

**UNIVERSITY OF EDUCATION, WINNEBA**

**FACTORS AFFECTING THE PERFORMANCE OF SENIOR HIGH  
SCHOOLS BIOLOGY STUDENTS IN ASHANTI BEKWAI MUNICIPALITY**



**EMMANUEL OKYERE**

**MASTER OF PHILOSOPHY**

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**(200004108)**



**A Thesis in the Department of Science Education, Faculty  
of Science Education, submitted to the School of Graduate  
Studies in partial fulfilment  
of the requirements for the award of the degree of  
Master of Philosophy  
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in the University of Education, Winneba**

**OCTOBER, 2021**

## DECLARATION

### STUDENT'S DECLARATION

I, Emmanuel Okyere, declare that this thesis with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE: .....

DATE: .....



### SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. CHARLES KWESI KOOMSON

SIGNATURE: .....

DATE: .....

## **DEDICATION**

To my mother, Mrs. Esther Anim and to my kid sister Daniella Oteng.



## ACKNOWLEDGEMENTS

I wish to express my profound gratitude to my supervisor Dr. Charles Kwesi Koomson whose direction, correction and advice inspired me immensely in this endeavor. I wish to sincerely thank the Ashanti Bekwai Municipal school teachers and students who provided vital data needed in this study. The fellowship of few other friends carried me through the programme and the writing of the project. I am grateful to Ambrose Darku and Thelma Sraha Sefakor for their generosity and support particularly during a challenging phase of this project. I extend my heartfelt appreciation to my mother, Miss Vivian Takyiwaah, from whom I acquired the virtues of diligence and patience, and for having confidence in my ability to succeed.

I appreciate the effort of my Grandmother, Madam Rose Dufie for her guidance and financial support. My greatest inspiration to academic pursuit comes from my uncle Mr. Ebenezer Anim, from whom I learnt the importance of education and also the tenacity to follow my academic dream. I extend my sincere thanks to all staff members of Fomena T.I. Ahmadiyya Senior High School for their massive support during the period of studies.

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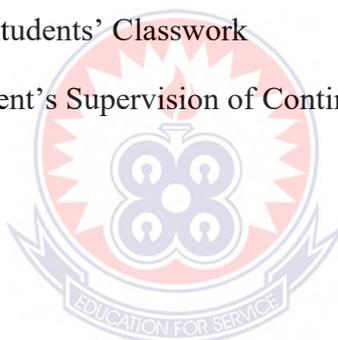
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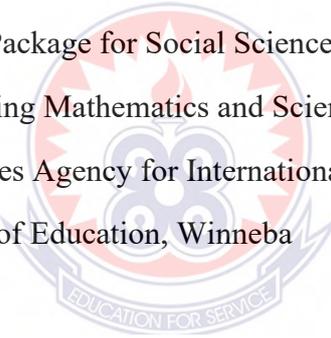
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## LIST OF ABBREVIATIONS

SDGs	Sustainable Development Goals
UNDP	United Nation Development Program
ESP	Education Sector Performance
MoE	Ministry of Education
WAEC	West African Examination Council
SHS	Senior High School
SEIP	Secondary Education Improvement Project
WASSCE	West African Secondary School Certificate Examination
GES	Ghana Education Service
SRCs	Science Resource Centres
MED	Municipal Education Director
SPSS	Statistical Package for Social Sciences
SMASSE	Strengthening Mathematics and Science in Secondary Schools
USAID	United States Agency for International Development
UEW	University of Education, Winneba



