry behaviour β = -.08, p =.04 significantly predicts students' academic achievement at $p < 0.05$ respectively. The coefficient of determination R^2= .01, the model explains 1% of the variance in student academic achievement with significant F (2,730) = 3.81, p = 0.02 as illustrated in table **4.8** below.

Table 4.8: Summary prediction of covariates on student academic achievement

Variables	Beta	T	Sig.	Df	F	Sig	R	R^2
(Constant)		15.51	.000	730,2	3.81	.023[b]	.102[a]	.008
Gender	-.08	-2.09	.037					
Student's entry behaviour (KCPE)	-.08	-2.03	.043					

Source: Researcher's data, (2022)

4.9 Research Findings as per the Study Objectives

In the previous sections, the researcher justified that the collected data was valid and reliable for further statistical analysis. The following sections present the research findings as analyzed, presented, interpreted and discussed as per the following research objectives: To determine the relationship between the parental level of education and student academic achievement; to determine the relationship between the parental level of education and student engagement; to establish the relationship between student engagement and student academic achievement; to determine the mediating effect of

student engagement on the relationship between the parental level of education and academic achievement.

4.9.1 Research objective one: To determine the relationship between the parental level of education and student academic achievement.

Under objective one, the researcher pursued to find out the relationship between the parental level of education and student academic achievement where both the qualitative and quantitative data were collected simultaneously. Parental level of education was conceptualized as the father's and mother's levels of education. Moreover, it presents the data analysis, interpretation and discussions achieved through student questionnaires, FGDs and semi-structured in-depth interviews with students, parents and class teachers respectively. The researcher further examined whether the parental level of education predicts student academic achievement.

This section begins with the presentation of quantitative analysis which includes; descriptive statistics of the study constructs, a correlation between the variables and finally the regression analysis then followed by qualitative analysis; themes and categories generated to support the quantitative outcomes

4.9.1.1 Descriptive analysis of the parental level of education

Under the parental level of education, the researcher sought to identify the frequencies, mean and variations (standard deviation) of parental levels of education attained by the father and mother. The student's responses to the questionnaire entry were presented in table **4.9** below

Table 4.9: Mean, standard deviation and variance of parental levels of education

Parent	Mean	S.E mean	Median	S.D	Variance	Range	Max	Min
Father	2.87	.057	3.00	1.55	2.41	4	5	1
Mother	1.96	.051	1.00	1.38	1.89	4	5	1

Source: (Research data, 2022)

Moreover, the study found that the mean of a father's level of education was 2.87, a standard error means of 0.06, a median of 3.00, a variance of 2.41, a standard deviation of 1.55, a range of 4 and a min-maximum of 1 -5. The mother's level of education had a mean of 1.96, a standard error means of 0.05, a median of 1.00, a variance of 1.89, a standard deviation of 1.38, a range of 4, and a minimum and maximum of 1 and 5 respectively as illustrated in table **4.9.** The findings illustrated that the average level of education for both parents was primary level education as indicated by the average mean implying that very few parents got the opportunity of going through formal education. This calls for more improvement on policies to achieve education access for all.

Further, descriptives of mother and father's levels of education were presented using the bar chart below which indicates the number of parents and the percentage estimate in each level of education as illustrated in figure **4.4** below.
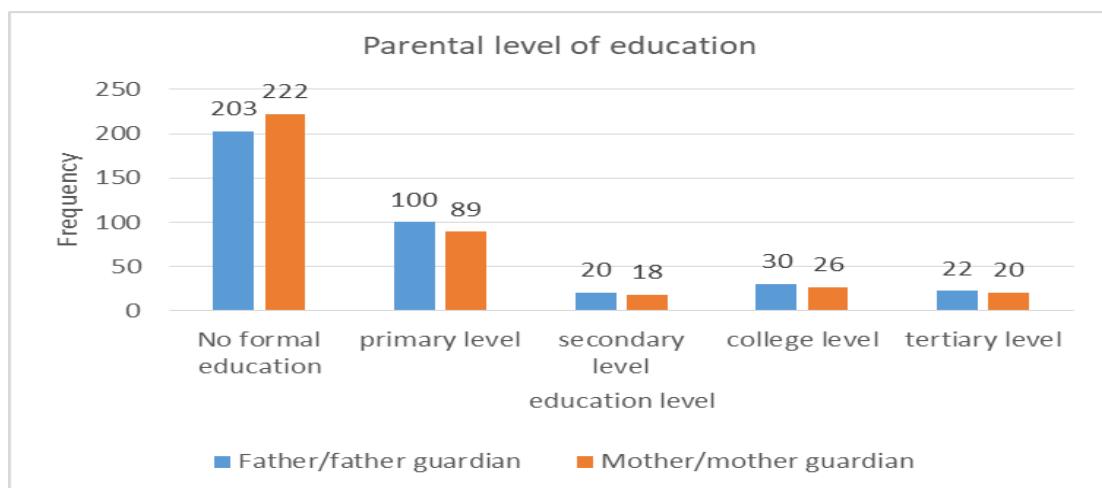
Figure 4.4: Descriptives of parental level of education
Source: Researcher's data, (2022)

Figure **4.4** above indicates that the majority of the surveyed respondents, a total of 203(27.7%) of their fathers had no formal education, 190(25.9%) had a university education, 138(18.8%) had a primary level of education, 135(18.4%) had secondary

education and finally, 68(9.3%) had attained college level of education. Regarding

mother's level of education, the majority of the respondents 422(57.7%) indicated that

their mothers had no formal education, 121(16.5%) had primary education, 83(11.3%)

had attained a university level, 69(9.4%) had secondary education and finally, 37(5.1%)

had college-level education. The above findings illustrates that the majority of the

sampled respondents in the Garissa sub-county had parents with no formal education

and fewer parents with university-level education implying that the literacy levels in

the Garissa sub-county are high which calls for more intervention measures.

4.9.1.2 Correlation analysis of the parental level of education and student academic achievement

Correlation analysis helps to evaluate the direction and level of strength of the linear

relationship among study variables (Gogtay and Thatte 2017). The threshold value of

the correlation coefficient ranges from -1 to +1, showing either a positive or negative

direction or a weak or strong correlation among the variables. The researcher sought to

examine the relationship between the parental level of education and student academic

achievement utilizing Pearson's Correlation coefficient to analyze the co-variation of

the parental level of education and student academic achievement. Parental level of

education was measured in terms of the father's and mother's levels of education. The

results are illustrated in table **4.10** below.

Table 4.10: Correlation coefficients of parental levels of education and student academic achievement

	Construct	1	2	3
1	Student academic achievement	1		
2	Father's level of education	.007	1	
3	Mother's level of education	.15**	.29**	1

Source: Research data (2022), **. Correlation is significant at the 0.01 level (2-tailed).

From table **4.10** above, the father's level of education has a weak positive non-significant relationship with student academic achievement (r=.007; p<.01) while mother's level of education illustrated a weak positive but significant relationship with the student's academic achievement (r=.15; p<.01) Therefore, from the hypothesized relationships, mother's level of education was found significant while father's level of education was non-significant with student academic achievement.

4.9.1.3 Regression analysis for the parental level of education and student academic achievement

To access the influence of parental level of education on student academic achievement, regression analysis was suitable to measure the effect of one variable on another as recommended by (Cohen, 2018). Parental levels of education were measured in terms of the father's level of education and the mother's level of education. Below is the summary of the regression analysis.

From Table **4.11** below, the father's level of education was not significant at **F (1,732) = .03, p = 0.86 at p<.01** to predict the outcome variable. Therefore father's level of education has no statistically significant effect on student academic achievement. However, the coefficient of determination value of R^2=.02 indicates that 2% of the total variation in students' academic achievement can be explained by the mother's level of education. The regression model was significant at **F (1,730) = 15.65, p =0.00 at p<.01** to predict the measure variable. This indicates that a mother's level of education has a positive and statistically significant effect on student academic achievement.

Table 4.11: Regression analysis of the parental level of education and student academic achievement

Variable	R	R^2	Adjusted R Square	S.E	R^2 Change	F	df1	df2	Sig.
					Change Statistics				
Fathers	.007[a]	.000	-.001	1.19	.000	.03	1	732	.86
Mothers	.14[b]	.02	.020	1.18	.02	15.65	1	730	.00

Predictors: (Constant), Father's level of education; S.E –standard error: at $\rho < .01$

Predictors: (Constant), Mother's level of education

Source: Researcher's data,(2022)

In support of the above quantitative finding, the qualitative information from the interviews with the teachers and parents; FGDs with students was analysed. The following theme and categories emerged as represented in the summary figure 4.5 below.
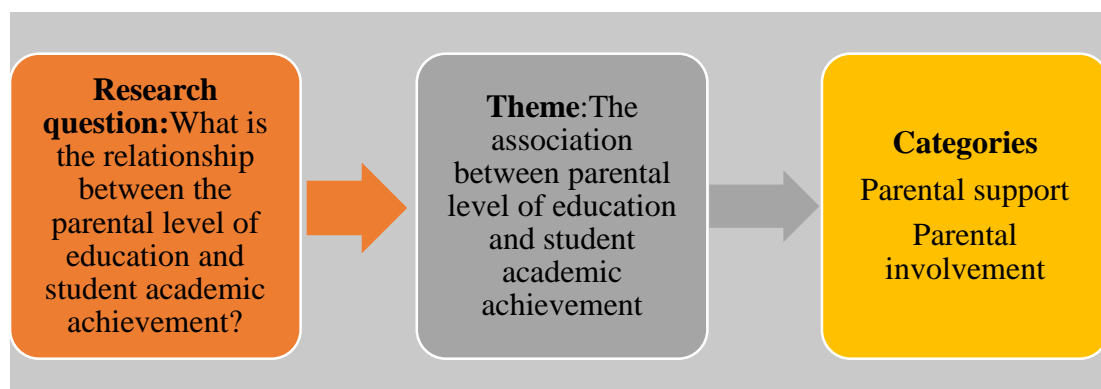
Figure 4.5: Summary of objective one qualitative findings
Source: Researcher's construct, (2022)

4.9.1.4 Theme: The association between parental level of education and student academic achievement

The researcher thematically analyzed the views from the parents, class teachers and students on the association between parental level of education and student academic achievement in which categories of parental support and parental involvement emerged as illustrated below.

