

**ACADEMIC PERFORMANCE AND STUDENTS' ENROLMENT IN ADVANCED  
LEVEL SCIENCE SUBJECTS: A CASE STUDY OF GOVERNMENT SECONDARY  
SCHOOLS IN GULU MUNICIPALITY**

**INNOCENT ANECHO**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL  
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**UGANDA CHRISTIAN  
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**DECLARATION**

I, ANECHO INNOCENT, hereby declare that this dissertation entitled, ‘Academic Performance and Students’ Enrolment in Advanced Level Science Subjects: A Case Study of Government Secondary Schools in Gulu Municipality is truly my original work and has never been submitted to any other University or Institution for any award of degree or any other qualification.

Signature:   
\_\_\_\_\_

**ANECHO INNOCENT**

Date: 08/08/2025

**APPROVAL**

I certify that this dissertation of ANECHO INNOCENT entitled ‘Academic Performance and Students’ Enrolment in Advanced Level Science Subjects: A Case Study of Government Secondary Schools in Gulu Municipality has been under my supervision and is now ready for submission for external examination.

Signature:

Date: 10/08/2025

**Dr. MUSIIMENTA ANNET**  
**(SUPERVISOR)**

## **DEDICATION**

This dissertation is dedicated to my beloved wife and entire family members.

## ACKNOWLEDGEMENT

First and foremost, I thank the Almighty God for giving me the life, grace; guidance and strength throughout the whole academic study period because without Him I would not have reached this level. I am forever indebted to Him. I say, trust in God for academic victory and To God Be the Glory. Thank you, Lord. Secondly, I am very grateful to my parents Vinancious Donge Anecho and Agnes Nyadoi, whose love, guidance and sacrifice have shaped me into the person I am today. And to my wife, Juliet Nakawooya, whose unwavering support and encouragement have been my rock throughout this journey. Heartfelt gratitude to the academic staff of the School of Education but above all, my Supervisor, Dr. Musiimenta Annet. You have done a great job of equipping me with practical skills, and academic guidance in research. Nothing to give you, apart from praying for you and asking God to bless you in everything you put your hands-on. God will certainly bless you abundantly. More special tributes go to all those who provided all the required primary information (data) during my research especially head teachers, science teachers, career guidance teachers and students. Lastly, I am grateful to my directors and friends for their inspiration and encouragement to finish this course. May the Almighty God bless you all.

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**ACRONYMS AND ABBREVIATIONS**

CSP	'Compulsory Science' Policy'
CVI	Content Validity Index
DV	Dependent Variable
EFA	Education for All
GER	Gross Enrolment Rate
IV	Independent Variable
MDGs	Millennium Development Goals
MoES	Ministry of Education and Sports
NCDC	National Curriculum Development Centre
SDGs	Sustainable Development Goals
SEL	Social Emotional Learning
SPSS	Statistical Package for Social Sciences
STEM	Science, Technology, Engineering and Mathematics
STI	Science Technology and Innovation
UACE	Uganda Advanced Certificate of Education
UCE	Uganda Certificate of Education
UNCST	Uganda National Council for Science and Technology
UNEB	Uganda National Examination Board
USE	Universal Secondary Education

## ABSTRACT

The research investigated the influence of academic performance on students' enrolment in Advanced Level (A-Level) science subjects in government secondary schools in Gulu Municipality. The study was guided by two objectives: to explore how Uganda Certificate of Education (UCE) performance in Ordinary Level (O-Level) science subjects affects Advanced Level science enrolment in government secondary schools (pre-qualifying entry – push factor), and to examine how performance in Advanced Level science subjects influences enrolment in these subjects (student academic outcome pull factor). A descriptive research design was employed, utilizing mixed methods with both quantitative and qualitative approaches. The sample included 214 respondents, and data were collected using questionnaires and interviews. Quantitative data were analyzed using SPSS version 26, while qualitative data were analyzed through thematic content analysis. Findings indicated that students' perceptions and attitudes towards science, parental encouragement, career guidance, and O-Level science grades significantly influence Advanced Level science enrolment. Additionally, the study revealed that enrolment in Advanced Level science subjects is increasing due to attractive career prospects, access to training facilities such as science laboratories, and improved academic performance scores. Based on the study findings, it was concluded that academic performance significantly impacts Advanced Level science enrolment in government secondary schools in Gulu Municipality. The study also established a strong positive and significant relations between Academic performance and students' enrolment in advanced level science subjects in Gulu City. The study recommended increasing the number of science teachers at the Advanced Level and suggested further research on factors influencing science subject enrolment in other districts of Uganda.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background to the Study

The study examines the relationship between academic performance and student enrolment in advanced level science subjects in government secondary schools in Gulu Municipality. This chapter outlines the background, problem statement, purpose, objectives, research questions, scope, justification, significance, and conceptual framework of the study.

#### 1.1.1 Historical Background

Globally, the declining interest in science related careers persists despite advancements in science and technology, particularly in developed nations (Bergeron & Gordon (2017:9). These advancements are critical for achieving the Millennium Development Goals (MDGs) of 2000, and the Sustainable Development Goals (SDGs) outlined in the United Nations' 2030 Agenda (United Nations 2015:11). Developed countries, Particularly Europe, prioritize science and technology as a cornerstone of development to meet these global objectives (Kumar & Vivekadhish, 2016:18). However, studies, such as one conducted by Kearney (2021) at King's College, London, reveal a decline in enrolment in science subjects attributed to push and pull factors.

In Sub Saharan Africa, the potential of science and technology to drive growth remains underutilized, particularly in less developed, low income countries (Durokifa & Ijeoma, 2018:9). Akpan (2016:13) emphasizes that science and technology are key to sustainable development at both global and national levels. However, Lange (2016:87) pointed out that “despite efforts by nations in Sub Saharan Africa to enhance creativity and productivity, it remains a significant concern” (p.87). This Low performance and lack of interest in science subjects hinders students' competitiveness in high-tech, knowledge-

based economies. Such experiences in science classes at ordinary level significantly influence engagement with science as students progress to advanced level.

In East Africa, particularly Kenya, students perceive physics and chemistry as challenging. This influences their decisions to pursue advanced level science subjects (Lange, 2016:71). A survey in Burundi by Osuu (2020:17) identified negative student perception, poor attitudes towards science careers, and inadequate performance at ordinary level, as key factors contributing to low enrolment in science subjects. Similarly, Albasha (2018:9) noted that students' lack of awareness about science occupations and underestimation of their abilities deter them from pursuing science at advanced level and STEM pathways.

### **1.1.2 Theoretical Background**

This study is grounded in the Constructivism Theory, Motivational Systems Theory, and Walberg's (1981:7) Theory of Academic Achievement. All with a primary focus on the latter. Walberg's theory posits that students' psychological characteristics and their immediate environments influence educational outcomes, including cognitive, behavioral and attitudinal aspects. Zins et al (2004) describes the theory as "one of the tested theories of school learning based on an extensive review and integration of over 3,000 studies" (p.17). Walberg identified 28 categories of learning influence, with 11 being most significant, eight of which are prior achievement, home environment, motivation, quality of instruction, quantity of instruction, peer group environment, classroom environment, and mass media exposure.

Zins et al (2004:17) highlighted the importance of motivational orientations, self-regulated learning strategies, and social interpersonal abilities in enhancing science students' academic performance and enrolment in upper secondary. Their research, based on a large-scale

implementation of a Social Emotional Learning (SEL) program, demonstrated that students who were self-aware, confident, goal oriented, and organized in their learning approach performed better in science subject, enabling them meet the prerequisites for advanced level science combinations.

In addition, Expectancy-value theory is a prominent framework used to explain the variable of academic performance in public primary schools. According to this theory, students are more likely to engage in and excel at academic tasks if they believe they can succeed and if they see the tasks as valuable and worthwhile. Expectancies are shaped by students' self-concept of their abilities, past experiences, and feedback from teachers and peers, while values are influenced by intrinsic interest, perceived importance, and utility of the task (Wigfield & Eccles, 2020).

Gaspard et al., (2019) contends that students with high expectancy and value perceptions tend to exhibit higher academic achievement, greater persistence, and more positive attitudes towards learning expectancies for success refer to students' beliefs about whether they can succeed in academic tasks, while task values represent the degree to which students find certain activities interesting, useful, and important. Together, these constructs form the basis for students' academic motivation and effort, thereby influencing their academic performance (Wigfield, A., & Eccles, J. S, 2000).

Expectancy-Value Theory highlights the importance of fostering both competence beliefs and task value among students. Teachers and educational leaders can enhance students' expectancies by providing supportive feedback, creating a positive learning environment, and setting achievable yet challenging goals (Hulleman et al., 2016).

Additionally, integrating culturally relevant and engaging content can increase the perceived value of academic tasks, making them more relevant to students' lives and future aspirations (Wigfield et al., 2019). According to Durik et al., (2015) interventions aimed at improving students' expectancies and values lead to significant improvements in academic performance, particularly among underrepresented and disadvantaged groups. By addressing both the expectancy and value components, educators can create more motivating and effective learning experiences that drive academic success.

### **1.1.3 Conceptual Background**

Academic performance as a critical determinant in educational research, significantly influencing school enrolment (Albasha, 2018:18). Amirah (2015:11) defined it as “the outcome of learning assessment and co-curricular activities, typically measured by final grades”. In this study, academic performance refers to the Uganda Certificate of Education (UCE) grades in science subjects at Ordinary level, which qualify students for advanced level science subjects. The researcher adopted this definition because external assessment marks obtained in final examinations play a pivotal role in determining student performance. Particularly for advanced level enrolment.

Enrolment as defined by Yoon & Stobel (2017:8), involves “trends of entry of learners in various educational domains”. Thomso et al. (2016:90) expanded this concept to include not only the number of new students but also retention and completion rates”. Enrolment strategies now encompass institutional missions and students' educational goals, requiring significant time and resources. In this study, enrolment refers to students registered in Advanced level science combinations in their final year of secondary education.

A' Level Science Subjects refers include physics, chemistry, biology and Mathematics, and the recently introduced Information and communication Technology (ICT) (Vansoom, 2020:9).

#### **1.1.4 Contextual Background**

In Uganda, the Government White Paper (1992:13) emphasized the role of science and technology in fostering development through scientific literacy, industrial advancement and innovation. This has driven the need for quality science education at all levels to equip students with skills to address rapid technological changes and the rise of knowledge-based societies (Vansoom, 2020). Amirah (2015:27) noted that, the Ugandan Ministry of Education and Sports (MoES) implemented reforms, such as compulsory science education at lower secondary and optioned based science electives at advanced level, to strengthen sciences and mathematics education. Initiatives like Universal Secondary Education (USE), salary increase for science teachers and scholarships for science students, affirmative action, teacher retraining programs, and curriculum updates aim to boost advanced level enrolment.

Albasha (2021) observed that, academic performance at O' level national examination is the primary criterion for advanced level admission in science subjects in government aided secondary school. Students must achieve distinctions or credits in science subjects at ordinary level to qualify for advanced level science combinations (Ejju, 2020:7). The Uganda National Council for Science and Technology highlighted that such policies enhance science literacy and numeracy, preparing citizens for economic growth and further science studies.

Despite these efforts, enrolment in advanced level science subjects in Gulu District remains low, particularly in government secondary schools (Gulu District Education Report, 2020).

Lugemwa (2020) reported a secondary school Gross Enrolment rate (GER) of 39% in Acholi region compared to higher rates in other regions. Although the government has expanded secondary education and reduced costs through USE, academic performance still remains poor, consequently impacting science enrolment. Few studies, such as those by Asiimwe (2021), has explored the issues in different contexts but none specifically addresses Gulu Municipality's Unique social and geographic setting, promoting this study to examine the influence of academic performance on Advanced Level science enrolment in government secondary school in Gulu Municipality.

## **1.2 Statement of the Problem**

Many education stakeholders in Uganda have long recognized that strengthening science education is essential for national development and technological advancement, with learners' performance in science subjects serving as a cornerstone for progress in higher education and innovation (Asiimwe, 2016; Lugemwa, 2020). In response, the Government of Uganda introduced the 2005 Compulsory Science Policy at the ordinary level, intending to improve science performance through curriculum reform, enhanced teacher training, and increased community engagement. However, in practice, the performance of pupils in science subjects within Gulu Municipality has remained unsatisfactory, with persistent poor results in mathematics and science reported annually (Komakech, 2020). According to the Uganda National Examinations Board (UNEB), the 2019 Uganda Certificate of Education (UCE) results revealed a 60% failure rate in science subjects, which continues to limit the number of students enrolling for science combinations at the Advanced Level (Ejju, 2020). This consistent underperformance highlights a significant gap between policy intentions and actual educational outcomes. Therefore, this study seeks to examine the influence of academic performance on science subject enrolment at the Advanced Level in Gulu Municipality's government secondary schools.

### **1.3.0 Purpose and Objectives of the Study**

#### **1.3.1 Purpose**

The study aims to examine how academic performance affects student's enrolment in Advanced level science subjects in government secondary schools in Gulu Municipality, addressing the low representation of students in science combinations.

#### **1.3.2 Objectives of the Study**

1. To investigate how UCE performance in O' level sciences subjects influence advanced level science enrolment in government secondary schools (Pre-qualifying entry- push factor)
2. To assess how A' level science performance impacts enrolment in science subjects (Student academic Outcome- pull factor).
3. To analyze the relationship between academic performance and students' enrolment in advanced level science subjects

### **1.4 Research Questions**

This research was guided by the following questions:

1. How UCE performance in O' level sciences subjects influence advanced level science enrolment in government secondary schools (Pre-qualifying entry- push factor)
2. How A' level science performance impacts enrolment in science subjects (Student academic Outcome- pull factor).