## ABSTRACT

The purpose of the study was to investigate the factors affecting the performance of senior high school biology students in Ashanti Bekwai Municipality. The study was guided by the following research objectives; to examine the influence of learning resources on the performance of senior high school biology students in Ashanti Bekwai Municipality, to examine the influence of teacher related factors on the performance of senior high school biology students in Ashanti Bekwai Municipality and to assess the influence of administrative practices on the performance of senior high biology students in Ashanti Bekwai Municipality. The study employed a descriptive survey research design. The study targeted all the 785 form two biology students and all the 28 biology teachers in senior high schools in the Bekwai Municipality. However, the sample size comprised 120 students and 12 biology teachers in the participating schools. Purposive sampling technique was used to select the schools. Random sampling techniques were used to select the 120 participating students and expert purposive sampling techniques were used to select 12 biology teachers from the three selected schools in the Bekwai Municipality. The research instruments used to collect the data included, questionnaires for teachers and students, interview schedules and observation schedules. Statistical package for social sciences (SPSS) and Microsoft Excel were used in data analysis. Frequency tables, percentages, pie charts and bar charts were used to present the analyzed data. The findings of the study revealed that learning resources were inadequate and hence affected academic performance to a great extent. The study also revealed that influence of administrative practices was significant to students' academic performance and similarly, teacher related factors had influence on academic performance to a great extent. The study recommended among others that heads of department should intensify the routine supervision of teachers and vetting of scheme of work by teachers to ensure the adherence to the dictates of professional records and that headmasters and school management should ensure that relevant materials are procured for use by both teachers and students.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Overview**

This chapter comprises of the following: background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, limitations of the study, delimitations of the study, organization of the study and operational definition of terms.

#### **1.1 Background to the Study**

Education is one of the most important factors in producing human resource that is necessary for economic development of a country (Rono, 2015). Education is the systematic development or training of the mind, capabilities or character through instruction. In Ghana, the policy on education is an instrument ‘per excellence’ for effecting national development (Anthony, 2011). Narad and Abdullah (2016) asserted that secondary education is the education children receive after primary education and before the tertiary education. The broad goals of secondary education shall be to prepare the individual for useful living within the society and higher education (Komla, 2015).

There seems to be a lot of controversy and concern all over the world as to the view that the standard of education is falling. One of the most amenable tools for measuring such standard has been students’ academic performance in both internal and external examinations. Academic performance of students is a key feature in education (Rono, 2015). It is considered to be the centre around which the whole education system revolves. Narad and Abdullah (2016) opined that the academic performance of students determines the success or failure of any institution.

Additionally, Farooq and Berhanu (2011) emphasized that the top most priority to all educators is academic performance of students. According to Narad and Abdullah (2016), academic performance is the knowledge gained which is assessed by marks by a teacher or educational goal set by students and teachers to be achieved over a specified period of time.

Factors contributing to improvement in academic performance have received much attention from educators and researchers. For instance, Anamuah-Mensah (2010), an educationist attributed the phenomenon of poor performance to lack of effective supervision and monitoring at school, lack of motivation for teachers and inadequate number of qualified teachers to fill empty classrooms. Khan and Ali (2012) found daily study hours, teacher related factors, administrative practices, teaching resources and socio-economic status of parents as factors that significantly affect academic performance. Student academic performance measurement has received considerable attention in previous research. Academic performance is a challenging aspect of academic literature, and students' performance are affected due to factors pertaining to teaching methodology, students' attitude, effective supervision, teacher workload, time management, and availability of teaching and learning resources (Johnson & Anthony, 2004).

The government of Ghana has made huge investments towards biology education. Over the years, students' academic performance in biology has prompted educational researchers to continuously make relentless efforts at identifying mitigating factors that might account for the observed unsatisfactory performance. In the Bekwai Municipal, performance in biology examinations conducted by the West African Examination Council (WAEC) has been dwindling despite the numerous educational