4.9.1.4.1 Parental support

Parental support involves the provision of educational resources and emotional support to improve student academic achievement (Roy, 2018). The majority of the students and teachers revealed that the support provided by the parents in terms of resources affects the student's academic achievement in terms of the average grades attained at the end of the term. Below are some of their responses from the interviews and FGDs;

> "[…] *Mothers who have gone to school,, their children do well in exams recording better grades as they encourage and motivate them to do well by providing resources such as books, pay fees on time and food for energy to concentrate in class"{*Teacher 2}

> *"My mother is a nurse in one of the public hospitals, she ensures I have enough pocket money, and school uniforms so that I can be comfortable while in school since I am a full-time border. My final term grade was a B."* {FGD, 1}

The above excerpts indicates that mothers who are educated do support their children with the necessary resources to facilitate the learning process and further encouraging and motivating them to score better grades. The foregoing findings are supported by the works of Fatima (2020) who asserts that supportive parents keep check and balance on their children by providing required resources in school for better grades. Moreover, parents need to play a leading role in supporting their children's education through the provision of essential resources which boost academic achievement (Martin, 2018).

Further a mother said;

> *"I bond and blend well with my child ensuring that at home we stay in a conducive environment for learning since I pay a tuition teacher for extra learning away from school,"*[…]{Parent 1}

The excerpt above illustrates that educated mothers can provide a very conducive home environment for their children and also provide extra services at home apart from the school programme, which leads to better grades. The finding agrees with Younas and Noor (2020) who assert that educational activities at home are connected to the parental

level of education which creates different learning situations hence varied grades attained.

4.9.1.4.2 Parental involvement

Parental involvement refers to the sum of effort parents put into child-oriented education and other activities. The teachers and parents gave their views in both contexts of parental involvement (home and school involvement) generated from the semi-structured in-depth interviews as illustrated in the verbatim below;

A teacher said;

> *"When school meetings and other activities are called upon, mothers are the ones who mostly attend, further following up their children's academic progress"* […] "He added, "[…] however, "*both parents do volunteer by participating in talks to their children on the importance of education, guide them and instil right values which greatly contributes to their average grades at the end of the term*." {Teacher 3}

From the above excerpt, parental involvement in the various school activities such as class meetings and annual parents' meetings enables them to follow up on their children's academic progress in various subjects. Further, motivates their children to work hard towards attaining higher grades. This finding is in agreement with Sekiwu (2020) who asserts children perform better in school when their parents are willing to participate in school activities and also demonstrate to the less hardworking students the value of schooling, parental interaction and time spent together equip children with good morals.

Additionally, through guidance and encouragement during class meetings, the less hardworking students are motivated to improve their achievement as supported by a mother who said;

> *"I spend most of the time with students during class meetings, guiding and advising our children on how to behave while in school and also*

motivate them to continue working hard for a brighter future [...]
{Parent Y}.

The above excerpt illustrates that the amount of time a parent spends with the child is of value as they guide, advice and motivate the children, instilling good discipline while in school for improved academic achievement. Guiding the children from the moment they are young moulds their character and discipline as they grow up. This agrees with Herbert and Aujoulat, (2018) who asserted that mothers are the important players in influencing children's activities in goal attainment. In addition, Ritzen (2018) highlighted mothers are the primary source of learning while implementing and maintaining socialization, beliefs and values.

From the foregoing findings, both the quantitative and qualitative illustrates that a mother's level of education has a significant and positive relationship with student academic achievement through provision of necessary resources and involvement in the various school activities. This finding is in agreement with Idris, Hussain, and Nasir (2020) who asserts that educated mothers can influence the student's academic achievement through parental support with the necessary resources for learning, involvement in school activities and also creating an enabling and conducive environment for learning while at home.

However, the father's level of education was non-significant with student's academic achievement which concurs with Soharwardi, Fatima, Nazir, and Firdous (2020) who opined that the Mother's level of education predicts the student's academic results as likened to the father's level of education. Moreover, Veiga and Canboy (2016) affirmed that the mother's level of education is more significant in predicting student academic achievement as compared to the father's level of education. Contrary, Amuda and Ali

(2016) argued that parental level of education has no statistical influence on student academic achievement.

The discrepancy in the results above between the influence of the father's level and the mother's levels of education on student academic achievement is a result that, in the context of this study the findings are likely to have been affected by the environmental conditions of the study context, the culture of the people, the religious beliefs and practices of the host community, how the residents of the area perceive education, and biased participants who viewed the researcher as an outsider and not one of their own and were, therefore, reluctant to give truthful information.

4.9.2 Research objective two: To determine the relationship between the parental level of education and student engagement

Under objective two, the researcher pursued to find out the relationship between the parental level of education and student engagement where both the qualitative and quantitative data were collected simultaneously. Parental level of education was conceptualized into father and mother's levels of education while student engagement as cognitive, behavioural and emotional engagement.

Initially, the researcher performed factor analysis in which student engagement items with a threshold of .5 and above were used for analysis. Hence, emotional engagement was dropped and analysis was performed using cognitive and behavioural engagements. This section presents the analysis, interpretation and discussion data collection achieved through student structured questionnaires, FGDs and semi-structured in-depth interviews. The researcher further examined if the parental level of education predicts student engagement.

This section begins with the presentation with quantitative analysis which includes; descriptive statistics of the study constructs, a correlation between the variables and finally the regression analysis then followed by qualitative analysis; themes and categories generated to support the quantitative findings.

4.9.2.1 Descriptive analysis of student engagement constructs

Results from table **4.12** below illustrates that students' cognitive engagement had the highest mean of **.64** (standard error 0.0051) and a standard deviation of **.14** with responses ranging from **.83** to **.17**. This implies that the majority of the respondents were cognitively engaged in-class activities to attain higher grades at the end of the term. On behavioural engagement with a mean of .50 (standard error 0.0068) and a standard deviation of **.10**, a variance of .01 with responses ranging from .64 to .36. The composite student engagement comprised all the behavioural and cognitive items with, a mean of **.28** (standard error 0.0026) and a standard deviation of .05, variance .003. The response of this variable ranged from **.36** to **.07**. The responses were based on a 1-5 Likert scale.

Table 4.12: descriptives summary of student engagement constructs

Variables	Mean	Std error	SD	Variance	Max	Min	Median
Behavioural	.50	.0051	.10	.010	.64	.13	.52
Cognitive	.63	.0068	.14	.02	.83	.17	.64
Engagement	.28	.0026	.05	.003	.36	.07	.29
Average value	**0.47**	**0.0049**	**0.25**	**0.011**	**0.61**	**0.12**	**0.48**

Source: Researcher's data, (2022)

**4.9.2.2 Correlation analysis results of parental level of education and student
   engagement**

In finding the relationship between the parental level of education and student

engagement, the researcher carried out a Pearson correlation analysis and the summary

results are illustrated below.

**Table 4.13: Correlation analysis of the parental level of education and student
          engagement**

	Construct	1	2	3	4	5
1	Composite student engagement	1				
2	Cognitive	.80**	1			
3	Behavioural	-.01	.87**	1		
4	Father's level of education	-.02	-.004	-.030	1	
5	Mother's level of education	-.01	.010	-.014	.29**	1

Source: Research data (2022), **. Correlation is significant at the 0.01 level (2-tailed).

Table 4.13 above illustrates that both father's and mother's levels of education have a

negative non-significant relationship with composite student engagement (r = -.02; r =

-.01) respectively. Further, mother's level of education has a weak positive non-

significant relationship with student cognitive engagement (r= 0.01) and a negative

non-significant relationship with behavioural engagement (r = -.014) while father's

level of education illustrated a negative non-significant relationship with cognitive and

behavioural engagements respectively (r=-.004; r=-, 030).

Further the researcher carried out regression analysis to find out the effect of parental

level of education on student engagement as shown below.

**4.9.2.3 Regression analysis of the parental level of education and student
   engagement**

The researcher sought to test the null hypothesis; H_0 = There is no statistically

significant relationship between the parental level of education and student engagement

in selected secondary schools in the Garissa sub-county. A simple linear regression was

accomplished to determine how well the father's and mother's levels of education can predict student engagement. In this study, Student engagement was used as a composite of both cognitive engagement and behavioural engagement. The summary effect is illustrated in table 4.14 below.