3. What is the relationship between academic performance and students' enrolment in advanced level science subjects

### **1.5.0 Scope of the Study**

The study was delimited by the following content, geographical and time scopes:

#### **1.5.1 Content Scope**

The researcher examined the relationship between academic performance and student's enrolment in Advanced level science subjects in government secondary schools. Specifically, it investigated two key aspects: the influence of Uganda Certificate of Education (UCE) grade in O' level sciences subjects (biology, chemistry, physics and mathematics) on student enrolment in advanced level, viewed as a Pre-qualifying entry or push factor); and the impact of academic performance in science subjects at A' level science subjects on continued enrolment of students in these science subjects, considered as Student academic Outcome or pull factor. Academic performance was treated as the independent variable, while student enrolment in Advanced level science subjects was the dependent variable. The study also covered the relationship between academic performance and students' enrolment in advanced level science subjects within in the context of Gulu municipality

#### **1.5.2 Geographical Scope**

This research was conducted among selected government secondary schools within Gulu Municipality located in Acholi Sub region, covering co-educational or Mixed, Boys only or Girls only schools. It examines school related factors and challenges affecting science performance and enrolment in government.

### 1.5.3 Time Scope

The study analyzes data from 2015 to 2021. A period marked by declining A' level science enrolment due to poor O' level performance.

### 1.6 Justification of the Study

Despite the 2005 compulsory science policy and associated reforms, science performance in Gulu Municipality remains poor, leading to low A' level science enrolment (Komakech, 2020:11) Ejuu, 2020:15). This study seeks to identify the underlying causes of this trend to inform interventions.

### 1.7 Significance of the Study

The study shall be of significance to the following beneficiaries:

**Curriculum Designers:** The findings of the study shall inform curriculum developers (NCDC) of the gaps in the science curriculum, which currently emphasizes passing exams over development of relevant skills and competencies. The goal is to enhance the quality of science education by promoting a practical and learner-centered teaching approach. This information will assist policy makers formulate strategies to improve academic performance, ultimately leading to increased enrolment in of learners for science subjects at A' level in Uganda.

**Researchers:** The study findings shall be useful literature to UNEB and Ministry of Education and Sports about the performance gaps in science subjects at ordinary level to enhance transition of learners to advanced secondary level science education.

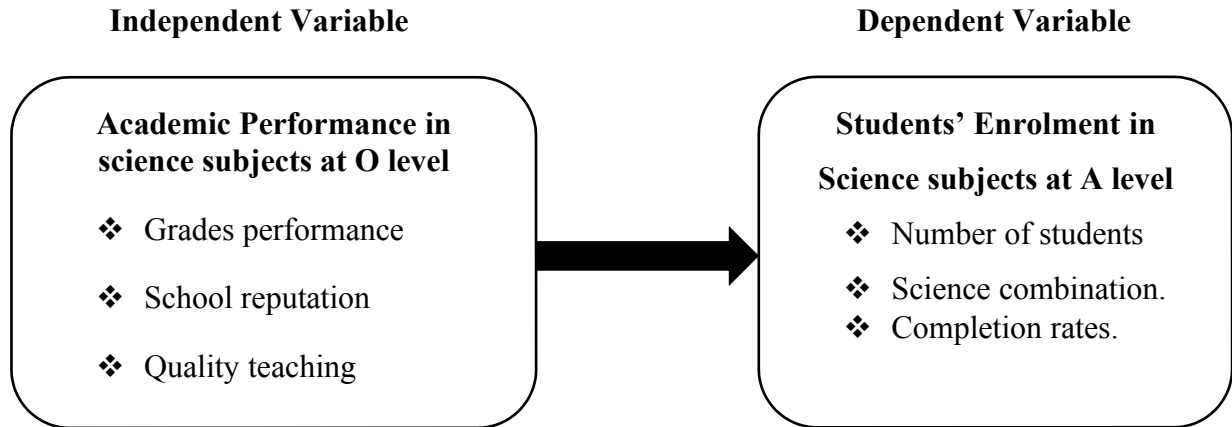
**Policy Makers:** It shall also guide policy makers and education practitioners in policy formulating and management decisions on education respectively. This is because the study is in line with Uganda's Development Vision 2040 and Millennium Development Goals (MDGs), all aiming at

enhancing human capital development by 2040 through quality education and increased enrolment in all levels of education. Having an up-to-date knowledge of students' choices of subjects and science enrolment patterns and trends, enables government to effectively and efficiently plan for workforce requirements in a technologically oriented country. They shall base on the conclusions and recommendations of this study to find out the recommended strategies that can be adopted towards achieving improved students' enrolment in science subjects at A' level.

**Library Users:** This study findings shall be considered as a source of reference for other academic library users from Uganda Christian University and beyond. It shall act as a vital source of reference by future researcher in the long run.

### **1.8 Conceptual Framework**

This research was guided by a conceptual framework which illustrates the relationship between the independent variable, academic performance and dependent variable, student enrolment in A' level science subjects. The frame work delineates how specific, measurable aspect of academic performance influence enrolment. These include prior grad performance in O' level science subjects (biology, chemistry, physics and mathematics) and school performance outcomes at advanced level. Additionally, the frame work considers and the students' perception of the learning environment encompassing academic achievements and awards, school reputation and ranking and the quality of teaching and resources. This relationship is depicted in Figure 1.1.



**Figure 1.1: An operational framework for academic performance and students' enrolment**

### 1.8.1 Interpretation of the Conceptual Frame Work

Figure 1.1 presents a conceptual model that outlines the interrelationship between variables influence student enrolment in science subjects at advanced level in government secondary schools, specifically in Gulu municipality. The operational framework for this study examines the relationship between academic performance and students' enrolment in science subjects at the advanced level. In this framework, the independent variable is academic performance, which is measured through two dimensions:

Science performance at the ordinary level including grades in core science subjects such as Biology, Chemistry, Physics, and Mathematics. School performance outcomes at the advanced level including school reputation and ranking, quality of teaching and learning resources, academic achievements, and awards. The dependent variable is students' enrolment in sciences at the advanced level, which is operationalized through: The number of students enrolling in science subjects. The combinations of science subjects chosen by students, Student retention, progression, and completion rates in science subjects.

The framework suggests that strong academic performance, particularly in science subjects at ordinary level and positive school performance outcomes at advanced level, positively influences students' choice and enrolment in science subjects at higher levels. Schools with better teaching quality, resources, and academic achievements are more likely to motivate students to continue with science, leading to higher enrolment, retention, and progression. This interaction highlights the relevance of academic performance as a key predictor of students' decisions and success in advanced science studies, providing insights into factors that encourage or hinder enrolment in science courses.

## CHAPTER TWO: LITERATURE REVIEW

### 2.0 Introduction

This chapter synthesizes empirical research on academic performance and student enrolment in advanced level science subjects in government secondary schools. It examines perspectives from various scholars, researchers and authors, organized according to the study's objectives; the influence of Uganda certificate of Education (UCE) performance in Ordinary level science subjects on Advanced level science enrolment as a prequalifying entry or push factor and the impact of Advanced level science performance on student enrolment in science subjects, as a student academic outcome or pull factor.

### 2.1 Influence of UCE Performance in O' Level Sciences Subjects on A' Level Science Enrolment (Pre-qualifying Entry- Push Factor)

Bergeron & Gordon (2017:13), asserted that strong academic performance in O' level science subjects significantly correlates with higher enrolment in A' level science. Students who excel in sciences at O' level are more likely to pursue science combinations at A' level due to their academic success and confidence in these subjects. However, Lugemwa (2020) further notes that, inadequate infrastructure, such as limited laboratory facilities restrict teachers' ability to conduct practical lessons, potentially discouraging students from pursuing A' level sciences despite recognizing their importance. Unlike the current study, which employs a mixed methods approach, Lugemwa's research relied solely on quantitative methods, using questionnaires and statistical analyses such as percentages and mean scores.

The Uganda National Council for Science and Technology report (UNCST, 2020) reports that, only approximately 20% of students enroll in A' level science subjects, primarily due to high

failure rates in O' level sciences. This issue is particularly pronounced in rural school, where performance in A' level science lags behind urban school due to shortage of qualified science teachers, inadequate equipment, and limited access to libraries and laboratories.

According to Lagemwa (2020), he emphasize a global concern regarding low enrolment in science subjects at both secondary and tertiary levels regardless of gender. They advocate for societal encouragement, particularly from parents, to boost students interests in sciences, which could increase A' level science enrolment. This perspective raises questions about whether similar trends exist in Gulu Municipality, a Gap this study seeks to address.

Research on gender differences in science enrolments suggests that prior academic performance in sciences subjects strongly predicts intentions to enroll in A' level sciences. For instance, Vansoom (2020) cites Gardner and Tamir (1989) who found that achievement in year 10 Biology significantly influenced Israeli students' decision to pursue biology in year 11. Although direct measures of past performances were unavailable in some studies, students' perception of their academic success often drive their enrolment decisions. However, these studies were conducted outside Uganda, were not exclusive focused on secondary schools and are somewhat outdated, highlighting the needed for a localized study in Gulu.

Modern education databases provide valuable insights into enrolment trends, suggest that, data from schools and the Uganda National Examination Board (UNEB) can reveal patterns linking O' level performance to A' level science enrolment. Studies by & Osuu (2020) indicate that, many O' level science students remain undecided about pursuing sciences at A' level. This amplifies the crucial role of decisiveness and self-realization in individual student choices. To encourage science at A' level enrolment, the science curriculum should highlight diverse career opportunities and

further study options. Habaasa (2023) defines “academic performance as an outcome of teaching and learning, often measured by examination grades, which significantly influence A’ level enrolment in science combinations. High performing schools with strong academic records tend to attract more students to science programs.

Amirah (2015:90) conducted a meta-analysis of studies from 2005 to 2015, using neural network classification to predict students’ science performance. The analysis revealed that external assessments, such as final examinations marks are critical predictors of A’ level science enrolment. Asimwe (2023) further identifies multiple factors affecting A’ level science participation, including teaching methods, teacher-student interactions, career guidance, societal factors and curriculum design. These factors collectively contribute to low science enrolment post O’ level, underscoring the need for this study to explore these dynamics in the Ugandan Context.

Lange (2016:9) as cited by Nabasumba, (2021) notes that, students generally express positive attitudes advanced level sciences enrolment, particularly in response to government initiatives. In Uganda, the government has prioritized science education to align with technological and industrial demands, investing heavily in science infrastructure and policies. The push and pull factors such as external forces and individual preferences, significantly shaping students’ educational choices. These factors vary across context, promoting this study to investigate their relevance in Gulu Municipality.

Nabasumba, (2021) observed that, students’ preference for practical subjects like physics, chemistry, and agriculture at ordinary level helps to foster a positive attitude towards these subjects, encouraging A’ level science enrolment. Kearney (2016: 12) adds that students who excel in practical subjects at ordinary level, are more likely to perform well in A’ level, motivating them

to pursue science combinations with confidence. This study aims to address the gap in understanding how these factors apply specifically to government secondary schools in Gulu Municipality.

## **2.2 How Performance in Science Subjects at A' Level Secondary Influence Enrolment of Students for A' Level Science Subjects (Student Academic Outcome- pull factor)**

Physical facilities such as classrooms, libraries, science laboratories significantly influence A' level science. Conversely, the absence of such facilities can deter students due to concerns about poor performance and overcrowding. As postulated by Namanda, (2021) who supports this notion in the view that in adequate science facilities in Sub Saharan African schools contribute to declining enrolment. While these studies used descriptive and analytical approaches to examine school stake holders' practices, the current study adopts a mixed design to explore these dynamics in Gulu municipality.

Researchers such as Osuu (2020), and Zins, Weissberg, Wang & Walberg (2020) emphasize that, the importance of quality science education at A' level, facilitates access to tertiary education and lifelong opportunities. A school's academic performance, measured by students A' level science results, shapes perceptions of the learning environment and influences enrolment decisions. Schools with conducive science learning environment and strong academic records tend to attract more students to A' level sciences. However, these studies were conducted outside Uganda and were not exclusively education focused. This justifies the need for a more localized and education specific study.

Jayantee (202) suggests that, a supportive learning environment enhances science education and boosts enrolment. Facilities such as science laboratory, classrooms, and qualified teachers

reassures students of their potential for academic success consequently encouraging A' level science enrolment. Habaasa (2020) identifies school factors, such as location, libraries, laboratories and technology, as key determinants of academic achievement and enrolment. A positive school environment significantly enhances students' science performance, thereby increasing enrolment.

Nabadda (2022) emphasizes that a conducive education environment fosters academic progress and influences enrolment. Wurtzburg & Centifanti (2021) conducted a cross section study among 420 physiotherapy students in Australia. The finding showed that students across all years perceived their learning environment positively. They recommended problem-based learning, mentorship and teaching workshops to enhance educational experiences performance. This points out clearly that schools with well-equipped science facilities tend to have higher A 'level science enrolment.

Bergeron & Gordon (2017:18) also attributed rising A' level science enrolment to career prospects and the structure of the curriculum. Yoon & Stobel (2020) added that career guidance and the high demand for professional careers further drive enrolment in pursuit for for their dream careers. Lyons & Quinn (2021) highlighted that practical teaching, has encouraged enrolment in science subjects at advanced level. In this regard, the practical oriented science curricula enhances students understanding and performance, encouraging enrolment. This study seeks to explore these pull factors in the context of Gulu Municipality, addressing the gaps in the secondary curriculum with a specific reasearch.