reforms, policies and programs (Science Resource Center Project, USAID Science Project and SEIP Project) initiated by the Ghana Education Service (GES) and the Ministry of Education (MoE) to improve the teaching and learning of the subject in the country. Researchers and biology teachers have observed over the years that there had been worrisome decline in the percentage of public senior high school students passing biology in both external and internal examination, and a sharp rise in percentage of failure recorded. The Reports provided by the Bekwai Municipal Education office indicated that there was massive failure in biology in the year 2014 because 41.59% of the student's passed biology at credit level while 58.41% had grades below credit in the subject. In 2015, only 54.52% candidates passed biology at credit level while 45.48% obtained grades below credit. Again, in 2016 only 41.6% of the students obtained credit in biology while 58.4% had grades below credit. In 2017, 46.2% of the candidates who sat for the West African Secondary School Certificate Examination obtained credit while 53.8% of the candidates had grades below credit. In 2018, there was a little improvement in the results because 52.0% of the candidates obtained credit in biology while 48.0% of them obtained grades below credit level. In 2019, about only 63.1% of the students obtained credit in biology while 36.9% of the candidates obtained grades below credit (MoE, 2016).

It is clear that students' performance in biology in senior high school in the Bekwai Municipality is unsatisfactory. Several researchers attribute the dissatisfied performance to factors pertaining to learning resource, administrative practices, students' attitude and teacher related factors that existed in the school (Komla, 2015).

This scenario of unsatisfactory performance in biology is very disturbing. It is a matter of concern that despite the utility value of biology and its involvement in the

science related courses that give prominence to a nation, students' performance in biology in the senior high schools in the Municipality remains at a very low ebb. This situation is causing a lot of concern to biology educators and calls for intensive investigation to identify the factors that were affecting the academic performance of students in biology in the Bekwai Municipality. This would help in providing suggestions that would promote better academic performance in the study area and Ghana at large. It is against this background that this study was deemed significant.

## **1.2 Statement of the Problem**

Researchers generally agree that a combination of school, teacher and student factors exert significant influence on the educational aspiration and academic performance of students.

In recent times, there has always been a public outcry on the issue of students' academic performance in biology in the Bekwai Municipality. Parents and government are in total agreement that their huge investment on biology education is not yielding the desired dividend and that despite their huge investment, students' performance still remain poor. Teachers also complain of students' low performance in biology at both internal and external examinations. However, it is not clear whether the problem of poor students' performance in biology in senior high schools is centered on administrative practice, teacher related factors, socio economic background of students, student attitude and learning resources.

Observations on students' academic performance in biology over the years in the results of West African Secondary School Certificate Examination (WASSCE) conducted by West African Examination Council (WAEC) revealed that a very few numbers of students perform better in biology examination compared to other subjects

(WAEC, 2014). The Reports provided by the Bekwai Municipal Education office on West African Secondary School Certificate Examination (WASSCE) indicated that there was a failure in biology in the year 2014 because 41.59% students pass biology at credit level and 58.41% had grades below credit in biology. In 2015, only 54.52% candidates pass biology subject at credit level and 45.48% obtained grades below credit. In 2016 only 41.6% of the students obtained credit in biology while 58.4% had grades below credit. In 2017, 46.2% of the candidates who sat for the West African Secondary School Certificate Examination obtained credit and 53.8% of the candidates had grades below credit. In 2018, there was a little improvement in the results because 52.0% obtained credit in biology and 48.0% of the candidates obtained grades below credit level. In the 2019 West African Secondary School Certificate Examination, there was a significant improvement because 63.1% of the students obtained credit in biology and 36.9% of the candidates obtained grades below credit.

Although several studies have been conducted to assess the performance of students in biology in the Bekwai Municipality, there is lack of sufficient studies conducted to examine the influence of learning resources, administrative practices and teacher related factors on students' academic performance in biology. The few studies conducted do not assess the current poor performance of senior high school students in biology. If the issue of poor students' performance in biology in senior high schools is not treated with the seriousness it deserves, poor quality of biology education in senior high school will still influence the quality of higher education and life beyond this level. In the long run this will make it difficult for Ghana to cope with the global changes of technological explosion and industries. There is an information

gap on the factors affecting the performance of biology students in senior high schools particularly, senior high schools in the Bekwai Municipality.