Table 4.14: Regression of Parental level of education and student engagement

Model Summary

Variables	R	R Square	Adjusted R Square	Std. The error in the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change
Father	.016[a]	.000	-.001	.033	.000	.19	1	730	.66
Mother	.007[a]	.000	-.001	.033	.000	.032	1	730	.86

a. Predictors: (Constant), Father's level of education. Mother's level of education

Table **4.14** above indicates that the regression model for the father's and mother's level of education were not significant at F **(1,730) = .19, p = 0.66 and, F (1,730) = .032, p = 0.86 at p<.001** respectively This implies that parental level of education does not predict student engagement hence the researcher failed to reject the null hypothesis and concluded that, parental level of education has no statistically significant effect on student engagement.

Table 4.15: Regression of Parental level of education and student cognitive engagement

Variable	R	R Square	Adjusted R Square	Std. The error in the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change
Father	.004[a]	.000	-.001	.13	.000	.01	1	732	.91
Mother	.010[a]	.000	-.001	.13	.000	.08	1	730	.78

a. Predictors: (Constant), Father's level of education. mother's level of education
Source: Researcher's data,(2022)

Table **4.14** above indicates that **0%** of the total variation in student cognitive engagement can be explained by the linear relationship between the parental level of education and cognitive engagement. Testing the significance of the model in

predicting the dependent variable, the regression model was not significant at an **F (1,732) = .01, p = 0.91** and **F (1,730) = .08, p = 0.8** for both father's and mother's level of education respectively. This indicates that the father's level of education and the mother's level of education does not predict student cognitive engagement hence we fail to reject the null hypothesis and conclude that the father's level of education has no statistically significant effect on student cognitive engagement.

Table 4.15: Regression of parental level of education and student behavioural engagement

Variables	R	R Square	Adjusted R Square	Std. The error in the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change
Father	.030ᵃ	.001	.000	.09	.001	.65	1	732	.42
Mother	.014ᵇ	.000	-.001	.09	.000	.15	1	730	.69

a. Predictors: (Constant), Father's level of education;
 mother's level of education

Table **4.15** above indicates that the regression model was not significant, for both father's and mother's level of education at **F (1,732) = .65, p = 0.42, and F (1,730) = .15, p = 0.69** in predicting the principle variable respectively. Therefore, the father's and mother's level of education does not predict behavioural engagement hence we accept the null hypothesis and conclude that the parental level of education has no statistically significant effect on student behavioural engagement.

In support of the above quantitative findings, views collected from the parents, class teachers and students from the semi-structured in-depth interviews and FGDs generated the following theme and categories from the analysis as presented below.

Figure 4.6: Summary of Qualitative findings
Source: Researcher's data (2022)

4.9.2.4 Association between the parental level of education and student engagement

From thematic analysis, the theme of association of the two constructs was explained by classroom environment and student attitude categories as discussed below.

4.9.2.4.1 Classroom environment and Student attitude

Students and class teachers revealed that the environment created in class by the teachers contributes to the type of student engagement in various class activities as illustrated by the verbatim below;

> "*Student's attitude towards a given subject determines their intensity of participation in the classroom activities such as attending the lesson, asking and also answering questions*" {Teacher 7}.

In addition a student said;

> "I asking and *answering questions in class depends on which subject and the teacher, some lessons are fun and enjoyable for participation as well as others are boring*" […] {FGD 1}

From the foregoing excerpts implies that student engagement is a personal effort and time dedicated by the student to accomplish activities influenced by the classroom environment created by the teacher and also the individual student's attitude towards the various subjects taught. This is in agreement with the works of Lang'at (2015) who found out that students with positive attitude towards mathematics and considered it as doable, learnable showed improvement in their grades.

From the above findings, both the qualitative and quantitative findings illustrate that parental level of education does not affect student engagement in class activities rather the classroom environment and student attitude does. This is in agreement with (Magpily & Mercado, 2015) who found that a father's level of education has no significant relationship with students' cognitive engagement in school.

4.9.3 Objective three: To determine the influence of student engagement on academic achievement

The researcher collected both the qualitative and qualitative data from students, parents and teachers through the structured questionnaires, interviews, questionnaires and FGDs. Data were analyzed by presenting descriptive statistics findings then followed by the correlation between the variables, regression and support information from the qualitative analysis.

4.9.3.1 Descriptive analysis of student academic achievement

The student academic achievement was measured by computing an average of end of term one and two marks which were converted into standardized average mark grades indicated by letter A as the highest and grade letter E as the lowest as shown in figure **4.7** below.

Similarly, from table **4.16** below the grades attained by the students aggregated at a mean score of 2.51, a standard error of the mean of 0.04, a median of 2, the standard deviation of 1.19, the variance of 1.43, a range of 4, a minimum and a maximum of 1 and 5 respectively. This illustrates that the average mean achievement translated to a mean grade of C (coded as 3) for all the students as shown, meaning the majority of the student's attained average scores in their end-of-term examinations

Table 4.16: Mean, standard deviation and variance of Student Academic achievement

Mean	Standard Error	Standard deviation	Variance	Min	Max
2.51	.044	1.19	1.43	1	5
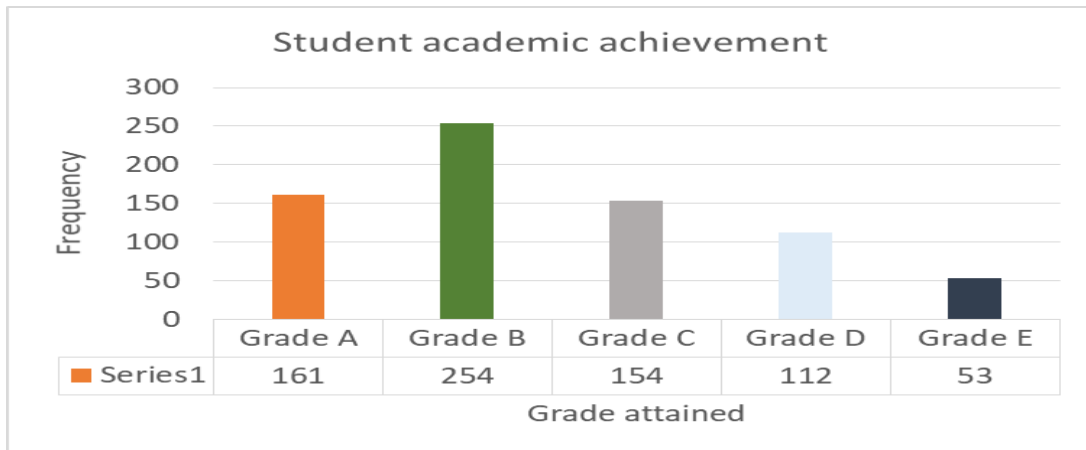
Figure 4.7: Descriptives of student academic achievement
Source: Research data (2022**)**

Figure 4.7 above indicates that the majority of the students, 254(34.6%) attained a grade letter B, 161(21.9%) of the students attained a grade A, 154(21%) scored grade C, while 112 (15.3%) scored grade D and finally 53 (7.2%) of the students scored the lowest grade E. This illustrates that the majority of the students put more effort into attaining good grades at the end of the term.

4.9.3.2 Correlation analysis of student engagement and academic achievement

The researcher examined the relationship between individual sub-constructs of student engagement and the composite student engagement on student academic achievement. The results are shown in table **4.17** below.

Table 4.17: correlation summary of student engagement and academic achievement

N=375	Construct	1	2	3	4
1	Academic achievement	1			
2	Student Engagement	$.16^{**}$	1		
3	Cognitive	$.09^{**}$	$.80^{**}$	1	
4	Behavioural	$.87^{**}$	$.50^{**}$	$.87^{**}$	1

Source: Research data (2022), **. Correlation is significant at the 0.01 level (2-tailed).

Table **4.17** above indicates that cognitive engagement has a weak positive but significant relationship with student academic achievement (r =.09;p<.01).The relationship between behavioural engagement and student academic achievement had (r =.87; p<.01) illustrating a strong positive significant relationship with academic achievement while the composite student engagement had a weak positive but significant relationship with student academic achievement (r=.16;p<.01)**.**Thus, all the student engagement constructs were retained for the further analysis below since they were found to be significant with academic achievement.

4.9.3.4 Regression of Student engagement and academic achievement

In testing the null hypothesis; **H₀** = there is no statistically significant relationship between student engagement and academic achievement in selected secondary schools in the Garissa sub-county. A simple linear regression was applied to determine how comprehensive student engagement can predict academic achievement. Student engagement is a multi-dimensional construct (Fredrick et.al, 2004). In this study, student engagement was computed in terms of behavioural, cognitive and composite student engagement.

Table 4.18: regression of Student engagement and academic achievement

Model Summary

Variables	R	R Square	Adjusted R Square	Std. The error in the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
Eng	.16[a]	.03	.03	1.18	.02	20.33	1	732	.000
Cogn	.09[b]	.01	.01	1.19	.01	6.81	1	732	0.01
Beh	.17[c]	.03	.03	1.18	.03	22.84	1	732	.000

a. Predictors: (Constant), Student Engagement: b. cognitive; c. Behavioural; Eng-composite engagement

Table **4.18** above indicates that R^2= (0.027), implying that **3%** of the variation in academic achievement can be explained by student engagement. The regression model was significant for **F (1,732) = 20.33, p = 0.000; F (1,732) = 6.81, p = 0.01: F (1,732) = 22.84, p = 0.000** for student engagement, cognitive and behavioral engagement. This indicates that student engagement predicts academic achievement hence the researcher rejected the null hypothesis concluding that student engagement has a statistically significant effect on student academic achievement.