### **2.3 Student enrolment and academic performance in Science subjects**

Student enrolment and academic performance are closely linked through factors such as class size, teacher workload, and learning resources. According to Adebayo and Omotayo (2021), increased student enrolment without proportional improvement in school infrastructure and teaching staff negatively affects students' learning outcomes due to overcrowding and limited instructional time. Similarly, Musau and Wanyonyi (2022) found that schools with balanced enrolment ratios demonstrated better academic achievement because teachers could provide more individualized support and feedback to learners. These findings suggest that managing enrolment levels is critical for sustaining quality education in secondary schools. In addition, the level of enrolment determines how educational resources are allocated, influencing performance outcomes across schools. A study by Adomako (2020) revealed that schools with optimal enrolment rates experience better performance due to equitable resource distribution, while those with under- or over-enrolment struggle with inadequate materials or underutilized facilities.

The relationship between enrolment and academic performance also manifests through peer interaction and competition among learners. According to Moyo and Nyoni (2023), schools with moderate enrolment encourage healthy academic competition that enhances motivation and performance, whereas excessively high enrolment diminishes engagement and teacher attention. In contrast, very low enrolment may lead to social isolation and reduced academic drive, affecting learning outcomes negatively. Thus, enrolment levels can either stimulate or hinder academic achievement depending on how well they are managed within the school environment.

Moreover, sustained enrolment growth must be supported by adequate investment in teaching quality and infrastructure. Nsubuga and Kaggwa (2022) observed that in many African secondary schools,

rapid increases in enrolment following universal education policies have outpaced improvements in teacher recruitment and classroom facilities, leading to declines in average academic performance. The findings underscore the importance of harmonizing enrolment expansion with strategic planning to maintain educational standards.

## **2.4 Research gap**

Based on the reviewed literature, the main research gap in this study stems from the lack of localized and comprehensive empirical evidence examining the interrelationship between students' prior academic performance in O' Level science subjects and their subsequent enrolment and achievement in A' Level science combinations within government secondary schools in Gulu Municipality. While numerous studies Lugemwa, (2020) have explored the influence of academic performance, school environment, and infrastructural factors on science enrolment, most of them were either conducted outside Uganda or focused on different educational levels and contexts.

Moreover, these studies often employed singular methodological approaches, overlooking the combined impact of institutional factors (school reputation, resources, and subject combinations) and student-level factors (retention, progression, and completion) on both performance and enrolment. Therefore, this study bridges the gap by employing a mixed-methods approach to provide context-specific insights into how these factors jointly influence academic performance and enrolment in Advanced Level science subjects in government secondary schools in Gulu Municipality.

This study will provide new insights into academic performance in the context of science education by offering a localized, evidence-based understanding of the factors that jointly influence both students' achievement and enrolment in Advanced Level science subjects within

government secondary schools in Gulu Municipality. Unlike previous studies that examined either academic performance or enrolment in isolation, this study integrates both dimensions to reveal how pre-qualifying (push) factors such as performance in O' Level science subjects—and academic outcome (pull) factors such as A' Level results, school reputation, quality of teaching resources, and student retention interact to shape students' participation in science education. By employing a mixed-methods design, the study will generate both statistical correlations and qualitative insights, highlighting not only what relationships exist but also why they occur within the Ugandan educational context. The findings will therefore contribute to policy formulation and school improvement strategies aimed at enhancing science teaching, improving learning outcomes, and increasing enrolment in science streams, thereby strengthening the foundation for national scientific and technological advancement.

## CHAPTER THREE: METHODOLOGY

### 3.0 Introduction

This chapter outlines the methodology used to investigate the relationship between academic performance and students' enrolment in advanced level science subjects in government secondary schools in Gulu Municipality. It details the research design, study area, Data sources, population and sampling techniques, variables and indicators, the measurement levels, data collection procedures, instruments, quality control measures, data analysis strategies, ethical considerations, and the methodological constraints.

### 3.1 Research Design

The research employed a descriptive research design. The focus of this research was to ascertain the effects of academic performance on student's enrolment in Advanced level science subjects in government secondary schools in Gulu Municipality; therefore, descriptive research design was appropriate as it enabled the researcher to generalize the findings to a large population. Creswell (2014: 87) noted that, "a research design is an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the research purpose". This study adopted correlation mixed-methods research design. A mixed-methods approach was used as the primary research design in this study. Both qualitative and quantitative methods were used because they supplemented each other. The qualitative approach was mainly used to describe subjective assessments, analyses and interpretation of respondents' attitudes, opinions, and behaviors of the respondents as expressed verbatim from interviews and focus group discussions. The quantitative methods also helped in generating numerical data, which was statistically manipulated to meet required objectives through descriptive statistics (frequencies and percentages) and inferential

statistics, which used correlations and coefficients of determination. The researcher collected and analysed data, integrate the findings, and drew inferences by using qualitative and quantitative approaches.

### **3.2 Area of Study**

This research was conducted in selected government secondary schools in Gulu Municipality within Acholi sub region. Schools were selected based on their type: co-educational (Mixed), boys only, or girls only. The study explored school related factors influencing performance and challenges associated with low performance in science subjects (Biology, Chemistry and Physics) and their impact on student enrolment, in advanced level science subjects.

### **3.3 Data Sources**

The study utilized both primary and secondary data sources of data. In this study, Primary data were collected through questionnaire and interview guides administered to the target population. The questionnaires included open ended and Likert scale closed ended questions aligned with the study objectives. Secondary data were sourced from district education reports, journals, textbooks, research dissertations and reports, and credible online sources.

### **3.4 Study Population and Sampling Techniques**

#### **3.4.1 Population**

The target population for this research included head teachers, science teachers, career guidance teachers and all the students enrolled for advanced secondary level science education of government secondary schools in Gulu Municipality. The estimated population comprised ten (10) head teachers, ten (10) career guidance teachers, forty (40) science teachers, and 420 (four hundred

and twenty) students enrolled for advanced secondary level science education of government secondary schools; totaling 480 target population.

### **3.4.2 Sample Size Determination**

The sample size was determined using Krejcie and Morgan's (1970) table for finite populations. From a total target population of 480, a sample of 214 respondents was selected. The sample included 10 head teachers, 10 career guidance teachers, 40 science teachers, and 154 students enrolled in Advanced Level science education from government secondary schools in Gulu Municipality. To ensure that the sample was representative of the different segments within the study population, a combination of purposive and simple random sampling techniques was applied.

Specifically, purposive sampling was used to select head teachers, career guidance teachers, and science teachers because these groups possess key information and experience relevant to science subject enrolment and performance. On the other hand, simple random sampling was applied to select students so that each learner had an equal chance of being included, thus reducing selection bias and ensuring diversity across gender, schools, and science subject combinations. This combination of methods enhanced the representativeness and credibility of the findings by capturing varied perspectives from both administrative and learner categories.

**Table 3. 1: Target Population, Sample Size and Selection**

<b>Category of Respondents</b>	<b>Population</b>	<b>Sample Size</b>	<b>Sample Technique</b>
Head teachers	10	10	Purposive sampling
Career Guidance Teachers	10	10	Purposive sampling
Science Teachers	40	40	Purposive sampling
Students	420	154	Simple random
<b>Total</b>	<b>480</b>	<b>214</b>	

**Source: Self Constructed Basing table of Krejcie & Morgan (1970)**

### 3.4.3 Sampling Selection

The study employed Purposive and Simple Random sampling techniques which were listed and explained in detail below.

**Purposive Sampling:** First, the researcher used the purposive technique to identify the head teachers, science teachers and career guidance teachers. Purposive sampling is a non-random sampling technique where respondents are selected because of specific characteristics. This method is commonly used in qualitative research, and the selected respondents were interviewed to provide qualitative data.

**Simple Random Sampling:** Students enrolled for advanced level science subjects were selected using simple random sampling to ensure unbiased representation. Every member in the study category had an equal chance of participating in the study. One set of small pieces of paper of the same size were prepared for all the teachers for each school. That is; 154 small pieces of the papers for the teachers carried the writing 'Yes' and the rest carried the writing 'No'. All were placed in a container and each teacher was asked to take only one piece of paper from the container. If the

writing on the paper read ‘Yes’, the teachers participated in answering the questionnaires. Cohen (2011) stated that, “a simple random sample is a subset of individuals (a sample) chosen from a larger population. Each individual was chosen randomly and entirely by chance, ensuring that every person had an equal probability of being chosen at any stage of the sampling process. Additionally, every subset of individuals had the same probability of being chosen for the sample as any other subset of individuals”.

**School selection:** Ten (10) government aided secondary schools in Gulu Municipality were conveniently selected.

### **3.5 Variables and Indicators**

Independent Variable was academic Performance, encompassing prior grade performance O’ level science subjects (biology, chemistry, physics and mathematics) and school performance outcomes at A’ level, including students’ perceptions of the learning environment such as academic achievements, awards, school reputation and teacher quality. The dependent Variable was Student enrolment in advanced level sciences subjects, measured by number of students enrolled, selected science combinations, and retention, progression, and completion rates.

### **3.6 Measurement Levels**

According to Kothari (2013: 13), “there are different types of measurement levels and this included ordinal, ratio, nominal, and interval”. Interval scales measures refer to equal intervals or degrees of variation, with an arbitrary zero point which does not represent anything or something. Ratio scales measures have an equal interval and an absolute zero point. Whereas, the nominal scale is typically used for classification and identification categories such as gender and education level, the interval scale is applied to measure the length of time a person has been in school. In

this regard, a Likert scale is used in the questionnaire, allowing participants to express their level of agreement or disagreement with specific statements. This scale typically ranges from 1 to 5, where participants indicate their strength or feeling on a particular issue under investigation. In this case, the five-point scale is defined as follows: where 5 represent strongly agree, 4 represent agree; 3 represent not sure; 2 represent disagree and 1 represent strongly disagree.

### **3.7 Procedure for Data Collection**

After successful completion of the research proposal, the researcher first got clearance from the Research Ethics Committee as well as School of Education, Department of Education of Uganda Christian University which was used to seek permission to conduct the study from the study area (Gulu Municipality). Such an authorization letter of permission was obtained in order for the researcher to carry out this research. Anonymity and confidentiality of the respondents were observed by not asking the respondents to put their names on the questionnaires. The questionnaires were then distributed to the respondents for one week and collected in the following week. The filled questionnaires were then entered in SPSS in preparation for analysis.

### **3.8 Data Collection methods and Instruments**

The study used both survey and interview methods to collect qualitative and quantitative data. Self-administered Questionnaires and interview guides were the various tools used in this study

#### **3.8.1 Self-Administered Questionnaire**

To collect primary data, a total of 154 questionnaires were distributed to the students participating in the study. The research employed self-administered questionnaires, which were structured to allow respondents to complete them independently. The questionnaires were carefully designed in sections,

including background information and items aligned with the specific research objectives. A ten-point Likert scale was used for most items to obtain quantifiable responses, with the following options: 5 – Strongly Agree, 4 – Agree, 3 – Not Sure, 2 – Disagree, 1 – Strongly Disagree. This approach enabled the researcher to measure students' attitudes, perceptions, and experiences systematically. In addition, certain items were open-ended, providing respondents the opportunity to elaborate on complex issues that could not be adequately captured through closed-ended questions. The questionnaires were distributed and collected personally, ensuring clarity and completeness of responses. Closed-ended questions were used to obtain specific and comparable data, while open-ended questions facilitated in-depth insights and richer qualitative information. Overall, the questionnaire method was applied systematically to align with the study objectives and ensure both quantitative and qualitative data were captured effectively.

### **3.8.2 Interview guide**

Data were collected through face-to-face interviews, involving direct interaction between the researcher and selected participants, specifically head teachers, career guidance teachers, and science teachers. An interview schedule guided the process, which included both structured interviews, where participants provided brief and specific responses, and unstructured interviews, allowing for more elaborate and detailed answers. This method enabled the researcher to obtain oral responses while also observing non-verbal behaviors, enhancing the depth and reliability of the data. As Creswell (2014) notes, face-to-face interviews promote confidentiality and provide opportunities to capture both verbal and non-verbal cues. The interviews were conducted systematically to ensure alignment with the study objectives, facilitating the collection of rich qualitative information and in-depth insights from the participants.

### 3.9 Quality/Error Control

The validity and reliability of instruments were looked at: -

#### 3.9.1 Validity of Research Instruments

To enhance validity, a pilot study was carried out. The pilot study helped the researcher to identify items in the research instrument which was found to be ambiguous in eliciting required information. According to Stephanie (2016: 16), “reliability refers to the consistence of the research instruments”. For the questionnaire, the researcher carried out a Test-Retest method where a respondent who completed the questionnaire were asked to complete it again after two weeks and his/her choices compared for consistence. According to Amin (2005:13), “test-retest or stability test provides evidence that scores obtained on a test at one time (test) are the same or close to the same when the test was re-administered some other time (re-test)”. Additionally, the instruments were validated by focusing on the questions that the researcher asked experts. The value 73% was used to test the validity of the self-administered questionnaire and the interview guide to ascertain accepting, rejecting or modifying the questionnaire.

Additionally, the instruments were validated by focusing on the questions that the researcher asked experts. After which a Content Validity Index (CVI) was calculated using the following formula;

$$\text{CVI} = \frac{\text{Number of items rated relevant}}{\text{Total number of items}}$$

Ten questionnaires were pilot-tested in secondary schools that did not participate in the study. Each questionnaire had 30 items. Hence;

$$\text{Total items} = 30 \times 10 = 300$$

$$\text{Invalid items} = 45$$

$$\text{Relevant items} = 300 - 45 = 255$$

$$\text{CVI} = 255/300 = 0.85$$

The instrument was said to be valid since the CVI was 0.85 which was far above 0.7 the recommended value for validity. Results from the field helped to identify gaps and made modifications to the instrument where it was necessary. Similarly, the questionnaires items were constructed such that they were related to the questions in order to ensure that the research questions were well covered.