The present study filled the gap of knowledge on factors affecting academic performance of students in biology in some senior high schools in the Bekwai Municipality.

### **1.3 Purpose of the Study**

The poor academic performance of senior high school biology students in Bekwai Municipality in Ashanti region has been alarming due to its repetitive occurrence. The purpose of this study therefore, is to investigate the factors affecting the performance of senior high school biology students in Ashanti Bekwai Municipality.

### **1.4 Objectives of the Study**

The objectives of the study were to:

- 1) Examine the influence of learning resources on academic performance of senior high school biology students in Ashanti Bekwai Municipality.
- 2) Examine the influence of teacher related factors on academic performance of senior high school biology students in Bekwai Municipality.
- 3) Assess the influence of administrative practices on performance of senior high school biology students in Bekwai Municipality.

### **1.5 Research Questions**

The study sought answers to the following research questions in order to achieve the objectives of the study.

- 1) To what extent does learning resources affects the academic performance of senior high school biology students in Bekwai Municipality?

- 2) Do teacher related factors influence the performance of senior high school biology students in Bekwai Municipality?
- 3) To what extent does administrative practices influence the academic performance of senior high school biology students in Bekwai Municipality?

### **1.6 Significance of the Study**

The study is considered significant because the government, parents and other stakeholders in education spend large portions of their respective resources on education. Low level of performance in examinations leads to undesirable wastage and denies students entry into their preferred course when trying to further their courses or profession. The effect spills over to the labour market, where the students fail to get employed in lucrative jobs. The outcome of the study would be important to all stakeholders in education.

The findings of the study could be used as a framework for improving academic performance of students in biology in all senior high schools in Ghana. Headmasters and Principals may utilize the results of the study to establish ways and means of improving performance in their respective schools, including those that have been enjoying good academic standards.

The study will also give awareness to biology teachers in order to formulate pedagogical techniques that would address the difficulties faced by student in their course of learning biology.

Moreover, it would also give useful information to the Ministry of Education curriculum developers and other stakeholders to provide students with basic science resources.

Finally, the findings of this research work would benefit those, who in future would pursue further studies on the factors affecting students' academic performance in biology in Senior High Schools in Ghana.

### **1.7 Limitations of the Study**

Bowen (2009), opined those limitations in research were weaknesses that are outside the control of the researcher. Teachers usually had no good time to fill in the questionnaires or were too tired to give appropriate responses in one day. Another limitation was fear of victimization because some respondents were afraid of their seniors in giving negative responses about their school. The study was delimited to only three schools therefore, the findings were not construed to be directly applicable to all schools in other parts of the Municipal and the region at large.

### **1.8 Delimitations of the Study**

Bowen (2009) opined those delimitations are within the control of the researcher. It spells out researchers' choice, boundaries and scope of the study. Based on this assertion, the study was delimited to only three public senior high schools in Bekwai Municipality. It was not possible to cover other parts of the Municipal, not only because of logistics but due to the large amount of money that would be required to carry out research of that nature.

The study was also delimited to particular factors influencing academic performance in biology: learning resources, administrative practices and teacher related factors. There are many other factors that were not addressed in this study. The study involved three (3) schools in Bekwai Municipality. These schools were Wesley High School, Oppon Memorial Senior High School and Saint Joseph's Senior High School. Primary

data were obtained from a sample size of 120 form two (2) students, twelve (12) teachers in the participating schools.

### **1.9 Organization of the Study**

The entire study was organized into five chapters. The first chapter focused on the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, limitations of the study, delimitations of the study, operational definition of terms and how the entire study was organized.

In the second chapter, the theoretical and conceptual framework of the study was also provided; an empirical review on academic performance was outlined and all other literature related to this study were extensively reviewed. This chapter was captured as literature review.

The third chapter is the research methodology. In this chapter a step-by-step approach on how the general objective and specific objectives of the study was achieved is clearly outlined. It entails the research design, study area, study population, sample and sampling technique, research instruments, validity of instruments, reliability of instruments, data collection procedures, data analysis procedure and ethical considerations.