In support of the above quantitative findings, qualitative analysis of responses from semi-structured in-depth interviews and FGDs by teachers, parents and students on the influence of student engagement on academic achievement; the theme and category generated are illustrated in figure 4.8 below;
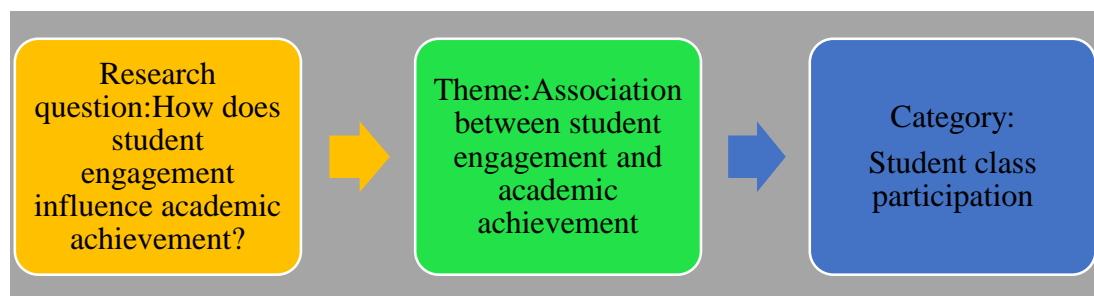
Figure 4.8: Summary of qualitative findings in objective three
Source: Researcher's data (2022)

4.9.3.5 Theme: Association between student engagement and student academic achievement

4.9.3.5.1 Student participation

Student participation is classified as either active or passive. Teachers and students had the following responses on how student participation influences student academic achievement.

A teacher said;

> "*Student participation in my class is not 100%, however, the students who perform highly in my class do class assignments, ask and answer questions. Those who perform poorly in class they don't do class assignments and skip lessons too*". {Teacher 1}

The above verbatim illustrates that students who actively participate in class by doing class assignments, regularly attending lessons and asking and answering questions perform well in their exams as compared to students who are less active in class.

However, students from focused group discussion suggested various ways in which they get to be actively engaged in class as illustrated below;

> "*I read ahead of the teacher and make my notes in which I can have a lot of diverse opinions about a concept hence performing well in class than those who just sit to be beaten and threatened for them to participate.*" {FGD 1}

> "*I am so aggressive to learn new ideas, I ensure that I participate fully in the class discussions, attempt various class tests and ask questions in areas I have not understood. My final grade last term was A-*" {FGD 1}

The above excerpt by the student illustrates that, students who read ahead of the teacher are able to collect diverse and rich knowledge using diverse resources hence improved academic achievement.

From the foregoing findings, both the qualitative and quantitative findings illustrate that student engagement influences academic achievement through the active student

participation in classroom activities. The findings was supported by Estevez,(2021) who asserts that students who rendered high engagement attained better grades as they utilized their time and environment appropriately. Moreover, they seek information, from the teachers and their peers with less behavioural misconduct. Additionally, Delfino, (2019) found out that behavioural and cognitive engagements were positively correlated to the academic achievement of the students.

4.9.4 Objective four: To determine the mediating effect of student engagement on the relationship between the parental level of education and academic achievement

In this objective, both the qualitative and quantitative data were collected from the students, class teachers and parents using structured questionnaires, semi-structured in-depth interviews and FGDs. Multiple linear regression analysis was used to investigate the hypothesis on how student engagement mediates the relationship between the parental level of education and student academic achievement. This study adopted a simple linear regression model to test the effect of the direct effect hypotheses, however, a multiple regression model using Hayes (2022) Model 4 to test for the mediation effect of student engagement.

H_0: Student engagement does not mediate the effect of parental level of education on student academic achievement**.**

From the findings of multiple linear regression analysis, all the covariates were found to be significant in both cases (see table **4.8**) hence they were controlled by the researcher so as not to alter the direct relationships.

The researcher examined the mediation effect by conceptualizing parental level of education into father's and mother's levels of education as the independent variables.

Similarly, student engagement in terms of behavioural and cognitive engagement as mediators as illustrated in the sections below.

4.9.4.1 Mother's level of education, cognitive engagement and student academic achievement

Mother's level of education was not a significant predictor of cognitive engagement with, b = .0001, t (365) = .01, p = 0.99 and cognitive engagement, controlling for mother's level of education, is a significant predictor of student academic achievement (DV), b = .04, t (365) = 2.83, p=.001. A mother's level of education was also a significant predictor of student academic achievement after controlling for the mediator, cognitive engagement, b = 0.46, t (364) = 0.96, p=.000 consistent with direct-only non-mediation. These results do not support the mediation hypothesis that cognitive engagement mediates the relationship between the mother's level of education and student academic achievement. Moreover, the indirect effect was tested using a percentile bootstrap estimation approach with 2000 samples (Hayes 2022). These results indicated that the indirect effect was not significant, b = .0420, SE = .0035, 95% CI = -.0076, .0077 since the LLCI and ULCI included a zero.

4.9.4.1.1 Mother's level of education, behavioural engagement and academic achievement

The mother's level of education was not a significant predictor of behavioural engagement, b = -.0014, t (365) = -.36, p = .72 and behavioural engagement controlling for the mother's level of education, was a significant predictor of student academic achievement (DV), b = 1.59, t (364) = 2.32, p=.000. A mother's level of education was a significant predictor of student academic achievement after controlling for the mediator, behavioural engagement, b = .04, t (365) = .83, p= 0.000 consistent with direct-only non-mediation. These results did not support the mediation hypothesis that

behavioural engagement mediates the relationship between a mother's level of education and student academic achievement. In addition, the indirect effect was tested using a percentile bootstrap estimation approach with 2000 samples. These results indicated that the indirect effect was not significant, b =-.0022, SE = .01, 95% CI = -.02; .01, since the LLCI and ULCI included a zero.

4.9.4.2 Parental level of education, student engagement and academic achievement

Mother's level of education was not a significant predictor of student engagement, b =-.004, t (365) = -.25, p = 0.800 and student engagement, controlling for mother's level of education, was a significant predictor of student academic achievement (DV), b = .04, t (365) = .83, p= 0.000. The mother's level of education was not a significant predictor of student academic achievement after controlling for the mediator, student engagement, b = 4.11, t (364) = 2.24, p=.025, consistent with direct-only non-mediation. These results did not support the mediation hypothesis that student engagement mediates the relationship between the mother's level of education and student academic achievement. These results indicated that the indirect effect was not significant, b = .0015, SE = .0015, 95% CI = -.016; .011, since the LLCI and ULCI included a zero.

4.9.4.3 Father's level of education, cognitive engagement and academic achievement

Father's level of education was not a significant predictor of cognitive engagement, b =-.0036, t (367) = -.71, p = 0.48 and cognitive engagement, controlling for father's level of education, was also not a significant predictor of student academic achievement (DV), b = .49, t (366) = .1.02, p= 0.31. The Father's level of education was not a significant predictor of student academic achievement after controlling for the mediator, cognitive engagement, b = .0074, t (367) = .16, p=.87 consistent with direct-

only non-mediation. These results did not support the mediation hypothesis that cognitive engagement mediated the relationship between the father's level of education and academic achievement. These results indicated that the indirect effect was not significant, b = -.0018, SE = .0034, 95% CI = -.01; 0.0038, since the LLCI and ULCI included a zero.

4.9.4.4 Father's level of education, behavioural engagement and academic achievement

The Father's level of education was not a significant predictor of behavioural engagement, b = -.0031, t (367) = -.87, p = 0.38 and behavioural engagement controlling for the father's level of education, was a significant predictor of student academic achievement (DV), b = 1.64, t (366) = 2.3909, p= 0.01. The Father's level of education was not a significant predictor of student academic achievement after controlling for the mediator, behavioural engagement, b = .0074, t (367) = .16, p=.87 consistent with direct-only non-mediation. These results did not support the mediation hypothesis behavioural engagement mediates the relationship between the father's level of education and academic achievement. These results indicated that the indirect effect was not significant, b = -.0050, SE = .0062, 95% CI = -.0191; .0059, since the LLCI and ULCI included a zero.

4.9.4.5 Father's level of education, student engagement and academic achievement

The father's level of education was not a significant predictor of student engagement, b = -.0012, t (367) = -.94, p = 0.35 and student engagement, controlling for father's level of education, was a significant predictor of student academic achievement (DV), b = 4.1880, t (366) = 2.2873, p= 0.00 consistent with direct-only non-mediation. The Father's level of education was not a significant predictor of student academic achievement after controlling for the mediator, student engagement, b = .0074, t (367)

= .16, p=.87. These results did not support the mediation hypothesis student engagement mediates the relationship between the father's level of education and academic achievement. The indirect effect was tested using a percentile bootstrap estimation approach with 2000 samples (Hayes 2022). These results indicated that the indirect effect was not significant, b = -.0052, SE = .0066, 95% CI = -.02; 0.0047, since the LLCI and ULCI included a zero.