### 3.9.2 Reliability of Research Instruments

According to Stephanie (2016: 13), “reliability of the instruments is to be established using Cronbach’s Alpha ( $\alpha$ ) internal consistency method where Reliability on questionnaire pretest =.8927 and Reliability after data collection =.8510”. In this case therefore, before real collection of data, the instruments were tested on 2 respondents from only students to determine their reliability and these respondents were not among the interviewees. Reliability of the instrument on the other hand was ensured through the use of Cronbach’s Alpha co-efficient index generated by SPSS. The results are presented in Table 3.2.

**Table 3. 2: Reliability indices for the questionnaire**

Cronbach’s Alpha	Cronbach’s Alpha Based on Standardised Items	No. of Items
.805	.796	20

The Cronbach’s alpha is 0.805 as indicated in Table 3.2 above, 0.7 the recommended reliability value. This showed that the questionnaire was reliable.

### **3.10 Data Processing, Analysis and Interpretation**

Data analysis involved use of both quantitative and qualitative approaches as shown below:

#### **3.10.1 Quantitative Data Analysis**

Students filled and answered questionnaires to provide quantitative data. Quantitative data from questionnaires were coded and summarized using descriptive statistics, measures of variability, frequency distributions and percentages. They were thereafter analysed using Statistical Package for Social Sciences (SPSS) version 20. Analysis was also carried out using descriptive, correlation and simple regressions on the variables of the study, and in some cases, it was presented showing mean and standard deviation.

#### **3.10.2 Qualitative Data Analysis**

Head-teachers, career guidance teachers and science teachers were interviewed to provide qualitative data. Qualitative data analysis took place after data collection and was based on how the findings are related to the research questions. Tentative themes and codes were identified. After data collection, information of the same category was assembled together and a report written. Qualitative data was analysed in themes and categories identifying patterns and trends that emerged. The analysis included presentation of quotes from different respondents and recording verbatim from what some respondents say. Themes emerging from secondary data were identified.

### **3.11 Ethical Considerations and Approvals**

The researcher took into consideration a number of ethical issues including: first, ethical clearance was sought. This was got from UCU Research Ethics Committee as well as Faculty of Education and Arts especially under the Department of Education of Uganda Christian University. This fully

allowed the researcher to conduct research. Additionally, another permission to carry out the study in Gulu Municipality was also sought from the Head teachers of the selected schools.

Confidentiality of respondents was kept. They were not required to reveal their names nor their contacts on the questionnaires. Identification numbers were used instead of names to avoid information given being traced to a respondent. All data gathered was used only for the purpose of this study and nothing else. The research procedures were explained to all the respondents before they took part in the research and their informed consent was obtained. All the sources of literature were acknowledged throughout the whole study through proper citations and referencing. Personal bias was avoided during the entire study that is to say during interviews, data analysis and reporting.

### **3.12 Methodological Constraints**

The researcher found difficulties in determining the time appropriate to approach science teachers as they were usually preparing for lessons and/or in their lessons after which they were found to be tired and fatigued. This was overcome by approaching heads of respective schools and agreeing with them on the best time possible for which the teachers could be able to give time to the researcher so that he only conducts the study in those times which were appropriate for the interviewee.

Time constraint. The time was adequate to manipulate all relevant material and information for study. The time that was given to the researcher was limited for exploring the whole information because most of the time was wasted during the COVID-19 lock down.

Financial constraints. Also, there was lack of funding considering that the researcher was self-sponsored and had limited means of financing, yet research of this proposed magnitude was a costly venture. This situation delayed the process of research.

Non-response. The researcher experienced a problem of non-response from respondents who were given the questionnaires to fill. Some respondents were suspicious of the intentions of the study. Some respondents did not understand the terminologies that are used in the questionnaire. The researcher had to guide some of the respondent and this was time consuming.

The questionnaire had too many boxes and columns to tick. This was a bit tedious and monotonous for the respondents.

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND INTERPRETATION

#### 4.0 Introduction

In this chapter, the study presents, analyses and interprets the results according to the objectives of the study; which included; establishing the ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor), and determining how performance in science subjects at A' level secondary influence enrolment of students for advanced level science subjects (Student academic Outcome- pull factor).

#### 4.1 Response Rate

All the questionnaires (160) that were distributed, and only 154 of them were filled, collected and used. The questionnaire survey response rate was 96.3%. Sixty (60) participants were interviewed, and the response rate for interviews was 100%. The overall response rate was 98.2%. Therefore, the response rate presents adequate, accurate, valid and reliable data on the study variables in secondary schools thus the study may give generalized results. The high response rate is attributed to the well-designed questionnaire, the study topic and the enthusiasm of the researcher which aroused the interest and positive attitude of the respondents.

The chapter is arranged from presentation of the demographic characteristics of the respondents, followed by the objectives of the study as detailed below.

## 4.2 Bio Data

This section presents the background of the respondents and establishes whether the individuals in a particular study are a representative sample of the target population for generalization purposes in which category of management. The bio data presents the following concepts.

**Table 4. 1: Respondents' demographic characteristics**

<b>Demographic data</b>	<b>Category (code)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Gender	Male	124	57.9
	Female	90	42.1
	<b>Total</b>	<b>214</b>	<b>100</b>
Highest Education Level	A' Level (attaining)	154	71.9
	Diploma	10	4.8
	Bachelor degree	36	16.8
	Master's Degree and above	14	6.5
	<b>Total</b>	<b>214</b>	<b>100</b>
Duration one has been in school	1-2 years	145	67.7
	3- 4 years	34	15.8
	5 years and above	35	16.5
	<b>Total</b>	<b>214</b>	<b>100</b>

*Source: Primary data (2022)*

Table 4.1 shows that inquiry into the gender of the respondents revealed that 57.9% of the respondents were males while 42.1% were females. This showed that there was gender imbalance in the study which was related to the willingness of targeted participants in secondary schools to

participate in the study, in addition to the majority of students enrolled for sciences at advanced level being males. However, the researcher was able to obtain information which was unbiased.

Additionally, regarding their highest level of formal education, the findings indicate that 71.9% of the respondents had secondary education (A' Level), 4.8% held diplomas, 16.8% had Bachelor's degree, and 6.5% possessed a Master's degree or higher. This level of education suggests that respondents were knowledgeable, making their responses credible.

The study examined the duration of time respondents had spent in school. It was found out that 67.7% of the respondents had stayed in those schools for a period of 1-2years, with most of these students who enrolled for sciences at A' level. In contrast, only a small percentage (15.8%) reported being in school for 3-4 years. These findings indicate that responses were collected from individuals with varying lengths of time in school, which helps minimize potential bias in the study results.

#### **4.3 Influence of UCE Grade Performance in O' Level Sciences on Enrolment of Students in Advanced Level Science in Government Secondary Schools (Pre-Qualifying Entry- Push Factor)**

The question was posed to establish the ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor). The methods were rated with the extent of agreement or disagreements i.e. strongly agree to strongly disagree. Findings from students are indicated in Table 4.2 below: -

Statement	Extent of (dis)agreement					Mean	Std. Dev
	SA	A	NS	D	SDA		
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)		
In our school, career guidance has an influence on the enrolment of students in 'A' level science	104 (67.5)	50 (32.5)	- (0)	- (0)	- (0)	4.8642	.34471
In our school, student's perception and attitude towards science subjects have an influence on their enrolment	98 (63.6)	45 (29.2)	11 (7.2)	- (0)	- (0)	4.6296	.48591
In our school, high academic grade scored at O' level in science subjects leads to high enrolment of students in 'A' level sciences	92 (59.7)	40 (25.9)	22 (14.4)	- (0)	- (0)	4.5802	.49659
In our school, parents encourage their children to enroll in A' level science subjects	84 (54.5)	34 (22.1)	26 (16.8)	10 (6.5)	- (0)	4.5309	.50216
In our school, we study science subjects with the guide of a modern and updated science curriculum	72 (48.3)	32 (22.1)	28 (12.4)	22 (9.6)	- (0)	4.4074	.58689
In our school, there is a high enrolment of students in A' level science	58 (31)	30 (27.6)	26 (15.2)	26 (13.8)	14 (12.4)	4.4321	.49845
In our school, the compulsory teaching of science subjects tends to influence the enrolment of students in A' level science	45 (31)	28 (27.6)	24 (15.2)	30 (13.8)	27 (12.4)	4.3333	.52440

**Table 4.2 The ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor) (n=154)**

*Source: Primary Data (Students in Gulu Municipality), 2022*

Table 4.2 represents the descriptive statistics on the ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor). The results show that 100% of the

respondents accepted to the statements that in secondary schools, career guidance has an influence on the enrolment of students in A' level science (Mean=4.8642 and standard deviation 0.34471). 92.8% of the respondents accepted that in secondary schools, students' perception and attitude towards science subjects have an influence on their enrolment (Mean=4.6296 and standard deviation 0.48591). In secondary schools, high academic grade scored at O' level in science subjects leads to high enrolment of students in A' level science subjects, which is backed up with the majority respondents (85.6%), represented by (Mean=4.5802 and standard deviation 0.49659), and lastly parents encourage their children to enroll for A' level science subjects in secondary schools as represented by 76.6% (Mean=4.5309 and standard deviation 0.50216) who accepted the statement.

The first objective was also set to establish the ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor). Interview schedules were used to solicit information from the ten (10) head teachers, ten (10) career guidance teachers, and forty (40) science teachers.

However, when they were asked: To what extent does UCE grade performance in O' level sciences subjects determine enrolment of students in advanced level science in Government secondary schools? (Pre-qualifying entry- push factor)

According to head teacher from school C had these to say;

*'Career guidance to students has been emphasized in schools aiming at encouraging students to concentrate on studying science subjects at ordinary level. In this regard, most students have given their precious time on studying sciences*

*thus leading to high academic performance scores at ordinary level, marking them to qualify for enrolment in A' level science'.*

This implies that career guidance helps students to have a right decision for their career. Career teachers play a crucial role in helping students identify transferable skills that can be applied to various roles. Students are often encouraged to focus, as it is perceived as a beneficial path for their future. Effective career guidance assists students achieve their aspirations by helping them set realistic goals. As mentioned by Lange (2021), career choice significantly impacts a student's future by enabling them secure their dream job and enhance their overall job satisfaction.

Another career guidance teacher from School A had these to say;

*'Career guidance field offers direction and support that enables students be career ready, plan effectively, making right subject decision (combination at A' level) and achieve career maturity'.*

This means that career counseling plays a vital role in guiding students towards making informed decisions regarding their professional futures. Career counseling helps with setting study goals and identifying individual skills and strengths. By engaging students in career counselling, they can better understand their interests and abilities, which helps in achieving study goals that align with their aspiration.

Another science teacher had these to say;

*'There is a limited or lack of guidance and counseling services in secondary schools to encourage students concentrate on science subjects. Students are not supported and encouraged due to lack of enough science teachers. Students need closer assistance in facilitating learning, when teachers are few, students' dreams fade. Few teachers available fail to take a close monitoring to all students due to high number of students.'*

The science teacher from school B had these to say;

*'The attitude and perception of students towards studying and learning of science subjects have greatly influenced their enrolment. Ordinary level students who prefer and perform well in science subjects tend to prefer studying it at Advanced level, with hope of passing well'.*

This indicates that there is a significant negative attitude among students towards science subjects in secondary school. Some students consider science subjects complicated and difficult, which leads to fear and poor performance. They often feel pressured by their teachers and parents to pursue science, as it is believed that a strong foundation in science subjects can lead to promising career opportunities in fields such as medicine, engineering and technology. However, the lack of intrinsic motivation among students towards science subjects contributes to the low enrolment numbers for science subjects at A' level.

Another head teacher from School B had these to say;

*'The learners' attitude towards science subjects influences their motivation and effort levels. Many enter classes with a preconceived notion that they are inherently incapable of excelling in science. This self-doubt leads them to invest minimal effort into their studies. Consequently, they receive lower marks on assessments and eventually confirm that they confirm that science is tough'.*

More so, one of the science teachers from school A had these to say;

*'Because many students are anxious about joining secondary schools, a fear is developed for science subjects. This fear undermines their confidence when learning these subjects. As a result, students reinforce their belief that they will never excel in science, leading to increased anxiety. Ultimately, this mindset often results in students dropping science subjects at ordinary level, contributing to low enrolment for science subject at advanced level'.*

This implies that some teachers convey to students that science is only for the exceptionally intelligent, and whenever they try, they are told to go and study “simple” subjects in the humanities. As students tend to place a high level of trust in their teachers, this message leads many to lose interest in science. Consequently, this belief contributes to the low enrolment of students in science at A’ level.

The study also noted that positive student perceptions directly influence specific learning outcomes like academic achievement, and motivation for learning, and this tend to be influenced by gender stereotype. Interviewed head teacher from school F had these to say:

*‘Gender stereotyping still remains the key reason why girls perform poorly in science subjects in African schools. Science subjects are perceived to be masculine and hard subjects for girls hence reducing their self-esteem towards pursuing science-related careers. Art subjects which include humanities subjects are viewed as feminine and easy compared to science subjects, which are viewed as masculine, hence most girls prefer Art-based careers to sciences’*

This suggests that teachers often discourage girls by implying that science is more suited for male students. As a result, there has been a lower participation of girls compared to boys. Additionally, girls tend to perceive science subjects as difficult and, on average achieve lower grades than boys. This negative attitude towards sciences ultimately influences students’ enrolment for sciences at advanced level.

The career guidance teacher from school G had these to say;

*‘The high academic grade scored at O’ level in science subjects leads to high enrolment of students in A’ level science subjects. Students who perform poorly in science subjects at ordinary level tend not to be admitted for science subjects at advanced level’.*

One science teacher in school B said;

*'Most students are lazy, they do not like to study, so when they are allowed to drop physics and chemistry because they know they are getting relief by reducing the huge load of many subjects.'*

This implies that even some science teachers feel discouraged because they view their subjects like agriculture as unimportant and there is less effort to recognize their value. In most schools, agriculture is regarded as subjects for form one and two students only. Form three and four are not given much considered because such subjects are optional rather than compulsory.