The data collected from respondents was analyzed and discussed in chapter four.

The findings from the study were summarized in chapter five. Summary, conclusions and recommendations is also outline in the same chapter

### 1.9.1. Operational definition of terms

**Students' academic performance:** The outcomes of the teaching and learning process in terms of knowledge and skills students acquired from schools as measured by scores obtained in senior high school examinations.

**Factor:** A factor is any of the circumstances, conditions, etc. that bring about a result; element or constituent that makes a thing what it is. In other words, a phenomenon that affects the nature, the magnitude, or the timing of a consequence.

**Persistent poor performance:** It is the consistency of poor performance, in this study persistent poor performance is contextualized as the situation whereby candidates of public and private senior high schools perform poorly in West African Secondary School Certificate Examinations consistently without reaching pass mark.

**Administrative practices** refer to the duties performed by the school authorities particularly, the Head of department to ensure the management of curriculum and instruction.

**Learning resources** refers to text books, videos, software and other materials that teachers use to assist students to meet the expectations for learning and includes physical facilities such as classrooms, computers and laboratories.

**Teacher related factors** refers to factors such as professional qualification of teachers, motivation, absenteeism and teacher work-load which influence students' outcomes.

**Credit** according to this study means any grade above D7 that a student obtains in exams which qualifies him or her for further studies.

### **1.9.2. Operational definition of abbreviations**

**WASSCE** is the final exams conducted in senior high schools to assess students for further studies in Ghana and West Africa. The exam is conducted by the West African Examination Council.

**GES** is a branch sector of the Ministry of Education that steers the affairs of pre-tertiary education in Ghana.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Overview

Frankel and Wallen (2008) posited that literature review is the systematic and thorough review of available literatures on the research topic. The literature review in this study focuses on the following thematic areas:

- Concept of academic performance
- Conceptual and theoretical framework
- Factors affecting students' academic performance
- Educational structure in Ghana
- The Science Resource Centre Policy in 1995
- Empirical review from other countries

#### 2.1 Concept of Academic Performance

Several concepts have been used in this study but the key variable is academic performance. This is because academic performance determines the human capital development of an economy; it enables parents to know the current academic state of their students and it also determines the failure and success of an academic institution (Cushing & McGarvey, 2004).

Academic performance has been defined and explained by several authors. According to Narad and Abdullah (2016), academic performance is the outcomes of the teaching and learning process in terms of knowledge and skills which students acquired from schools as measured by scores obtained in examinations. They added that these goals are measured by using continuous assessment or examination results. Annie, Howard and Midred (2015) also indicated that academic performance measures education

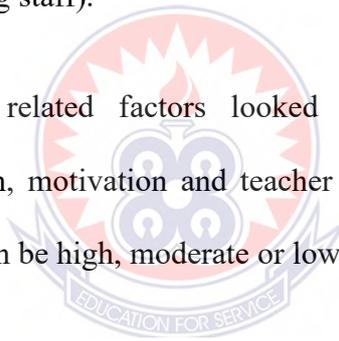
outcome. They stressed that academic performance shows and measures the extent to which an educational institution, teachers and students have achieved their educational goals. Similarly, Yusuf, Onifade and Bello (2016) opined that academic performance is a measurable and observable behavior of a student within a specific period. They further added that it consists of scores obtained by a student in assessment such as class test, class exercise, mock examination, mid-semester and end of semester examination. Martha (2010) emphasized that academic performance of student is defined by a student's performance in examination, tests, and in a course work.