Table 4.19: Summary of the indirect effects

Predictor	Mediator	Coeff.	S.E	LLCI	ULCI
Father's level of education	Cognitive	-.0018	.0034	-.01	.0038
	Behavioural	-.0050	.0062	-.02	.0059
	Student engagement	-.0052	.0066	-.02	.0047
Mother's level of education	Cognitive	.0420	.0035	-.0076	.0077
	Behavioural	.0022	.0071	-.02	.01
	Student engagement	.0015	.0015	-.02	.01

Source: Researcher's data, (2022)

From the qualitative data collected from the students and classteachers confirmed that student engagement does not mediate the relationship between parental level of education and academic engagement as illustrated by the following quotations;

> *[…]I being in high school allows me to have my identity card easily and also I just need the form four paper to mark my completion […] {*FGD 1}

> *[…]Majority of the student here are just forced to be in school as a formality, what matters to them is they have completed high school no matter the final grade[…]{*Teacher 2}

> *[…]I pray that my child gets to finish high school even though she doesn't because, she needs to go abroad and join the other siblings… {*Parent X}

From the above quotations the teachers, students and parents clearly illustrate that student engagement is not important however the learning process is meant to achieve other diversified obligations.

The foregoing findings, both the quantitative and qualitative indicates that student engagement does not mediate the relationship between the parental level of Education and student academic engagement as the interest focuses on secondary school completion and offering a ladder to attaining government services which seem hard or take long to receive. This finding is in agreement with Lei (2017) who asserts that student engagement is an insignificant mediator of student outcomes in which the indirect effects showed that the LLCI and ULCI included a zero. This is contrary to (Ribeiro et al., 2019) whose findings indicated that cognitive and behavioural engagement mediated the relationship between students' background variables and their academic achievement. Moreover, Fredricks, (2013) found that student behavioural engagement was a significant mediator between home environment and learning outcomes.

4.10 Connecting Research Findings to the Theory

The home environment influences student's participation in schools in order to achieve higher grades. Moreover, the study revealed that, for the home environment for it to be favourable, parents play a vital role. Educated parents can provide a conducive home environment leading to higher grades in examinations as compared to less educated parents. This has been emphasized by Walberg's theory of educational productivity that the immediate psychological environments of students affect their academic achievement.

Further, Walberg's theory stipulates that the psychological characteristics such as affective, behavioural and cognitive of the students influence their educational outcomes. This was revealed in the findings that student engagement dimensions of cognitive and behavioural engagement have a positive statistically significant effect on student academic achievement. This is in alignment with Fullerton, (2002) asserts that

psychological characteristics in classroom learning environments and the overall student engagement in learning illustrate an increase in validity to demonstrate the student outcomes.

The findings are also informed by the theory, that parental support at home in terms of resources and involvement in school activities, influence the quality of grades attained by the students. Student attitudes towards the teachers and the subjects taught align with the theory on the quality of instruction offered by the teachers.

Additionally, the theory advocated for the interaction of the study variables to achieve academic achievement. The study illustrated the interaction of parental level of education, student engagement and academic achievement to realise the academic outcomes.

4.11 Summary of the Chapter

This chapter focused on data presentation, analysis, interpretation and discussion of findings employing a mixed method approach. The next chapter presents the summary of the findings, conclusions, recommendations and suggestions for areas of further research.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

The previous chapters (one through four) echoed the introduction to the study, literature review, the research design and methodology used and presentation, explanation and discussion of the study results. This chapter incorporates the reaffirmation of the research objectives, the summary of study findings, the conclusion, theoretical implication, recommendations and suggestions for further research.

5.2 Summary of the Study Findings

The study sought to access the influence of the parental level of education and student engagement on academic achievement taking into account of the direct and indirect effects on the study variables. Moreover, accessing the mediating effect of student engagement on the relationship between the parental level of education and academic achievement. The summary of the study findings were grounded in the four research objectives as presented below.

5.2.1 Research objective one: To determine the relationship between Parental level of education and student academic achievement in selected secondary schools in Garissa sub-county

The descriptive findings on the parental level of education indicated that; the majority of the parents both father and mother 85.4% had no formal education while those with the highest level of education were 32.4%. Additionally, in student academic achievement, most students scored an average grade of **(254** marks**; 34.6%)** D (plain) in their end-of-term examinations for terms one and two indicating a fairly low student academic achievement. From the correlation analysis, mother's level of education had a weak positive but significant relationship with student academic achievement (**r=.29,**

ρ= <.01) whereas the father's level of education had a weak positive non-significant relationship with student academic achievement (r=.007, ρ= < .01).

Additionally, from regression analysis, the father's level of education had a positive non-significant effect on student academic achievement (R^2=.000, p =.86) while the mother's level of education has a positive significant effect on student academic achievement (R^2=.010, $ρ$=.000).

Furthermore, through the semi- structured in-depth interviews and FGD findings, participants testified that parental support such as motivating the students, provision of the necessary learning resources, provision of extra learning while at home in terms of tuition and parental involvement in school activities such as attending to school/class meetings, checking the learner's progress leads to improved student academic achievement.

5.2.2 Research objective two: To examine the relationship between the parental level of education and student engagement in selected secondary schools in Garissa sub-county

The study revealed that parental level of education has a positive non-significant influence on student engagement (both cognitive and behavioural) as indicated by (β=.21, α= .66, α=.86) respectively. Moreover, findings from the semi-structured in-depth interviews and FGDs, the participants viewed that the classroom environment created by the subject teachers and student attitude towards the subject influences student attendance to lessons, general participation in asking and answering questions in class and further the overall student conduct in the classroom activities.

5.2.3 Research objective three: To determine the relationship between student engagement and academic achievement in selected secondary schools in Garissa sub-county

Both behavioural engagement such as (attending lessons and participating in group discussions), cognitive engagement such as (I read ahead of the teacher, I make my notes and answer questions in class) and composite student engagement have a positive significant influence on student academic achievement (β=1.22, α= .000). Further, the correlation analysis revealed a weak positive but significant relationship between student engagement and student academic achievement (r=.16), cognitive engagement had a weak positive but significant (r=0.09) relationship with academic performance while behavioural engagement had a strong positive relationship with academic achievement (r=0.86).

Moreover, qualitative findings revealed that active student participation in terms of regularly attending lessons, participating in class discussions and rehearsals, reading on their own, doing class assignments, asking and answering questions in class perform highly in their exams as compared to those who participate less in doing class activities.

5.2.4 Research objective four: To assess the mediating effect of student engagement on the relationship between the parental level of education and academic achievement in selected secondary schools in Garissa sub-county

The mediation effect was carried out using a percentile bootstrap estimation approach to test for the indirect effects with 2000 samples (Hayes, 2022). Results revealed that, student engagement with (β= -.011, SE =.018, CI= -.053, .017) does not mediate the relationship between the parental level of education and student academic achievement since the lower limit it confidence level (LLCI)and upper confidence interval (UPCI) included a zero.

Additionally, qualitative findings demonstrated that student perceptions on student engagement does not mediate the relationship between parental level of education and academic achievement as the majority were of the view that being in school helps them to get national identity cards and also be able get access to other areas not easily accessible in a common way.

5.3 Conclusion of the Study

The study investigated the direct effects of parental level of education i.e. father's and mother's levels of education and the direct effect of student engagement on academic achievement. Finally, the study analyzed the mediating effect of student engagement on the relationship between the parental level of education and academic achievement.

Concerning the findings of objective one, to determine the relationship between parental level of education and student academic achievement in selected secondary schools, the researcher concluded that to a high extent educated mothers influence student academic achievement by providing resource support and involvement in school activities as compared to less educated mothers while a father's level of education has a negative non-academic significant relationship with student academic achievement.

Concerning objective two, to examine the relationship between parental level of education and student engagement in selected secondary schools in Garissa sub-county , the researcher concluded that to a higher extent, parental level of education has no influence on student engagement .However, classroom environment and the student attitude towards the subject and teacher does creating a favourable class environment during instruction and a change of learner attitude promotes student motivation for better grades.

In light of the findings of the third objective, to determine the relationship between student engagement and academic achievement in selected secondary schools in Garissa sub-county, the researcher concluded that, to a high extent student engagement through active student participation in classroom activities such as attending lessons, asking and answering questions influences academic achievement.

Based on study objective four, to access the mediating effect of student engagement on the relationship between parental level of education and academic achievement in selected secondary schools in Garissa sub-county, the researcher concludes that to a high extent, student engagement does not mediate the relationship between the parental level of education and academic achievement as majority of student efficacy is on school completion and other life gains..

5.4 Theoretical Inferences of the Study

This study supports the theory of educational productivity by Walberg and contributes knowledge body of the available literature. First, it adds to what has already been recognized by other scholars that parental level of education and student engagement have a significant direct influence on student academic achievement. Furthermore, the study adds some more knowledge that student engagement does not mediate the relationship between the parental level of education and academic achievement. Secondly, reveals that parental level of education has a positive non-significant effect on student engagement.

The findings of this study support the theory of educational productivity which claims that the psychological characteristics of individual students (emotional, cognitive, and behavioural) and their immediate psychological environments (home environment-

parental level of education) influence the educational outcomes (Reynolds &Walberg, 1992).

5.5 Recommendations of the Findings

In the light of the study findings and conclusions drawn, the following recommendations are proposed as per the study objectives

5.5.1 Recommendation as per objective one: To determine the relationship between Parental level of education and student academic achievement in selected secondary schools in Garissa sub-county

Secondary Schools should carry out parental sensitization on parental support in terms of resources and involvement in school activities. This could be achieved by scheduling termly activities where students and their parents interact. For instance, if there are science or language exhibitions that parents are required by a school policy to attend, it could probably elicit their interest in supporting their children after observing their achievements.