Additionally, one of the interviewed career guidance teachers also noted;

*'Parents encourage science subjects among their children leading enrolment at A' level for sciences. If parents and guardians play their role in helping students study science and motivating them, there will be much improvement not only in performance and enrolment, but also in preparation for the better career in the future'.*

This implies that parents and society play a central role in helping shape students' perceptions. Most of the students who are studying science are influenced or advised by their parents, brothers or successful peers.

Further, one of the interviewed science teachers had these to say;

*'There is an increase of students' enrolment for science subjects at advanced level as a result of existing modern and updated science curriculum. Computers have been distributed in most schools that help to have self-revision and carry out research. Science laboratories have been modernized to encourage proper science subject learning, that is, practical lessons.'*

This means that existence of modern and fully equipped science laboratories and equipment tend to encourage student's enrolment for science subjects at advanced level. Students enroll for science subjects well knowing that they shall pass, so long as they have enough equipment for experiments and practical lessons.

Furthermore, one of the interviewed science teachers also had these to say;

*'There is an increased students' enrolment in advanced level science and this has happened as a result of compulsory teaching of science subject. Students have been forced to study sciences at ordinary level. Science subjects at ordinary level being compulsory in Uganda, it has gradually increased the number of students willing to enroll for sciences at advanced level.'*

This means that the policy of making science subjects compulsory at ordinary level has led to a steady rise in student enrolment in sciences at advanced level. This initiative not only ensures more students are exposed to scientific disciplines early on but also serve to motivate those who excel in these subjects. As students achieve good grades in their ordinary science subjects, they are encouraged to continue their studies by enrolling in advanced level science subjects, thus fostering a deeper interest and commitment to the sciences.

Lastly, interviewed head teacher from school D had these to say;

*'Allowing students to take some science subjects such as agriculture, as optional subjects' shapes their perception, leading them to believe these subjects are difficult and less important. As the numbers of secondary schools increase, there is a significant shortage of science teachers who can effectively support students pass science subjects. If these science subjects remain optional at ordinary secondary school level, student enrolment for science subject at advanced level will be decline.'*

This implies that such policies and practices implemented by educational management authorities often serve a catalyst for fostering negative perception among students. Many students come to view a science subject as challenging subject, one that seems to be reserved for only a select group of individuals deemed intelligent. This perception not only discourages interest in the subject but also reinforces a belief that success in science is untrainable for the majority.

#### **4.4 How performance in science subjects at A' level secondary influence enrolment of students for A' level science subjects (Student academic Outcome- pull factor)\_**

The question was posed to determine how performance in science subjects at A' level secondary influence enrolment of students for advanced level science subjects (Student academic outcome- pull factor). The methods were rated with the extent of agreement or disagreements i.e. strongly agree to strongly disagree. Findings from students are indicated in Table 4.3 below: -

**Table 4. 3: How performance in science subjects at A' level secondary influence enrolment of students for A' level science subjects (Student academic Outcome- pull factor) (n=154)**

Statement	Extent of (dis)agreement					Mean	Std. Dev
	SA	A	NS	D	SDA		
	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)		
In our school, there is an improvement in students' academic performance score	98 (63.6)	49 (31.8)	7 (4.6)	- (0)	- (0)	4.2593	.64765
In our school, students' enrolment for science subjects at advanced level is as a result of presence of training facilities especially school science laboratory	88 (57.2)	45 (29.2)	21 (13.6)	- (0)	- (0)	4.1111	.72457
In our school, the rising enrolment of students for science subjects at advanced level is as a result of career prospects	84 (54.5)	42 (27.3)	20 (12.9)	8 (5.3)	- (0)	3.1235	1.15523
In our schools, the enrolment of students in science subjects at advanced level have tremendously increased in those schools with conducive studying environment	80 (51.9)	36 (23.4)	26 (16.8)	12 (7.9)	- (0)	4.7160	.52997
In our school, science teachers that make students get assured to perform well in sciences at the end of A' level.	76 (49.5)	32 (20.7)	24 (15.6)	22 (14.4)	- (0)	4.7407	.44096
In our school, high enrolment in sciences at A' level is influenced by school factors such as location, and existence of school library	60 (38.9)	38 (24.7)	22 (14.4)	20 (12.9)	14 (9.1)	4.5432	.50123
In our school, presence of good classroom environment, more conducive for science subjects, tend to have high enrolment of students at advanced level sciences	56 (36.4)	36 (23.4)	20 (12.9)	24 (15.6)	18 (11.7)	4.3580	.72987
In our school, the rising enrolment of students for	40	32	22	36	24	4.1852	.86763

science subjects at advanced level is as a result of curriculum or program offered at advanced level	(25.9)	(20.8)	(14.3)	(23.4)	(15.6)		
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*Source: Primary Data (Students in Gulu Municipality) 2022*

Table 4.3 represents the descriptive statistics on the how performance in science subjects at A' level secondary influence enrolment of students for advanced level science subjects (Student academic Outcome- pull factor). The results show that 95.4% of the respondents accepted to the statements that in secondary schools, there is an improvement in students' academic performance score (Mean=4.2593 and standard deviation 0.64765). 86.4% of the respondents accepted that in secondary schools, students' enrolment for science subjects at advanced level is as a result of presence of training facilities especially school science laboratory (Mean=4.1111 and standard deviation 0.72457). In secondary schools, the rising enrolment of students for science subjects at advanced level is a s a result of career prospects, which is backed up with the 81.8% of the respondents (Mean=3.1235 and standard deviation 1.15523), and lastly, in secondary schools, the enrolment of students in science subjects at advanced level have tremendously increased in those schools with conducive studying environment as represented by 75.3% (Mean=4.7160 and standard deviation 0.52997) who accepted the statement.

The second objective was also set to determine how performance in science subjects at A' level secondary influence enrolment of students for advanced level science subjects (Student academic Outcome- pull factor). Interview schedules were used to solicit information from the ten (10) head teachers, ten (10) career guidance teachers, and forty (40) science teachers.

However, when they were asked: To what extent does performance in science subjects at advanced level secondary determine enrolment of students for advanced level science subjects? (Student academic Outcome- pull factor)

According to head teacher from school A, he had these to say;

*‘Those schools that achieve high academic performance scores at advanced level, have seen an increase in student enrolment rates. Students are often motivated by the UACE results in science subjects and are more likely to choose to enroll in these subjects at advanced level, feeling confident about their chances of passing successfully’.*

This means that those secondary schools with high academic scores at UACE in science subjects have experienced rising enrolment of students for sciences at advanced level. This has been partly due to students’ hope and expectations to also pass highly.

Another interviewed science teacher had these to say;

*‘The presence of well-equipped training facilities and laboratories in secondary schools also encourages students to enroll for sciences at advanced level. Those schools with fully stocked science laboratory and relevant equipment tend to attract more students interested in pursuing science at advanced level’.*

This means that students’ enrolment in advanced level science subjects is influenced by the presence of training facilities particularly. school science laboratories. These facilities encourage practical work and experiments to be conducted during teaching and learning process. As a result, students can grasp the subject matter quickly, which ultimately enhances their academic performance.

Additionally, another interviewed career guidance teacher from school C had these to say;

*'The increasing enrolment of students for science subjects at advanced level is partly due to career prospects. Many learners in secondary school tend to prefer non-science subjects such as economics, literature, and history, believing they are easier than science. This perception can diminish their interest in science despite its importance for nation development. However, career guidance programs have changed this mindset.'*

This means that student's enrolment and performance in specific subjects are heavily influenced by their career aspirations and long-term goals. Their choices reflect interests in field like biology, chemistry, or physics and involve consideration of what is valuable for their future. Consequently, students tend to select subjects that align with their interest and career goals, helping them develop essential skills. By understanding the connection between their choices and aspirations, they make informed decisions that enhance their academic and future opportunities.

Another science teacher from school F had this to say.

*'A supportive school environment is essential for, effective teaching and learning of science subjects, and it encourages students to pursue advanced level sciences. Schools that have appropriate infrastructure and well-equipped laboratories tend to attract more students interested in science at advanced level.'*

This implies that the enrolment of students in science subjects at advanced level has significantly increased in schools with a conducive studying environment. The availability of adequate physical facilities attracts many students to these schools to pursue science subjects.

Further, another science teacher from school B noted that;

*'In some schools, science teachers assure students that they will perform better when they take sciences at the end of A' level. Additionally, it may also be implied that students are comfortable with teaching methods used by science teachers.'*

A head teacher from school A further noted that;

*'I had a science teacher who often made statements like, 'I naturally dislike girls in Physics'. Such comments from teachers can harm students and have far reaching effects that are often underestimated. Students have the right to be from exposure to such statement. I presume that our current Science teachers may still hold similar perceptions about girls'.*

This implies that blaming or praising students, along with offering rewards and punishments, can either improve or diminish their self-esteem, which eventually affects their enrolment in specific science subjects.

One of the interviewed career guidance teachers from school B had these to say;

*'The choice of a science subject may also be significantly influenced by the reinforcement students receive from their schools, particularly from their subject teachers. This reinforcement may manifest in various ways, such as positive feedback, personalized guidance, or engaging classroom activities. Overall, the School-based factors contribute to a student's engagement and motivation, ultimately influencing their academic path in the field of science.'*

This implies that social support from peers and attitude towards enrolling for a course are strong determinants of student choice to pursue science courses voluntarily, which suggests that the theory holds some degree of validity. Teachers who are enthusiastic, articulate, knowledgeable, caring, and supportive tend to foster greater interest in their subjects among students. In contrast, teachers who are inflexible, and unclear influence can make learning difficult, which is significant concern for students. Albasha, (2018).

One of the science teachers from school G had these to say;

*'There is rising enrolment of students for science subjects at advanced level, which is a result of the curriculum offered. The science curriculum emphasizes practical and experimental approaches, helping students to understand the subject content more effectively'.*

This means that the way science is taught in secondary schools significantly impacts students' decision to enroll in science subjects. Students often choose to take sciences at advanced level because of the curriculum emphasizes experimental and practical work, can help them to perform well at UACE exams.

Lastly, one of the science teachers also had these to say;

*'Presence of a good classroom environment and a well-equipped science laboratory encourage higher enrolment at advanced level sciences. Additionally, the school's location, and existence of school library highly influence enrolment in sciences at A' level'.*

This implies that schools, as a learning institution, play a significant role in influencing students' choice. Well-furnished and well-ventilated school buildings encourages more students, including those interested in science, to enroll in the school.

#### **4.5 Inferential Analysis**

This section highlights a series of inferential analyses that were carried out to examine and establish the relationships between the different variables. The study used correlation analysis and regression analysis to examine the strengths and direction of the relationships in the variables as presented below.

##### **4.5.1 Correlation Analysis**

The correlation analysis was undertaken to examine the strength and direction of the relationships between the independent and dependent variables as explained in Table 4.4 below.

**Table 4. 4: Correlation Analysis Correlations**

		Grades	School reputation	Quality teaching	Number of students.	science combination	Student retention
Grades	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	154					
School reputation	Pearson Correlation	.756**	1				
	Sig. (2-tailed)	.000					
	N	154	154				
Quality teaching	Pearson Correlation	.435**	.434**	1			
	Sig. (2-tailed)	.000	.000				
	N	154	154	154			
Number of students enrolled in.	Pearson Correlation	.613**	.744**	.375**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	154	154	154	154		
science combination	Pearson Correlation	.679**	.719**	.458**	.748**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	154	154	154	154	154	
Student retention,	Pearson Correlation	.674**	.717**	.450**	.757**	.810**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	154	154	154	154	154	154

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### Interpretation

Table 1 presents the correlation coefficients between academic performance (measured by grades) and several factors influencing students' enrolment in Advanced Level science subjects, namely: school

reputation and ranking, quality of teaching and resources, number of students enrolled in science subjects, combinations of science subjects, and student retention, progression, and completion.

The results indicate that grades are strongly and positively correlated with school reputation and ranking ( $r = .756, p < .01$ ). This implies that schools with better reputations and higher rankings tend to produce students with higher academic performance. A positive school image likely attracts motivated learners and skilled teachers, fostering an environment conducive to academic excellence.

A moderate positive correlation was observed between grades and the quality of teaching and resources ( $r = .435, p < .01$ ). This shows that effective teaching methods, adequate laboratory equipment, and learning materials significantly enhance learners' understanding and performance in science subjects. Similarly, the number of students enrolled in science subjects ( $r = .613, p < .01$ ) is positively correlated with grades, suggesting that higher enrolment may be a reflection of improved interest and confidence in science education, possibly influenced by good performance trends and supportive learning environments.

Furthermore, grades are highly correlated with the combinations of science subjects offered ( $r = .679, p < .01$ ), meaning that the availability of diverse and complementary subject combinations (e.g., PCB, PCM, or PEM) gives students greater flexibility to align their interests and strengths, resulting in better performance outcomes. Lastly, student retention, progression, and completion show a strong positive relationship with grades ( $r = .674, p < .01$ ). This indicates that consistent attendance, smooth progression through academic levels, and successful completion of courses contribute significantly to students' academic success.

The inter-correlations among the independent variables especially between student retention and combinations of science subjects ( $r = .810, p < .01$ ) demonstrate that these factors are mutually

reinforcing. Schools that offer diverse science combinations and maintain high retention rates tend to have better overall student engagement and achievement.

In summary, all variables show significant positive correlations ( $p < .01$ ), implying that improvements in school reputation, teaching quality, subject combinations, and student retention are likely to enhance both academic performance and enrolment in Advanced Level science subjects in government secondary schools within Gulu Municipality.