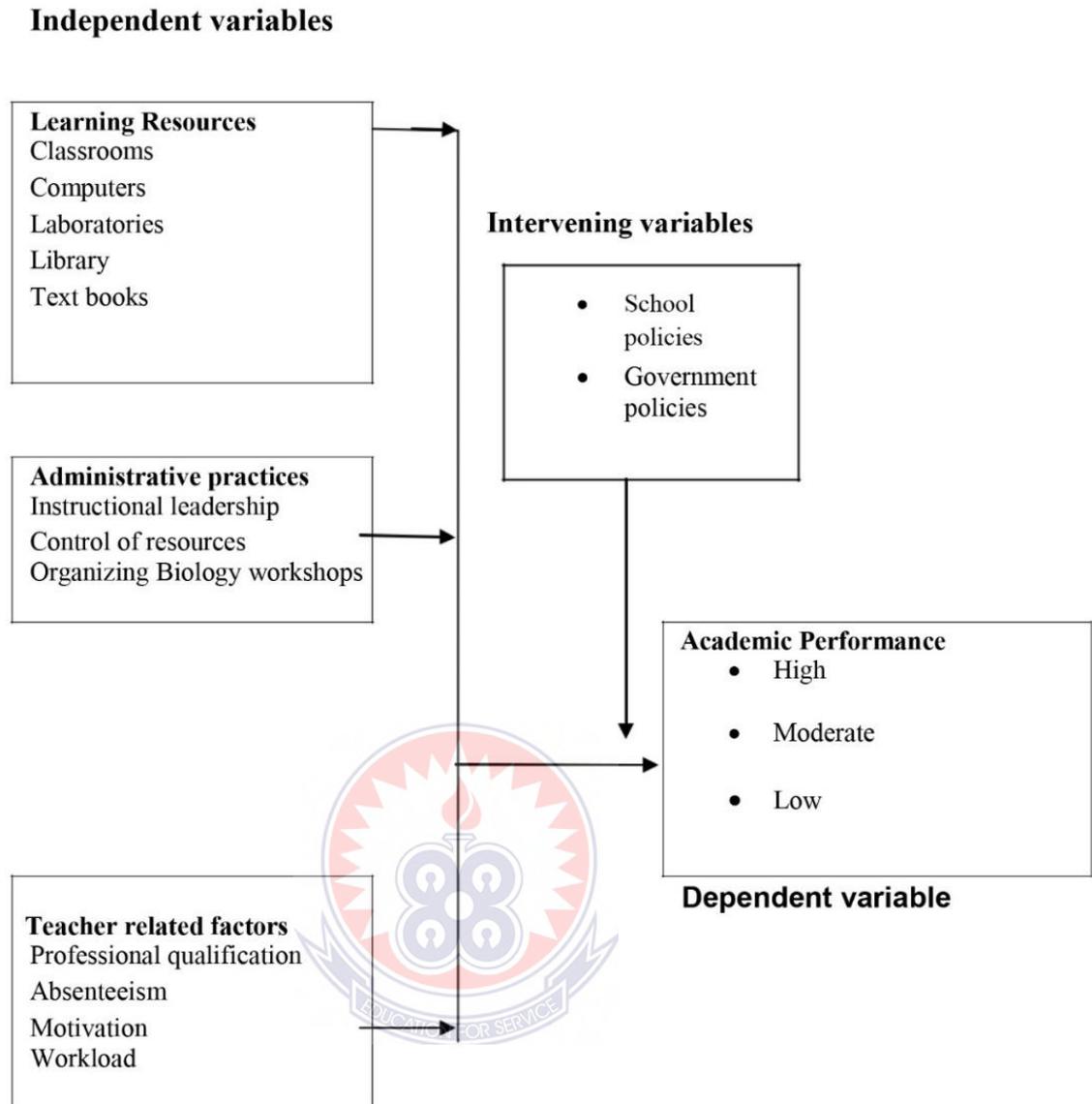
The definition given by the author's shows that the definition of academic performance is based on measurable outcomes such as class exercise, test, and examinations results. Previous studies have found that improvement in academic performance of students is dependent on combination of teacher, student, school and parental factors (Adewale, 2014). Others have also attributed it to environmental, personal, social, psychological and emotional factors (Enaigbe, 2009). Most of these studies tend to focus on a single subject or focuses on limited factors that contributes to academic performance. Blazar (2016) focused on only socio-economic status and parents' education level. Blazar (2016) recommended that other studies should explore learning resource factors, administrative practices, student factors and teacher related factors. Again, Enaigbe (2009) emphasized that an extensive study should be conducted to include more than one school to assess the academic performance of students.