However, for children whose parents are less privileged in terms of provision of the required support resources, the school management committees should put into consideration the needs of the student and put a support plan for them. For instance, schools could source support from alumni students and charity organizations such as NGOs.

5.5.2 Recommendations as per objective two: To examine the relationship between the parental level of education and student engagement in selected secondary schools in Garissa sub-county

Teachers should create a conducive learning environment and further facilitate the change of student attitude towards the subject through motivation, positive reinforcement to enhance student engagement.

5.5.3 Recommendations as per objective three: To determine the relationship between student engagement and academic achievement in selected secondary schools in Garissa sub-county

Regarding the finding in objective three, secondary schools should adopt student-centered learning strategies which enhance active student participation to improve student academic achievement

Educational policymakers should enhance and implement policies that stimulate active student engagement in both aspects of behavioural and cognitive in an educational setting. This could help curb the situation of less engagement in classrooms making learning more interactive hence promoting higher student academic achievement.

5.5.4 Recommendations as per objective four: To assess the mediating effect of student engagement on the relationship between the parental level of education and academic achievement in selected secondary schools in Garissa sub-county

From the findings in objective four, the Garissa county government should enhance parental participation in school activities such as attending meetings, academic days which allows both the students, teachers and parents to interact contributing to student academic achievement.

5.6 Suggestions for Further Research

This study suggests the following areas for further research;

In this study concurrent triangulation design was used and hence a similar study could be done employing explanatory sequential design to extend the depth of the findings. Further, in this study parental level of education was used hence a further study be done on the influence of the **parental** level of occupation and income on student academic achievement since they are dimensions of socio-economic factors.

Additionally, the study revealed that of **parental** support and involvement in school activities has a great influence on student academic achievement and thus a further research be done to provide in-depth findings.

Further, outcomes of this study indicated that student engagement does not mediate the relationship between the parental level of education and academic achievement, parental level of education has no significant effect on student engagement. These findings should be discovered in other contexts as they might offer more insights to solve low academic achievement.

Moreover, the findings of this study, a father's level of education was non-significant to influence student academic achievement. The researcher recommends a further study be done on this variable in other contexts to ascertain the finding.

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APPENDICES

Appendix A: A Map of Garissa county sub-county
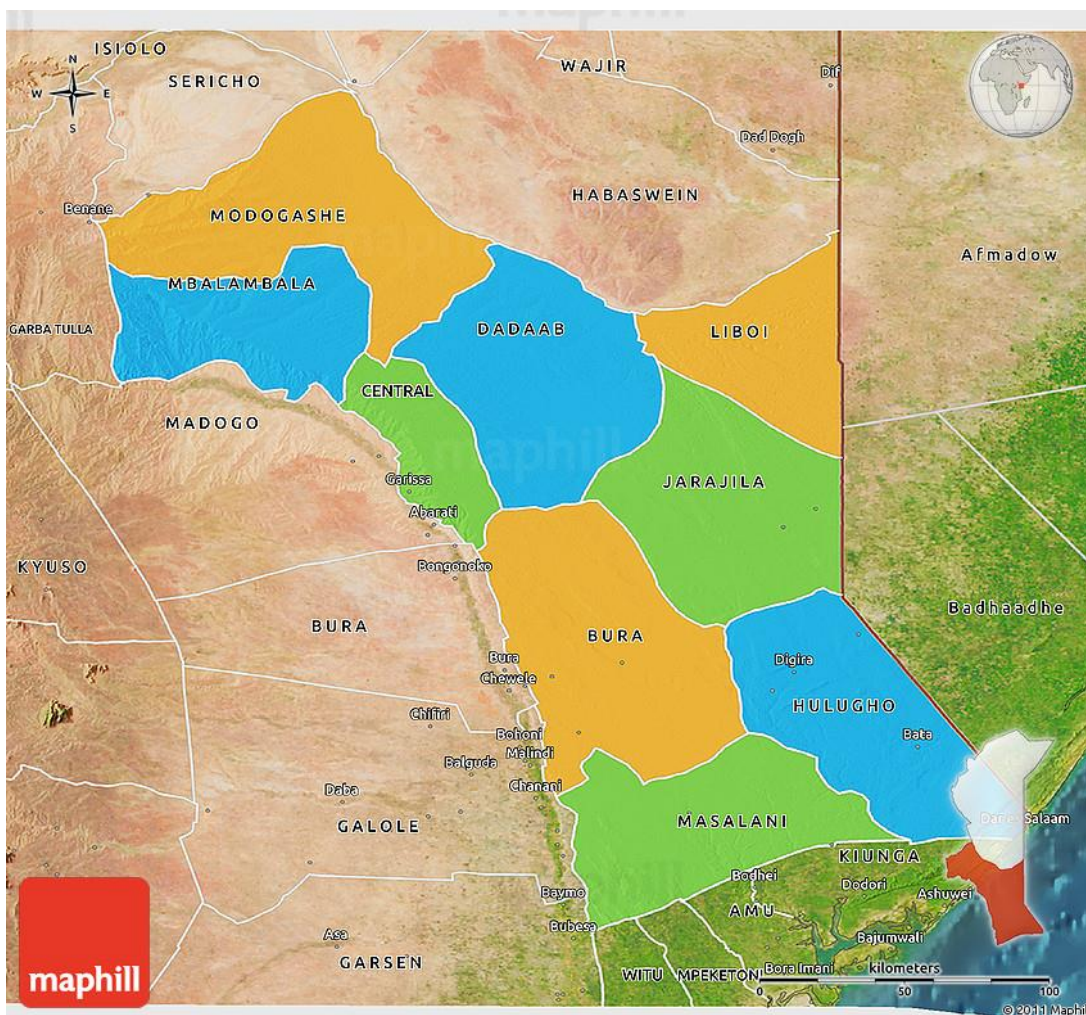
Source: ndma.go.ke,(2021)

Appendix B: A Student Questionnaire

Student Questionnaire

This questionnaire is intended to collect information on the "**Influence of parental level of education and student engagement on academic achievement in selected secondary schools in Garissa sub-county, Kenya**" The information given will be used for this research only.

SECTION A: DEMOGRAPHIC INFORMATION

♣ Tick where appropriate. ♣ Do not write your name and that of your school on this

1) What is your gender? Male ( ) Female ( )

2) How old are you? Below 16 years ( ) 16-18years ( ) above 18years ( )

3) What is your School type? Boys Boarding ( )   Girls boarding (   )   Mixed day ( ) Mixed day and boarding (   )   Girls day (   )   Boys day ( )

4) In Which county were you born? (Tick the appropriate one)

Garissa ☐   Wajir ☐   Mandera ☐   Isiolo ☐ Tana-River ☐

Other(s) ☐

5) Occupation of the parent (Tick the appropriate occupation)

S/NO	Current/last occupation	Father	Mother
1	Small scale traders e.g Retailers-Hawker, Roadside seller		
2	Large-scale traders e.g wholesalers		
3	Professional occupation (e.g. doctor, lawyer, engineer etc.)		
4	Semi-professional (e.g. teacher, civil servant etc.)		
5	Farmer (livestock raring/rancher, crop growing etc.)		
6	No occupation		

6) Parental Marital status (Tick the appropriate one)

Father: Alive [ ]   Not alive [ ]   **Mother**: Alive [ ]   Not alive [ ]

7)   How many siblings do you have? ----------- (indicate the number)

SECTION B: PARENTAL LEVEL OF EDUCATION

What is the highest level of education of your parent(s)? (Tick the appropriate level of education)

S/NO	Education level	Father	Mother
1	No formal education/ uneducated		
2	Primary		
3	Secondary		
4	College (e.g. Technical institute, teachers training college etc.)		
5	University(e.g undergraduate, post-graduate)		

SECTION C: STUDENT ENGAGEMENT

How often do you do the following in **THIS** class that you are in right now? (Tick one answer that applies to you)On a scale of **1-5**, in which **1**- Never is the lowest and **5** is Always the highest**.**

S/NO	In This Class	1-Never	2-Very Rarely	3-Sometimes	4-Often	5-Always
1.	I feel excited					
2.	I attend lessons					
3.	I smile, laugh, and have fun					
4.	I ask and answer questions					
5.	I just pretend like am working					
6.	I listen carefully in class					
7.	I feel proud.					

8.	I go back over things I don't understand					
9.	I participate actively in group discussions.					
10.	I do not want to stop working at the end of class.					
11.	I actively participate in class rehearsals.					
12.	I make my notes.					
13.	I read ahead of the teacher.					
14.	I raise my hand					
15.	I ask questions when I don't understand the teacher					
16.	I am organized					
17.	I work with other students and we learn from each other					
18.	I complete my assignments given by the teacher					

SECTION D: STUDENT ACADEMIC ACHIEVEMENT

What was your mean mark in the previous end of term one and two 2021

examinations? (Indicate the mark)

Term One Marks ----------

Term Two Marks ----------

Entry marks (K.C.P.E) ---------

THE END

THANK YOU FOR YOUR COOPERATION

Appendix C: Interview guide for Class Teachers

Interview Guide For Class Teachers

Dear research participant,

I am pleased to introduce myself to you as FAITH NYABERI, a master's student of Moi University main campus, Eldoret Kenya. I am carrying out a research study on the influence of parental level of education and student engagement on academic performance in selected secondary schools in the Garissa sub-county, Kenya. I am indebted that you are one of my research participants.