**Table 4. 5: Regression Analysis**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.589 <sup>a</sup>	.350	.341	.56880

a. Predictors: (Constant), Students' enrolment in advanced level science subjects

Regression analysis was conducted to determine the extent to which academic performance has an influence on students' enrolment in advanced level science subjects. The results in Table 4.5 above indicate that academic performance moderately affects the students' enrolment in advanced level science subjects ( $r=0.589$ ). This implies that academic performance is a determinant factor of students' enrolment in advanced level science subjects. Since  $r$  square = 0.350, this shows that academic performance contributed to 35% variance in students' enrolment in advanced level science subjects.

## **CHAPTER FIVE: DISCUSSION OF RESULTS**

### **5.0 Introduction**

This chapter discusses the study findings on the effects of academic performance on student enrolment in Advanced level science subjects in government secondary schools in Gulu Municipality. The discussion of findings is based on the study objectives in chapter one and the results obtained in chapter four of this report.

### **5.1 Discussion of Findings**

The results are discussed based on the thematic results in chapter four addressing the two main objectives of the study:

#### **5.1.1 Influence of UCE Grade Performance in O' Level Sciences on Enrolment in Advanced Level Science (Pre-Qualifying Entry- Push Factor)**

The study explores how in the Uganda Certificate of Education (UCE) examinations in O' level sciences subjects influences student enrolment in advanced level science in government secondary schools (Pre-qualifying entry- push factor).

The study noted that career guidance to students is emphasized in schools to encourage students to concentrate on studying science subjects at ordinary level. This aligns with Albasha (2018) who argued that career guidance helps students make informed subject choices at advanced level. Career teachers assist students in identifying transferable skills that can be applied to various roles. Additionally, Asiimwe (2021) noted that students are often encouraged to concentrate on science subjects because this path is seen as beneficial for their future careers. Career guidance plays a crucial role in helping students achieve their aspirations by setting realistic goals. Furthermore, Lange (2016:

9) suggested that career aspirations serve as a significant motivating factor that draws student to pursue specific course in their future education and can influence their performance in science subjects. As a result, many students dedicate their time and efforts studying sciences, leading to high academic performance scores at ordinary level, which qualifies them for admission to advanced level science.

The study highlighted that career guidance field plays a crucial role in providing direction and resources to students enabling them to achieve career readiness, plan effectively, make informed subject choices (combination) for their A' level, and attain career maturity. This aligns with Ejju (2020), who stated that career counseling empowers students to choose suitable combinations for advanced level. It assists in setting study goals, identifying skills and abilities someone, and exploring various opportunities available in pursuing science subjects at advanced level. Additionally, Habaaasa (2018) pointed out that students often lack encouragement due to shortage of science teachers, which limits their enrolment in advanced science subjects. The few available teachers struggle to monitor all learners effectively due to high students-to-teacher ratio. Consequently, in secondary schools where guidance is limited or absent, students are less likely to focus on science subjects, further restricting their enrolment in these areas at advanced level.

The study further noted that students' attitudes and perceptions towards studying and learning of science subjects have significantly influenced their enrolment. This aligns with Jayantee (2021) who asserted that ordinary level students who prefer and excel in science subjects at UCE level are more inclined to continue studying them at Advanced level, with the hope of achieving good results. Additionally, Kearney (2016) observed that some students are compelled to study science at advanced level by their teachers and parents due to their promising performance. However, these students often lack intrinsic motivation for the subjects. This situation contributes to the low enrolment numbers in

science subjects at advanced level. The negative perception and attitude towards science subjects in secondary school still exists. Many students view science as a complicated and challenging field, which increases their fear of failing at Advanced level.

The study revealed that students' attitudes leads them to invest less efforts in science subjects. Many of these students believe that they will never perform well at advanced level, which contributes to their perception that science is difficult. This aligns with Kearney (2016: 87), who noted that teachers often convey to their students that science is only for those with a higher intelligence quotient (IQ). Similarly, Komakech (2020) mentioned that students lack interested in science because they think it challenging and demands a high-level understanding. The subject also involves significant calculations and complex terminology, causing many students to drop science subject at O' level, subsequently leading to low enrolment at A' level. This situation suggests that students place considerable trust in their teachers; when they are told that science is suited only for the "talented," they are likely to lose interest in pursuing the subject at advanced level, resulting in decreased enrolment in science programs.

The study also revealed that many students feel anxious before entering secondary school, which leads to fear of science subjects and loss of confidence in their ability to learn them when they learn those subjects. This aligns with Kearney (2016), who argued that many of these fears are constructed by societal perception. Students often believe that science is very difficult, which results in underperformance that confirms their belief. Additionally, Komakech & Osuu (2020) stated that this negative attitude causes students to exert less effort in science, as they feel they will never perform well. When they receive low marks, it reinforces their perception that science is challenging. Consequently, influenced by the fears and pressures from teachers and their environment, students come to believe that they will not succeed in science, this fear eventually drives them to drop these

subjects at the ordinary level, leading to a decline in student enrolment in science subjects at advanced level’.

The study also noted that positive student perceptions directly influence specific learning outcomes, such as academic achievement and motivation for learning. However, these perceptions are often affected by gender stereotypes. This aligns with Lange (2016: 12), who observed that some teachers discourage girls by suggesting that science is meant for male students. As a result, this has led to low participation rates of girls in sciences compared to boys. Moreover, Lugemwa (2020) stated that girls often perceive science subjects as difficult and, on average achieve lower grades than to boys. This negative attitude towards sciences affects students’ enrolment for sciences at advanced level. In many African settings, boys are generally favored and tend to own most family properties, receiving preferential education compared to girls, who are often assigned domestic chores. These stereotypes are reinforced in schools, where many teachers perceive girls as incapable of excelling in technical and science subjects. This perception fosters negative attitudes towards science among girls, resulting in poor performance. Consequently, science subjects are seen as masculine and difficult, which diminishes girls’ self-esteem regarding the pursuit of science -related careers. In contrast, art subjects, including humanities, are viewed as feminine and easier, leading many girls to prefer art-based careers over scientific ones. In summary, gender stereotyping remains a significant factor contributing to the poor performance of girls in science subjects in African schools.

The study further noted that the high academic grade scored at O’ level in science subjects leads to high enrolment of students in A’ level science subjects. Students who perform poorly in science subjects at ordinary level are often not admitted to advanced science subjects, as confirmed by Kumar & Vivekadhish (2020). Failing in examination does not necessarily indicate a lack of ability; some students may perform poorly yet remain self-motivated to study subjects with hope of improving.

Conversely, others who perform well may lack interest and choose to drop science subjects altogether. Additionally, Lange (2021) observed that science teachers often feel discouraged because they perceive subjects like agriculture as unimportant. Consequently, less effort is made to recognize these subjects. In schools, agriculture is often regarded only as a subject for form one and two students, with forms three and four considered less significant because these subjects are optional rather than compulsory. This situation leads to low enrolment of agriculture students at advanced level. This implies that many students may be disinterested in their studies, and when given the option to drop subjects like physics and chemistry, they often prefer to do so, viewing it as a relief from the burden of managing numerous subjects.

The study also revealed that parents actively encourage their children to pursue science subjects, which leads to higher enrolment in advanced level science. This aligns with Lyons & Quinn (2021) who emphasized the significant role parents and society play in shaping students' perception. Many students studying science are influenced or guided by their parents, siblings, or successful peers. This suggests that if parents and guardian take an active in supporting and motivating students to study science, there will likely be significant improvement in performance and enrolment, as well as better preparation for future careers.

The study highlighted an increase of student enrolment in science subjects at the advanced level, largely due to the availability of a modern and updated science curriculum. This finding aligns with the observation of Naamara., (2022), who pointed out that well-equipped science laboratories and the latest equipment encourage student to pursue science subjects at this level. Additionally, Lyons & Quinn (2015: 71) noted that students enroll for science subjects with confidence that they will succeed, especially when they have access to adequate equipment for experiments and practical lessons. This implies that modernized science laboratories promote effective learning in science subjects,

particularly through hands-on experiences. Furthermore, the distribution of computers in many schools facilitate self-study and research.

The study highlighted there has been an increase in student enrolment in advanced level science, largely due to the compulsory requirement of studying science subjects at ordinary level. As a result, students have been obligated to take sciences at this foundational level. This finding, aligns with Lange (2016: 43), who asserted that making science subjects compulsory at ordinary level has gradually boosted the number of students' enrolling for sciences at advanced level. Furthermore, students who perform well in science subjects at the ordinary level are often encouraged to pursue science subjects at advanced level. Thus, the compulsory nature of science subjects at ordinary level in Uganda has contributed to a steady rise in students willing to enroll for sciences at advanced level'.

Lastly, the study noted that making some of the science subjects, such as agriculture, optional contributes to students' perception that, these subjects are difficult and not very important. This finding aligns with Thomso, Wurtzburg, & Centifanti (2016: 6), who stated that as the number of schools increase, there is a significant shortage of science teachers capable of effectively helping students succeed in science subjects. If some science subjects remain optional at ordinary secondary school level, it is likely that there will soon be a limited student enrolling for science subject at advanced level, as highlighted by Lange (2016: 5). This implies that the presence of policies and practices by educational management authorities can play a crucial role in changing negative attitudes towards science subjects and should be focused on enhancing student enrolment in sciences at advanced level.

### **5.1.2 How performance in at A-level science subjects influences student enrolment in advanced level (Student academic Outcome- pull factor)\_**

The above study aims to determining how A-level performance in science subjects influences student enrolment for advanced level science subjects (Student academic outcome as a pull factor).

The study indicated that schools with high academic performance scores at advanced level also experience increased enrolment rate of students. This finding aligns with Asimwe (2020) who observed that those secondary schools with strong UACE scores in science subjects have seen a rise in students' enrolment for sciences at advanced level. This trend is partly due to students' hope and expectations of achieving high marks. As a result, these are motivated by UACE science results, believing they will perform well.

The study found that the presence of well-equipped training facilities and laboratories in secondary schools encourages students to enroll for sciences at advanced level. This aligns with Amirah (2021), who argued that student enrolment in science subjects at advanced levels is influenced by the availability of training facilities, particularly school science laboratories, which promote practical experiments during teaching-learning process. These hands-on experiences help students grasp the subject matter more quickly, thereby enhancing their academic performance, as noted by Asimwe (2020). This suggests schools with equipped science laboratory and necessary resources tend to attract more students to pursue science subjects at advanced level.

Additionally, the study observed that the increasing enrolment of students in science subjects at the advanced level is partly due to career prospects. This is consistent with Bergeron & Gordon (2020), who noted that a students' enrolment and performance in a particular subject are often tied to their career aspirations. Moreover, Amirah (2021) stated that the students' choices are often driven by their

interest, meaning that their subject selections are influenced by their passion for specific science topics. Generally, individuals tend to choose subjects they enjoy and believe will be beneficial for their future. This implies that many secondary school students tend to prefer non-science subjects, such as economics, literature, and history, believing that they are easier than science despite its importance for national development; however, career guidance has helped shift this viewpoint.

The study also noted that the school environment which is conducive for effective teaching and learning of science subjects also attract students to enroll for sciences at advanced level. This concurs with Ejju (2020: 43) who asserted that the enrolment of students in science subjects at advanced level have tremendously increased in those schools with conducive studying environment. It attracts many students to join the schools to pursue the science subject because of those physical facilities. This implies that the school environment with conducive infrastructures and equipment like laboratory tend to attract students to join such schools for sciences at advanced level.

The study also found out that a students' choice of a science subject may be influenced by the support they receive from their school, particularly from their subject teachers. This aligns with Lyons & Quinn (2015: 15), who noted that social support from peers and a positive attitude towards enrolling in a course are strong determinants of a students' decision to pursue science courses voluntarily. This suggests that the theory has at least some degree of validity. Additionally, Lange (20121) observed enthusiastic, articulate, knowledgeable, caring, and supportive teachers, significantly influence students' preference for their subjects. In contrast, teachers who are inflexible and unclear, make it much harder for students to learn, which is a major concern (Albasha, 2022). This indicates that school-based factors, particularly strategies employed by teachers, play a crucial role in shaping students' experiences during teaching and learning sessions.

Furthermore, the study observed that in some schools, science teachers encourage students by assuring them of better performance when they take sciences at A-level. It can also be inferred that students felt comfortable with the teaching methods used by these science teachers. This finding agrees with Nabadda (2017), who stated that praising or blaming students, as well as offering reward and punishment, can significantly impact students' self-esteem, ultimately influencing their enrolment in specific science subjects. However, Thomso., Wurtzburg & Centifanti (2021) pointed out that the extent of negative treatment from teachers necessary to yield detrimental effect on students is not clearly understood. Teachers may unconsciously reinforce and validate students' perception of gender-related behaviors.

The study noted a rising enrolment of students in science subjects at advanced level, attributed to curriculum or programs offered. This aligns with Kumar & Vivekadhish (2021), who asserted that the nature of science subject and their teaching in secondary schools significantly influence student's enrolment decisions. Students are drawn to enroll in sciences at advanced level because the curriculum emphasizes experimental and practical approaches, which can enhance performance in their UACE examinations.

The study highlighted that a positive good classroom environment and well-equipped science laboratories greatly contribute to higher enrolment in advanced level sciences subjects. This finding is supported by Lange (2021) who noted that school environment is a crucial factor influencing students' subject choices. Well- furnished school facilities encourage many students, including those interested in science, to enroll. Furthermore, the location of the school and the overall existence of educational facilities also play a significant role in enrolment in advanced level sciences.