## 2.2 Conceptual Framework

According to the conceptual framework in figure 1, it is generally accepted that there are many factors which influence the students' academic performance in biology. This research focused on three groups of factors; learning resources, administrative practices and teacher related factors. The section on learning resources described the resources available in the school, including the availability and state of the classrooms, laboratories, library, text books and exercise books. Administrative practices sought to determine the extent to which the school leadership influenced school academic performance. The administrative factors also considered the qualifications of heads of department and their control of resources, including the human resources (teaching staff).

In this study, teacher related factors looked into the teachers' professional qualification, absenteeism, motivation and teacher workload. The end result is that academic performance can be high, moderate or low.





**Figure 1: Conceptual Framework**

## 2.3 Theoretical framework

### 2.3.1 Walberg's (1981) theory of educational productivity

The study is anchored on the theory of educational productivity by Walberg (1981). The theory of educational productivity is one of the few empirically tested theories of school learning. Walberg's theory tackles about influences on learning that affects the academic performance of a student. The theory is an exploration of academic achievement where Walberg used a variety of methods on how to identify the factors

that affects the academic performance of a student. Walberg's theory classified eleven influential domains of variables that affect the academic performance of students, the theory highlighted eight of the variables to have a major influence on academic performance of students. According to Walberg, the variables highlighted were affected by socio-emotional influences namely, classroom management, parental support, student-teacher interactions, social-behavioral attributes, motivational-effective attributes, the peer group, school culture and school climate and the remaining variables is affected by distant background influences namely, school policies, organizational characteristics, curriculum, and instruction were less influential to academic performance.

Walberg identified key variables that affect students' outcomes. The key variables proposed by Walberg are; student ability, motivation, age, quantity and quality of instruction, classroom climate, home environment, peer group, and exposure to mass media outside of school. According to Walberg, the first three variables (ability, motivation, age) reflect characteristics of the student. The fourth and fifth variables reflect instruction (quality and quantity of instruction), and the final four variables (classroom climate, home environment, peer group, and exposure to media) represent aspect of psychological environment. Walberg explained that these variables have a certain effect that might cause problems with academic performance of students if it will not be properly guided. Giving importance with certain variables can mean a big impact on students' academic performance. Walberg theory further posits that on the large-scale implementation of social emotional learning program, students who become more self-aware and confident regarding their learning abilities, students who are well motivated, who set learning goals, and well organized in their approach to work (self-regulated learning) perform better in school. Walberg's theory targeted

student learning characteristics i.e., social, behavioral, motivational, effective, cognitive, and metacognitive as a set of variables with the most potential for modification that could, in turn, significantly and positively affect student academic performance. The theory further demonstrated the importance of the domains of motivation, self-regulated learning strategies, and interpersonal abilities in facilitating academic performance.

Walberg concluded that the direct intervention in the psychological determinants of learning promotes the most effective avenues for reforms and good academic performance.

### **2.3.2 Lezotte (2010) effective school's model**

The study was also premised on the effective schools' model advanced by Lezotte (2010). According to Lezotte (2010), there are seven correlates of effective schools. According to this model, an effective school is a school that can, in measured students' achievement terms, demonstrate the joint presence of quality and equity. The seven correlates are: Strong instructional leadership, clear and focused mission, safe and orderly schools, climate of high expectations for success, frequent monitoring of student progress, positive home-school relations, and opportunity to learn on task.