SPECIFIC INFORMATION

1. Can you comment on students in terms of their family background specifically education level and their academic achievement?

2. Can you make observations or comments on your class's student engagement? What types of engagement have you noted? Can you comment on the student's academic achievement and engagement? Are they linked? If yes, in what way? Explain

3. Would you say that the level of student engagement is linked to the family background the student comes from and let us say particularly parental level of education? Expound more on this.

4. Comment on the family background specifically the education level, student engagement and academic achievement. Are the three linked? How? Explain

Thank you for your cooperation

Appendix D: Interview guide for the Parents

Interview Guide For The Parents

Dear research participant,

I am pleased to introduce myself to you as FAITH NYABERI, a master's student of Moi University main campus, Eldoret Kenya. I am carrying out a research study on the influence of parental level of education and student engagement on academic performance in selected secondary schools in the Garissa sub-county, Kenya. I am indebted that you are one of my research participants.

SPECIFIC INFORMATION

1. Can you comment on students in terms of their family background specifically parental education level and academic achievement?

2. Would you say that the level of student engagement is linked to the education level of the parent? level of education? Develop more on this.

3. Can you comment on the student's academic achievement and engagement in classroom activities? Are they linked? If yes, in what way? Explain

4. Comment on the parent's education level, student engagement and academic achievement. Are the three linked? How? Explain

SUB-QUESTIONS

1. What is your level of education?

2. Do you support your child while at home and in school by providing the necessary resources?

3. Do you follow up on your child while in school?

4. When your child performs well in exams, what do you do?

5. A part of the child being taught at school, during holidays, which activities does your child engage in at home?

6. What is your relationship with the class teacher?

7. As a parent, do you influence your child's participation in class activities and also achievement in examinations administered?

THE END

Appendix E: Focused Group Discussion Guide for the Students

Focused Group Discussion Guide For Students

Dear research participant,

I am pleased to introduce myself to you as FAITH NYABERI, a master's student of Moi University main campus, Eldoret Kenya. I am carrying out a research study on the influence of parental level of education and student engagement on academic performance in selected secondary schools in the Garissa sub-county, Kenya. I am indebted that you are one of my research participants.

SPECIFIC INFORMATION

1. Can you comment on your parent's level of education and your academic achievement? Are they linked? If yes how? Explain-(Things that your parents do to you at home, what support they do offer towards your education, and their reaction when they see your achievement).

2. Can you make observations or comments on your class engagement? What types of engagement have you noted? Can you comment on your academic achievement and the type of engagement? Are they linked? If yes, in what way? Explain—(Do you attend lessons, assignments, and work with other students?)

3. Would you say that the level of your engagement is linked to the parental level of education? Expound more on this. (what is the thing your parents do to make you more or less engaged in class activities?)

4. Comment on the family background specifically the Parental education level, student engagement and academic achievement. Are the three linked? How? Explain—(Parents are supportive but you relax in school and fail, does the effort of a student matter more than the parents' education to perform well?)

Thank you for your cooperation

Appendix F: Document Analysis Checklist

Document Analysis Checklist

Below is a list of documents that can be used to determine student academic achievement and student entry behaviour. Provide your answer according to their accessibility.

INDICATOR	Name of Document	Description	Remark.
Student entry behaviour	Student Admission file	KCPE Marks scored by the student in primary school	
Student's Academic Achievement	Form End of term exam analysis file (2021	Average of aggregate marks attained for terms one and two	

Thank you for your cooperation.

Appendix G: The Questionnaire items validation tool

Tool validation for the project **"Influence of parental level of education and student engagement on academic achievement in selected secondary schools in Garissa sub-county, Kenya"**.

Dear expert,

This inventory contains 1 domain with 22 items related to student engagement activities that enhance academic achievement. I request your expert judgement on the degree of relevance of each item domain subject on the following rating scale.

Degree of relevance.

1 = the item is not relevant to the measured domain.

2 = the item is somehow relevant to the measured domain.

3 = the item is quite relevant to the measured domain.

4 = the item is highly relevant to the measured domain.

Tick what you view as per the item based on the degree of relevance in the boxes provided. Any change will be highly appreciated

S/NO	IN THIS CLASS	1	2	3	4
1.	I feel excited				
2.	I attend lessons				
3.	I smile, laugh, and have fun				
4.	I ask and answer questions				
5.	I just pretend like am working				
6.	I listen carefully in class				
7.	I feel proud.				
8.	I go back over things I don't understand				
9.	I participate actively in group discussions.				
10.	I do not want to stop working at the end of class.				
11.	I actively participate in class rehearsals.				
12.	I make my notes.				
13.	I read ahead of the teacher.				
14.	I raise my hand				
15.	I ask questions when I don't understand the teacher				
16.	I am organized				
17.	I work with other students and we learn from each other				
18.	I complete my assignments given by the teacher				
19.	I am always attentive				
20.	I always do my homework even when it's boring				
21.	I feel discouraged				
22.	I feel good				

Thank you for your cooperation

Appendix H: Research Budget

Research Budget for the Influence of parental level of education and student engagement on academic achievement in selected secondary schools in Garissa sub-county, Kenya.

<u>**Data Collection Period: Jan/ 2022- March /2022.**</u>

S/N	ITEM	UNIT	COST PER Unit	TOTAL COST Ksh
1.	**Research Ethical clearance**			
	National Commission for science, technology and Innovation (Nacosti)	1		2,000
2.	**Field Research**			
	Digital Voice Recorder	1		5,800
	Vehicle hire/Travel within.	30days	800	24000
	Research Assistant field allowance	20days	1500	30,000
	Research Assistant's meals and transport.	20days	1000	20,000
	Participants' Refreshments.	20days	500	10,000
	Communication/ Air time.		3000	3,000
3.	**Stationary**			
	Reams of paper for questionnaires & thesis for examination submission.	7	370	2,590
	Reams of paper for Final Submission of the thesis.	4	370	1,480
	Printing costs.	1200pages	5	6000
	Spiral binding cost.	8copies	240	1,920
	Hardcover binding at the library	8copies	400	3,200
4.	**Editorial work**	180pages	720	108,000
	Total			**217,990**

Appendix I: Work Action Plan

Main Aim: To investigate the influence of parental level of education and student engagement on academic achievement in selected secondary schools in the Garissa sub-county.

Strategic Action Description	Resource Required	Time frame	Outcome desired.
Secure Research Permit	Funds	Jan-Feb 2022	Research Permit.
Appointment teachers, parents and students	Permission Letters from the sub-county education office and introductory letters	Feb-march 2022	Data from interviews, FGDs, questionnaires and documents.
Data management.	Datasets	April 2022	Cleaned datasets
Analysis of data	SPSS and developing themes	May-June 2022	Outputs.
Report writing	Data outputs	June 2022	Outputs
Editorial work	Funds	July /august 2022	Drafts and final copy
Submission of the thesis	Report.	July-Sept.2022	Submission of the thesis

Appendix J: Letter of Introduction to the Research Study

MOI UNIVERSITY

P.O BOX 3900-30100

ELDORET-KENYA

18TH FEBRUARY 2022

The Sub-County Director Of Education,

p.o Box 1801, Garissa.

Dear sir/Madam,

<u>**Re: Research Study in Garissa sub-county**</u>

My name is Faith B. Nyaberi. I am a master's student at Moi University under the admission of MS/R/2021. I am doing a study on the ***Influence of parental level of education and student engagement on academic achievement in selected secondary schools in the Garissa sub-county***.

Participation is voluntary but will be highly appreciated. The duration of the study will be 3 months entailing many appointments to the selected secondary schools for data collection.

Phone number:0726997689   Email:faithbochaberi@gmail.com

Thank you for your cooperation

Faith Nyaberi

Appendix J: Research Consent forms

<div align="center">

Individual Informed Consent Form

</div>

MOI UNIVERSITY

SCHOOL OF EDUCATION

P.O BOX 3900

ELDORET

Project: ***Influence of Parental Level of Education and Student Engagement on Academic Achievement in Selected Secondary Schools in Garissa Sub-County***

Research student: Faith Nyaberi

Dear Sir /Madam,

I am a research student from Moi university researching the named title above. You have been selected to participate because of your knowledge. I seek your consent to participate in the voluntary study.

Your privacy and confidentiality will be observed as your real names will not be used and the collected information will be kept within reach of the researcher only. Physical documents will be destroyed after two years and the findings of this research will be published in journals and video conferences to understand the research phenomena. There are no risks involved in the study since its for academic purposes.

You have a right to withdraw or ignore the questions from the interviews and questionnaires. Indicating your signature implies you conform with the consent and that you have agreed to be part of the study.

For any enquiries do not hesitate to contact 0726997689

Participant: Name……………….. 	Signature:…………………….

Researcher………………………. 	Signature:…………………….

Participant's statement

I have read the consent form. I understand that my participation in this study is voluntary and I choose to withdraw at any time. I choose to participate and provide cooperation in the study.

Researcher's statement

I hope the participant named above has understood the relevant details of the study. That he has given consent to participate.