### **5.1.3: Relationship between Academic performance and Student Enrolment:**

The correlation analysis reveals strong and significant positive relationships between academic performance (grades) and key factors influencing students' enrolment in Advanced Level science subjects. The findings show that school reputation ( $r = .756$ ,  $p < .01$ ) has the strongest correlation with grades, suggesting that schools with high reputations attract motivated learners and competent teachers, creating a conducive environment for excellence, consistent with findings by Orodho and Njeru (2021) who noted that institutional prestige significantly enhances student outcomes. Quality of teaching ( $r = .435$ ,  $p < .01$ ) also moderately correlates with grades, emphasizing the importance of effective pedagogy and adequate learning resources, as supported by Onyango (2020), who found that teaching quality directly influences learners' comprehension in science subjects.

Similarly, the number of students enrolled ( $r = .613$ ,  $p < .01$ ) and the diversity of science subject combinations ( $r = .679$ ,  $p < .01$ ) were positively associated with grades, implying that higher enrolment and wider subject options increase student engagement and performance, aligning with the observations of Adebayo and Omotayo (2021). Additionally, student retention ( $r = .674$ ,  $p < .01$ ) showed a strong link to academic success, corroborating Musau and Wanyonyi (2022), who argued that consistent school attendance enhances achievement and continuity in science education. The strong inter-correlations among independent variables, particularly between student retention and science combinations ( $r = .810$ ,  $p < .01$ ), demonstrate that these factors are mutually reinforcing. Overall, the results confirm that improved school reputation, quality teaching, subject diversity, and high retention rates jointly contribute to better academic performance and increased enrolment in science subjects in government secondary schools in Gulu Municipality.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATIONS

#### 6.0 Introduction

This chapter therefore contains the conclusion of findings and recommendations of the study as presented in chapter four in order to establish whether the objectives of the study were achieved, to answer the research questions. These follow the sequence of research questions as developed from the research objectives. The areas for further study are equally presented in this chapter.

#### 6.1 Conclusions

From the findings and discussion in chapter four and five respectively, the following conclusions were drawn.

Reference to objective one, it is concluded that student's perception and attitude towards science subjects, parent's encouragement, career guidance and high academic grade scored at O' level in science subjects; these are the major ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor)

Basing on the objective two, it is also concluded that the rising enrolment of students for science subjects at advanced level is a s a result of career prospects; students' enrolment for science subjects at advanced level is as a result of presence of training facilities especially school science laboratory; and the improvement in students' academic performance score. These are the major ways how performance in science subjects at A' level secondary influence enrolment of students for advanced level science subjects (Student academic Outcome- pull factor).

On correlation, objective 3, the study concluded that improving school reputation, teaching quality, and student retention can significantly enhance academic performance and science subject enrolment. Schools offering diverse science combinations attract and retain more learners, fostering better grades. These results highlight the interconnectedness of institutional reputation, teaching standards, and learner outcomes. Therefore, strengthening these factors can create a sustainable foundation for academic excellence in science education at the Advanced Level.

## **6.2 Recommendations**

Following the analysis of the study, the researcher came up with the following recommendations.

Make science subjects not only compulsory from S.3 to S.6 but also give in the necessary equipment needed. Schools should require students to study Physics, Chemistry, and Biology throughout their senior secondary years to ensure consistent exposure and preparation for advanced studies. Many schools in to restock their laboratories with modern equipment that seems to be lacking.

Improve school science infrastructure. School administrators should ensure that laboratories are functional, adequately equipped, and stocked with necessary materials. This can be achieved through school budgeting, government support, or partnerships with NGOs and private organizations.

Recruit and motivate competent science teachers. Recruitment should focus not only on numbers but also on teachers' qualifications, creativity, and commitment. Regular professional development workshops and performance-based incentives can help teachers deliver lessons effectively and maintain student interest.

Encourage positive attitudes towards science. Schools should organize mentorship programs where students, especially girls, are paired with role models in science. Parents and peers should also be involved in campaigns that demystify science and encourage perseverance.

The study recommended that school management should provide extra support, such as remedial classes or peer tutoring, instead of allowing students to drop science subjects. This ensures students stay engaged with core subjects while addressing learning difficulties.

Promote gender equity in science education. Teachers should actively encourage girls to participate in science, and any staff found discouraging female students should face accountability measures. Awareness campaigns and science clubs can further motivate girls to pursue science subjects.

Provide ongoing guidance and counseling. Schools should have regular counseling sessions to help students with career guidance, academic planning, and personal challenges, ensuring they remain motivated and focused on their studies.

Monitor and evaluate implementation. School authorities and education officials should regularly assess the effectiveness of these measures, gathering feedback from students and teachers to improve teaching strategies and learning outcomes.

The study also recommends that all subjects should be compulsory for students. If poor performance will lead to drop of subjects, what will happen if students fail all subjects? Will they be allowed to drop all subjects? It would be beneficial to reconsider the best approach to address this issue. Instead of allowing students to drop subjects, the government should create a conducive and learner-friendly environment in schools, which help students thrive and succeed in their studies which help

Lastly, students in secondary schools require continued guidance and counseling on important issues such as identity, relationships, career choices and academic endeavors.

### **6.3 Areas of Further Research**

The researcher carried this study in order to examine the “Academic Performance and Student’s Enrolment in Advanced Level Science Subjects: A Case Study of Government Secondary Schools in Gulu Municipality”; but the study was not exhaustive owing to constraints in terms of scope, time and finance. Further research is therefore needed in areas such as: -

1. The Effect of school environment on student’s enrolment in Advanced level science subjects in government secondary schools in Uganda.
2. The Impact of Digital marketing on student’s enrolment in Advanced level science subjects in government secondary schools in Uganda.
3. The Effect of home background on student’s enrolment in Advanced level science subjects in government secondary schools in Uganda.

In conclusion, more research should be done about the effects of academic performance on student’s enrolment in Advanced level science subjects in government secondary schools in Uganda so as to compare with results got from Gulu Municipality so as to draw a ground for recommendations.

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## APPENDIX A: INFORMED CONSENT FORM

**Guidance for the Participants:** I am Anecho Innocent, a student researcher of Uganda Christian University. This research study is being undertaken to assess the ‘Academic Performance and Student’s Enrolment in Advanced Level Science Subjects: A Case Study of Government Secondary Schools in Gulu Municipality’.

**SOPs:** Ensuring everyone adheres to the COVID-19 health guidelines especially social distance and wearing a face mask.

**Seeking Consent:** Before the distribution of questionnaires, the participant’s will be requested to first consent to participate in this study (fill the consent form). In case one of the participants decline to participate, politely inquire for the reason why and you have to document it before excusing him/her.

**Confidentiality:** Ensure the participants that the answers they will provide shall be confidentially treated. It shall only be used for study purpose and authorized people may be only to access them.

**Benefits and Risks:** The findings may be beneficial to the government secondary schools in Gulu Municipality and the Uganda as whole. This study has no anticipated risks that may occur as a result of your involvement in the research.

**Voluntary Consent:** Your participation or involvement in this study is fully out of your good will. This study will be fully carried out when you accept right now. Get informed that no legal implication or any other form of punishment that may be given to you when you decline to take part in this research. More required information, contact the Principal Investigator: Anecho Innocent on +256785466230. You may also contact Mr. Osborn Ahimbisibwe +256 775737627 (UCU Research Ethics Committee Administrator or Prof. Peter Waiswa +256 772405357 (Chairperson UCU Research Ethics Committee).

**Consent Statement:** I, the respondent, have been well informed about this research and its purpose. I am willing to participate in fully giving them the necessary or required information. I am well informed of the voluntary participation, confidentiality and other concerns related to voluntary consent.

Date of the Interview ----- Consent to Interview Yes/No

Participants’ Name ----- Signature -----

## ASSENT FORM

**For participants below 18 years.**

**Guidance for the Participants:** I am Anecho Innocent, a student researcher of Uganda Christian University. This research study is being undertaken to assess the ‘Academic Performance and Student’s Enrolment in Advanced Level Science Subjects: A Case Study of Government Secondary Schools in Gulu Municipality’.

**SOPs:** Ensuring everyone adheres to the COVID-19 health guidelines especially social distance and wearing a face mask.

**Seeking assent:** Before the distribution of questionnaires, the participant’s will be requested to first consent to participant in this study (fill the consent form). In case one of the participants decline to participate, politely inquire for the reason why and you have to document it before excusing him/her.

**Confidentiality:** Ensure the participants that the answers they will provide shall be confidentially treated. It shall only be used for study purpose and authorized people may be only to access them.

**Benefits and Risks:** The findings may be beneficial to the government secondary schools in Gulu Municipality and the Uganda as whole. This study has no anticipated risks that may occur as a result of your involvement in the research.

**Voluntary participation:** Your participation or involvement in this study is fully out of your good will. This study will be fully carried out when you accept right now. Get informed that no legal implication or any other form of punishment that may be given to you when you decline to take part in this research. More required information, contact the Principal Investigator: Anecho Innocent on +256785466230. You may also contact Mr. Osborn Ahimbisibwe +256 775737627 (UCU Research Ethics Committee Administrator or Prof. Peter Waiswa +256 772405357 (Chairperson UCU Research Ethics Committee).

**Guardian’s Statement:** I assent to have been well informed about this research and its purpose. I approve the participant to take part in the study.

Date of the Interview ----- Person assenting to Interview Yes/No

Participants’ (Optional) Name ----- Signature -----

## APPENDIX B: Questionnaire for Students

### Topic: ACADEMIC PERFORMANCE AND STUDENT’S ENROLMENT IN ADVANCED LEVEL SCIENCE SUBJECTS: A CASE STUDY OF GOVERNMENT SECONDARY SCHOOLS IN GULU MUNICIPALITY

#### Dear Participant

You have been chosen to get involved in this research titled ‘Academic Performance and Student’s Enrolment in Advanced Level Science Subjects: A Case Study of Government Secondary Schools in Gulu Municipality’. This study is carried out strictly for academic purposes. You are requested as a chosen participant to fully answer the questions to the best of your knowledge. The information to be given by you shall be greatly treated with utmost confidentiality. Please you are requested not write your identity like name anywhere in this questionnaire. Kindly fill in to those space provided or put a tick where applicable.

Thank you in advance

#### Anecho Innocent

#### Section A. Respondents’ Bio-data

1. Sex

i). Male                       ii). Female

2. Form you are in

No.	Form	Tick Applicable
2.1	S.5	
2.2	S.6	

3. For how long have you been in this school?

i). 1- 2 years                       ii). 3 – 4years   
 iii). 5years and above

**Section B: The ways in which UCE grade performance in O' level sciences subjects influence enrolment of students in advanced level science in government secondary schools (Pre-qualifying entry- push factor)**

You are requested to tick where it's applicable to you following the below key.

**(5) Represent SA, (4) represent A, (3) represent NS, (2) represent D, (1) represent SD**

No.	Questions	5	4	3	2	1
1.	In our school, there is a high enrolment of students in A' level science					
2.	In our school, student's perception and attitude towards science subjects have an influence on their enrolment					
3.	In our school, high academic grade scored at O' level in science subjects leads to high enrolment of students in A' level science subjects					
4.	In our school, parents encourage their children to enroll for A' level science					
5.	In our school, we study science subjects with the guide of a modern and updated science curriculum					
6.	In our school, career guidance has an influence on the enrolment of students in 'A' level science					
7.	In our school, the compulsory teaching of science subject tends to influence the enrolment of students in 'A' level science					
8.	Any other (specify) ----- -					

**Section C: How performance in science subjects at A' level secondary influence enrolment of students for A' level science subjects (Student academic Outcome- pull factor).**

You are requested to tick where it's applicable to you following the below key.

**(5) Represent SA, (4) represent A, (3) represent NS, (2) represent D, (1) represent SD**

No.	Questions	5	4	3	2	1
1.	In our school, the rising enrolment of students for science subjects at advanced level is as a result of career prospects					
2.	In our school, students' enrolment for science subjects at advanced level is as a result of presence of training facilities especially school science laboratory					
3.	In our school, there is an improvement in students' academic performance score					
4.	In our schools, the enrolment of students in science subjects at advanced level have tremendously increased in those schools with conducive studying environment					
5.	In our school, science teachers that make students get assured to perform well in sciences at the end of A' level.					
6.	In our school, high enrolment in sciences at A' level is influenced by school factors such as location, and existence of school library					
7.	In our school, presence of good classroom environment, more conducive for science subjects, tend to have high enrolment of students at advanced level sciences					
8.	In our school, the rising enrolment of students for science subjects at advanced level is as a result of curriculum or program offered at advanced level					
9.	Any other (specify) .....					

Thank You Very Much for Your Response

**APPENDIX C: INTERVIEW GUIDE**

**Interview Guide for Head teachers, Career Guidance Teachers and Science Teachers**

**Guiding Questions**

1. Does UCE grade performance in O level sciences subjects determine enrolment of students in advanced level science in Government secondary schools? (Pre-qualifying entry- push factor)

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2. Does performance in science subjects at Advanced level secondary determine enrolment of students for advanced level science subjects? (Student academic Outcome- pull factor)

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3. What are the intervening ways of improving the enrolment of students at Advanced levels sciences?