INSTITUTION CONSENT FORMS

MOI UNIVERSITY

SCHOOL OF EDUCATION

P.O BOX 3900

ELDORET

Project: ***Influence of Parental Level of Education and Student Engagement on Academic Achievement in Selected Secondary Schools in Garissa Sub-County***

Research student: Faith Nyaberi

Dear Sir /Madam,

I am a research student from Moi university researching the named title above. You have been selected to participate because of the knowledge required from your teachers and students. I seek your consent to participate in the voluntary study.

Your privacy and confidentiality will be observed as your real names will not be used and the collected information will be kept within reach of the researcher only. Physical documents will be destroyed after two years and the findings of this research will be published in journals and video conferences to understand the research phenomena. There are no risks involved in the study since its for academic purposes.

You have a right to withdraw or ignore the questions from the interviews and questionnaires. Indicating your signature implies you conform with the consent and that you have agreed to be part of the study.

For any enquiries do not hesitate to contact 0726997689

Participant: Name……………….. Signature:…………………….

Researcher…………………………. Signature:…………………….

Appendix K: Study Research Permits

GARISSA HIGH SCHOOL
P.O.BOX 94 Garissa cell: 0706692820
email: garissahighschool@yahoo.com

7TH FEBRUARY,2022

TO WHOM IT MAY CONCERN

RE: PERMISSION FOR NYABERI FAITH BOCHABERI TSC/876069

The above subject refers,

Madam faith is hereby granted permission to carry out her research on impact of Parental level of Education and Student Engagement on Academic Performance in selected secondary school in Garissa Sub-County.

Kindly accord her the assistance she requires to enable her collect Data.

Yours faithfully,

LAWRENCE O. NYAKWEBA

CHIEF PRINCIPAL

GARISSA HIGH SCHOOL

MINISTRY OF EDUCATION

State Department of Early Learning & Basic Education

Telegrams: "EDUCATION", Garissa
Telephone: **0721589688**
Fax: **046-2358**
When replying please quote
Ref. N0: EDG/5.32/VOL V/306

Sub-County Education Office
P. O. BOX 42
GARISSA
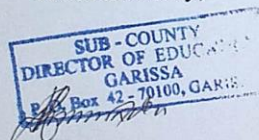Date: 7ᵗʰ February, 2022

TO
ALL
PRINCIPALS
GARISSA SUB-COUNTY

RE: RESEARCH PERMIT IN RESPECT OF NYABERI FAITH BOCHABERI.

The above named is a teacher Garissa High school. She is doing her masters degree and is out to conduct research.

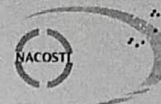Kindly accord her the necessary assistance for her to conduct successful research.

Yours faithfully,

Ali Buthul
Sub- County Director of Education
GARISSA

REPUBLIC OF KENYA

**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: 753381

Date of Issue: 25/January/2022

RESEARCH LICENSE

This is to Certify that Miss.. FAITH BOCHABERI BOCHABERI NYAB of Moi University, has been licensed to conduct research in Garissa on the topic: THE IMPACT OF PARENTAL LEVEL OF EDUCATION AND STUDENT ENGAGEMENT ON ACADEMIC PERFORMANCE IN SELECTED SECONDARY SCHOOLS IN GARISSA SUB-COUNTY, KENYA. for the period ending : 25/January/2023.

License No: NACOSTI/P/22/15429

753381

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document,
Scan the QR Code using QR scanner application.

Appendix L: SPSS OUTPUTS

The Rotated factor analysis of student engagement

Component matrix	Component
I feel excited	***
I attend lessons	***
Smile, laugh and have fun	.67
I ask & answer Questions	.59
I just pretend like am working	***
I listen carefully in class	***
I feel proud	.56
I go back over things I don't understand	.58
Participate actively in group discussions	.64
Do not want to stop working at the end of the class	.60
Actively participate in class rehearsals	.53
I make my notes	.67
I read ahead of the teacher	.69
I raise my hand	.63
Ask questions when I don't understand the teacher	.73
I am organized	.73
I work with other students & we learn from each other	.68
I complete my assignments given by the teacher	.63

*** Item deleted: Source: Research data, (2022)

Rotated factor analysis of student engagement when item deleted

Rotated Component Matrix	Factor loading	
Behavioural engagement…………as component 1	**1**	**2**
I am organized	.78	
I work with other students & we learn from each other	.77	
I complete my assignments given by the teacher	.73	
Ask questions when I don't understand the teacher	.65	
Participate actively in group discussions	.63	
Do not want to stop working at the end of the class	.58	
I go back over things I don't understand	.57	
I feel proud	.53	
cognitive engagement……………as component 2		
I read ahead of the teacher		.76
I raise my hand		.69
I make my notes		.62
Actively participate in class rehearsals		.55
I smile, laugh and have fun		.61
I ask & answer quizzes		.59

Extraction method: principal component analysis

Rotation method: Promax with Kaiser Normalization

Source: Research data, (2022)

The Composite reliability of the study constructs after Factor Analysis

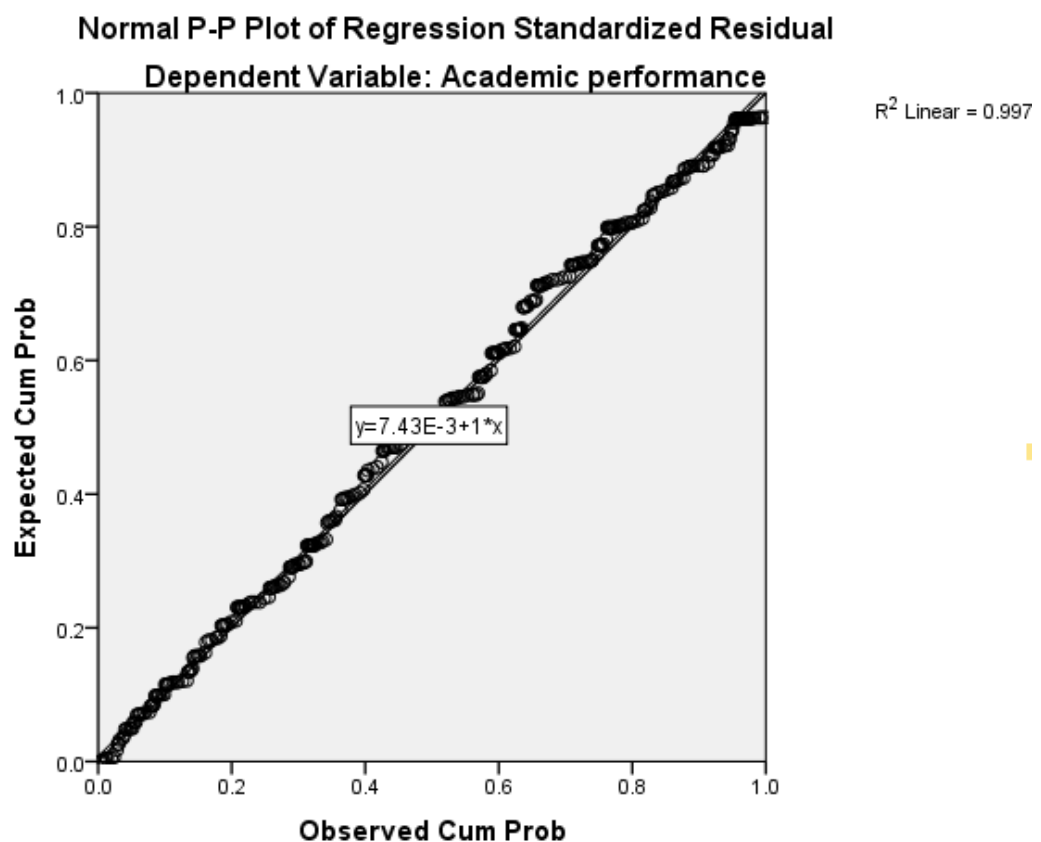| Variables	Cronbach alpha	Number of items after exclusion
Cognitive engagement	.70	**6**
Behavioural engagement	.81	**8**
Overall items reliability	**.85**	**14**

Source: Researcher's data, (2022)

Figure 4.9: Linearity and normal plot
Source: Researcher's data, (2022)

Descriptive statistics of student engagement-Before data reduction

S.E	N	MIN	MAX	Mean	SD	Variance
Smile, laugh and have fun	375	1	5	3.70	.063	1.26	1.58
I ask & answer quizzes	375	1	5	3.66	.070	1.41	1.98
I listen carefully in class	375	1	5	4.05	.067	1.34	1.81
I feel proud	375	1	5	4.04	.067	1.33	1.78
Participate actively in group discussions	375	1	5	3.80	.068	1.36	1.84
Do not want to stop working at the end of the class	375	1	5	3.83	.064	1.29	1.66
Actively participate in class rehearsals	375	1	5	3.94	.063	1.26	1.59
I make my notes	375	1	5	3.91	.063	1.27	1.61
I read ahead of the teacher	375	1	5	3.64	.067	1.34	1.79
I raise my hand	375	1	5	3.77	.062	1.247	1.56
Ask questions when I don't understand the teacher	375	1	5	4.04	.063	1.251	1.57
I am organized	375	1	5	4.16	.060	1.20	1.45
I work with other students & we learn from each other	375	1	5	3.98	.061	1.22	1.48
I complete my assignments given by the teacher	375	1	5	4.37	.057	1.13	1.28

Reliability Statistics of items during pilot testing

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
.794	.801	18