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-----

**Thank you**

## APPENDIX D: AUTHORIZATION LETTER



**UGANDA CHRISTIAN  
UNIVERSITY**

A Centre of Excellence in the Heart of Africa

06/04/2022

To: Anecho Innocent

Uganda Christian University  
0785466230

Type: Initial Review

**Re: UCUREC-2022-280: ACADEMIC PERFORMANCE AND STUDENT'S ENROLMENT IN  
ADVANCED LEVEL SCIENCE SUBJECTS: A CASE STUDY OF GOVERNMENT SECONDARY  
SCHOOLS IN GULU MUNICIPALITY, GULU DISTRICT, 1, 2022-02-15**

I am pleased to inform you that the Uganda Christian University REC, through expedited review held on 06/04/2022 approved the above referenced study.  
Approval of the research is for the period of 06/04/2022 to 06/04/2023.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of 06/04/2023 in order to continue the study beyond the approved period. Failure to submit a confirming review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Uganda Christian University REC:

No.	Document Title	Language	Version Number	Version Date
1	Informed Consent Form	English	1	2022-02-15
2	Data collection tools	English	1	2022-02-15
2	Protocol	English	1	2022-02-15

Yours Sincerely



Peter Waiswa

For: Uganda Christian University REC

**APPENDIX E: Table for Determining Sample Size for a Finite Population**

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

# Anecho Innocent Innocent

## ACADEMIC PERFORMANCE AND STUDENTS' ENROLMENT IN ADVANCED LEVEL SCIENCE SUBJECTS: A CASE STUDY OF GO...

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# UGANDA CHRISTIAN UNIVERSITY

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## UGANDA CHRISTIAN UNIVERSITY

### SCHOOL OF RESEARCH & POSTGRADUATE STUDIES

#### DISSERTATION CORRECTION COMPLIANCE REPORT BY THE CANDIDATE (POST VIVA FORM)

Date: 10 October 2025

Name of Candidate: ANECHO INNOCENT Reg. No: RJ19M06/008

Title of Dissertation: ACADEMIC PERFORMANCE AND STUDENTS' ENROLLMENT IN ADVANCED LEVEL SCIENCE SUBJECTS. A CASE STUDY OF GOVERNMENT SECONDARY SCHOOLS IN GULU MUNICIPALITY.

SN	COMMENTS BY EXTERNAL EXAMINER	ACTION TAKEN	INDICATOR
1	<b>ABSTRACT</b>  1. Redo the abstract after addressing all the comments throughout the document.	The Abstract was revised as per the content	Abstract page xv

2	<p><b>CHAPTER ONE: INTRODUCTION</b></p> <p>1. The relationship that appear in the introduction section and the rest of the document need to be adjusted since you did not do justice to the correlation analysis. You linked the independent variable with the dependent variable and asked the respondents to affirm their agreement or disagreement, which is totally wrong. Therefore, the third section of the findings need to be withdrawn. You cannot run the statistical analysis to detect the existing relationship since there are no specific items for the independent and for the dependent variables. It is therefore suggested that you deal with the perceptions of respondents on how the two variables relate, rather than testing the significance relationship. This will affect the rest of the chapter's contents.</p> <p>There are several specific concerns that need to be addressed based on the comments given</p>	<p>Correlation analysis was done and the table was drawn and its subsequent interpretation.</p> <p>The relationship was analyzed in terms of Strength, direction and significance.</p>	<p>Page 49-52 of the report.</p>
3	<p><b>CHAPTER TWO: LITERATURE REVIEW</b></p> <p>The literature review chapter is too short. Add some more literature. Six pages are not enough. Remember to adjust the significant relationship idea based on the comments provided in chapter one.</p>	<p>The chapter was adjusted and included the relationship between variables as well and the research literature gap was included in the literature</p>	<p>Page 13-19</p>

4	<p><b>CHAPTER THREE: METHODOLOGY</b></p> <p>Improve the design, sampling and the statistical treatment of data. Remember, you should not test the hypothesis due to comments given in both chapter one and chapter four. Only deal with the descriptive statistics, which show the perception of respondents</p>	<p>The design was left unchanged since the analysis was reconsider and in inferential statistics was acceded to the study.</p>	<p>See pages 49-50 for inferential statistics</p>
5	<p><b>CHAPTER FOUR: DATA PRESENTATION, ANALYSIS, AND DISCUSION</b></p> <p>1. Do not do the correlations since the items in the questionnaire that appear in the findings section are already connecting the independent and dependent variables. The two had to appear separately for the first two research questions, and the third research question would call for hypothesis testing and actually correlate the two to establish if there is any existing relationship. On the contrary, you have required the respondent to tick whether there is a relationship or not, which is totally wrong statistically.</p>	<p>The details of the correlations were made to complement the descriptive data.</p>	<p>pages 49-52</p>
6	<p><b>CHAPTER FIVE: DISCUSSION OF THE FINDINGS</b></p> <p>This chapter needs to be repeated due to changes in the previous chapters.</p>	<p>The changes were adjusted accordingly to incorporate the changes made</p>	<p>Pages 53-62</p>

7	<b>CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDAIONS</b> As above.	Well edited and recommendations adjusted, conclusion added	63-66
8	<b>REFERENCES</b>	Updated and rephrased, indented as required.	Pages 67-70

SN	COMMENTS BY INTERNAL EXAMINER	ACTION TAKEN	INDICATOR
1	<p>The dissertation follows a standard academic structure, but typographical errors (e.g., "Submitted" instead of "Submitted" on the title page), inconsistent formatting (e.g., empty "LIST OF TABLES" section, incomplete "LIST OF FIGURES" with only one figure mentioned), and truncation of content (e.g., abrupt end after Chapter 2, <b>Improvements:</b> Proofread thoroughly, populate or remove empty sections, and ensure document completeness. <b>Areas to highlight:</b> Title page (typo, page 1), List of Tables (empty, page 7), List of Figures (incomplete, page 8), truncated sections (post-Chapter 2, page 25 onward).</p>	<p>The cover page was edited and spelling errors corrected</p> <p>List of Tables and List of Figures edited</p> <p>Improvements were made and the research gaps was added to conclude the literature.</p>	<p>See cover page for corrections made.</p> <p>Visit pages xi &amp; xii respectively.</p>
2	<p>The introduction provides a strong background, objectives, and conceptual framework, but includes repetitive phrasing (e.g., incomplete sentence in abstract, "Basing on the study findings, it is concluded that academic performance. The study concluded..."), ambiguous terms (e.g., "promoting this study" instead of "prompting" in Section 1.1.4), and weakly supported claims (e.g., 39% GER in Acholi region, Section 1.1.4). Figure 1.1 is described but not included. <b>Improvements:</b> Remove redundancies, clarify terms,</p>	<p>The repetitive phrases were edited and removed from the abstract.</p> <p>All redundant phrases were removed from and the statement changed" it was "concluded that. etc., this now gives meaning.</p> <p>1.1.4 Was removed because it had no</p>	<p>Page xiv</p> <p>Page xiv</p> <p>See page 6</p>

	strengthen citations, and include missing figures. <b>Areas to highlight:</b> Abstract (incomplete sentence, page 9), Section 1.1.4 (vague data, pages 14	content.	
3	The review covers relevant themes (push/pull factors, performance influences), but relies on outdated sources (e.g., Walberg 1981, UNCST 2012), lacks critical synthesis (mostly descriptive), and repeats authors (e.g., Bergeron & Gordon, Kearney 2016) without new insights. Gulu-specific gaps are underdeveloped. <b>Improvements:</b> Use recent (post-2020) literature, critically analyze sources, and articulate Gulu-specific gaps. <b>Areas to highlight:</b> Repetitive citations (e.g., Kearney 2016, pages 17-18), outdated sources (e.g., UNCST 2012, page 15).	The repetitive citations were changed and updated in chapter two from 2020 upwards.  Only citations from post 2020 were maintained  The gaps were identified in the study and included	See pages 13 to 20  Page 20  Page 20
4	The chapter is missing/truncated (only a reference to Figure 3.1 in List of Figures, page 8). Inferred from abstract and appendices, it uses mixed methods (214 respondents, SPSS/thematic analysis), but lacks details on design, sampling, or validity. <b>Improvements:</b> Include full chapter, detailing design, sampling, data collection, and ethical considerations. <b>Areas to highlight:</b> Missing Chapter 3 (expected around page 25), undefined CVI in acronyms (page 8).	Data collection methods and tools was included.  Content Validity Index (CVI) was included on the list of acronyms.	Page 24,  Page xiii,

5	<p>The chapter is missing/truncated (text jumps to mid-content, e.g., "...udents' hope..." around page 25). Inferred from appendices and later text, it includes quantitative (SPSS) and qualitative (thematic) analysis, but no data tables or statistical outputs are visible. Analysis seems superficial. <b>Improvements:</b> Include full data presentation (tables/figures), deepen analysis with statistics, and align with objectives. <b>Areas to highlight:</b> Missing Chapter 4 (expected around page 25), appendices (questionnaires without data, pages 29-35).</p>	<p>Analysis was expanded to include a detailed presentation and explanation of the inferential statistics table 4.4</p> <p>Appendices, questionnaire without data included. The tool is good and well aligned.</p>	<p>Page 50</p> <p>Page 71-76</p>
6	<p>The discussion links findings to literature (e.g., Amirah 2015, pages 25-26) and objectives, but is repetitive, lacks depth in critiquing discrepancies, and has typos (e.g., "a s a result," page 26). Theoretical integration (e.g., Walberg's theory) is weak. <b>Improvements:</b> Synthesize findings critically, address limitations, and correct errors. <b>Areas to highlight:</b> Repetitive alignments (pages 25-26), typos in school environment discussion (page 26).</p>	<p>The discussions were amended and repetitive alignments removed</p>	<p>Page 5–62</p>
7	<p>Conclusions align with objectives, and recommendations (e.g., increase science teachers, page 27) are relevant but generic and lack actionable details. Further research suggestions (page 27) need for stronger justification. <b>Improvements:</b> Provide specific, evidence-based</p>	<p>Recommendations were edited and corrected as guided</p>	<p>Page 63-65</p>

	recommendations and justify further research. <b>Areas to highlight:</b> Section 6.2 (generic recommendations, page 27), Section 6.3 (weak research justification, page 27).		
8	The reference list (~30 sources, pages 28-29) is relevant but inconsistently formatted (e.g., no APA style, duplicates like Albasha 2018). Appendices (pages 30-35) include consent forms, questionnaires, and interview guides, but lack sample data. <b>Improvements:</b> Standardize citation style, remove duplicates, and add data examples in appendices. <b>Areas to highlight:</b> References (formatting/duplicates, pages 28-29), Appendices (no data examples, pages 30-35).	References were indented, years updated and aligned in ABC style.	Pages 67-76

SN	COMMENTS BY VIVA VOCE PANNEL	ACTION TAKEN	INDICATOR
1	<ul style="list-style-type: none"> <li>• <b>Topic is too broad</b>—it currently covers a lot of aspects. A more <b>narrowed-down focus</b> is needed to ensure that the research remains manageable and focused on a specific aspect of academic performance.</li> <li>• The study could benefit from specifying <b>which aspect of academic performance</b> you're focusing on. Is it grades, understanding, or something else?</li> </ul>	<p>The topic was not revised, but the findings on the relationship between variable, so the topic stands.</p> <p>The study clarified that besides grade, other aspects include School reputation, quality teaching</p>	Cover page
2	<p><b>Study Design and Research Questions:</b></p> <ul style="list-style-type: none"> <li>• The study should clearly explain <b>why it's focused on science subjects</b> in particular. Why these specific subjects, and how are they related to students' overall academic success?</li> <li>• The <b>research question</b> should be sharpened to specifically address the issue you're investigating. For instance, what factors contribute to the enrollment patterns and academic performance in these subjects? You need to clarify the specific academic outcomes you aim to measure.</li> </ul>	<p>The questions were rephrased as guided, the science subjects are outlined and they include Physics, Mathematics, biology and Chemistry.</p> <p>The research questions were also refined</p>	<p>Page 8 corrected</p> <p>See pages 7</p>
3	<b>Literature Review and Discovery:</b>	Another theory was added, in addition to	See page 3

	<ul style="list-style-type: none"> <li>• Have you found any <b>new theories</b> or insights that haven't been previously addressed? Make sure to highlight any fresh perspectives on <b>science education</b> that you discovered during your research.</li> <li>• The study could examine how <b>science teaching methods</b> are impacting students' academic performance. For example, is the current method of teaching science subjects effective?</li> </ul>	<p>complement the study, Expectancy-value theory).</p> <p>The gaps in the teaching methods were identified at the end of the literature review.</p>	<p>See page 19 to 20</p>
4	<ul style="list-style-type: none"> <li>• Your final <b>recommendation</b> should be clearer. For instance, a strong recommendation could be that <b>science subjects should be compulsory from S.3 to S.6</b>, ensuring that students are well-prepared for advanced studies.</li> </ul>	<p>Strong recommendations were made to for students of S 3 to S 6 specifically, where all biology, Chemistry, Physics and math should be compulsory and be give necessary support to the schools</p>	<p>See page 64.</p>
5	<ul style="list-style-type: none"> <li>• The <b>conceptual framework</b> should be revised to clearly define <b>independent and dependent variables</b>. You need to explain how these variables interact and why they are relevant to your study.</li> <li>• <b>Adjust the framework</b> to ensure that the variables accurately reflect the relationship between students' enrollment in science subjects and their</li> </ul>	<p>The conceptual framework was redesigned, the dependent and independent variables clearly indicated and constructs summarized</p> <p>The explanation of the table was also given</p>	<p>Pages 10-11</p> <p>Pages 10-11</p>

	academic performance.		
	<p><b>Research Gap and Uniqueness:</b></p> <ul style="list-style-type: none"> <li>What is the <b>main research gap</b> you are addressing, and how is your study unique in this regard? Define how your study will provide new insights into academic performance in the context of science education.</li> </ul>	Worked on and included as 2.4, in the literature review to summarize the entire literature work and identify the research gaps.	See page 19
	<p><b>Data Analysis and Statistical Methods:</b></p> <ul style="list-style-type: none"> <li>You should consider <b>quantitative data</b> and provide <b>specific statistics</b> on student performance. This could include looking at how enrollment numbers correlate with performance outcomes in science subjects.</li> </ul>	The quantitative statistics was included, a correlation analysis was done to establish relationship between variable.	Addressed on page 50-52

ANECHO INNOCENT

Candidate's Name

Signature

Dr. Musiimenta Annet

Supervisor's Name

Signature