According to Lezotte (2010) strong instructional leaders are proactive and seek help in building team leadership and a culture that is conducive to learning and professional growth. In the effective school, the head of department and others act as instructional leaders and effectively and persistently communicate and model the mission of the school to staff, parents, and students. The theory is relevant to this study because the seven correlates advanced by Lezotte (2010) of an effective school

require effective leadership on the part of the administrator (head of department). This is in line with Sullivan and Glanz (2000) assertion that a prime task of school leaders is to exercise instructional leadership of the kind that results in a shared vision of the directions to be pursued by the school, and to manage change in ways that ensure that the school is successful in realizing the vision. The head of department is the one to initiate and influence the seven correlates of an effective school, the seven correlates can therefore be termed as the head of departments' leadership practices which is the independent variable in this study. Lezotte (2010) asserts that in an effective school, in measured students' achievement terms there is quality and equity. An effective school facilitates high academic achievement. This assertion is the dependent variable of this study. By identifying the first three correlates of an effective school according to Lezotte (2010): leading the instructional program, focus on the mission and creating safety and orderliness in the school environment, this study tests Lezotte's (2010) effective school model, and may also suggest measures that low performing schools can take to improve on the academic achievement of students.

#### **2.4 Factors Affecting Biology Students' Academic Performance**

Several studies have been conducted in different countries to assess the factors which affects academic performance of students. In Pakistan, Farooq and Berhanu (2011) found that parents' education and socio-economic status have significant effect on a student's academic performance in biology. A study conducted by Mlozi, Kaguo and Nyamba (2014) in Kenya revealed that the interest in pursuing biology affects academic performance of a student. Additionally, Sibanda, Iwu and Olumide (2015) found that regular study habit, punctuality in school and self-motivation are key determining factors which influence students' academic performance in biology in South Africa. Musili (2015) also found out that daily study hours and parents'

socioeconomic status have a significant impact on academic performance of students in biology.

Moreover, Catherine (2015) found that socioeconomic status of parents especially those with high incomes has a significant impact on academic performance of students in biology within the Kitale Municipal of Kenya. Positive classroom environment has also been found as a determining factor of academic performance in biology (Molokomphale & Mhlauli, 2014). Maganga and Osei-Mensah (2012) indicated that teaching and learning materials, teacher work load, competency of teachers and environment in which the school is located have an impact on students' academic performance in biology. Furthermore, personal goals and motivation as well as the support from teachers and the teachers' level of experience significantly influence academic performance of biology students (Ulate & Carballo, 2011).

The discussion above suggests that academic performance of students in biology is influenced by a combination of factors which include but not limited to parents' level of education, socioeconomic status of parents, interest in the biology subject, regular study habit, punctuality in class, self-motivation, availability of teaching and learning materials, the biology teachers' competency, school environment, and personal goals. These factors could be classified into student related factors, teacher related factors, administrative factors, parental factors and learning resources.

#### **2.4.1 Influence of teacher related factors on academic performance**

According to Creamer (2014), teacher related factors are those within the teachers that could hinder or promote academic performance of learners in their schools. Teachers play a vital role towards the academic performance of students. Aspects of teacher-based factors may include: teachers' commitment, teachers' frequency of

absenteeism, teachers' motivation and teachers' workload. Good performance is as a result of high commitment levels by the teachers. For example, when teachers absent themselves from school frequently, students go unattended and do not do well in examinations. Absenteeism by teachers reduces the amount of instructional time and this result in the syllabus not being completed. This in turn leads to lower output of work by the students (Ubogu, 2004).

Teachers' satisfaction is generally related to achievement because satisfied teachers would concentrate to enhance academic performance of their students. On the other hand, overloaded teachers do not have enough time to prepare well for class work and this impact negatively on students' academic performance in biology.

A study conducted by Kimani, Kara and Njagi (2013) in Kenya on teacher factors influencing academic performance, found that teachers experience, age, gender and professional qualification had no statistically significant relationship with academic performance of student in biology. However, they noticed that performance targets, completion of syllabus, paying attention to weak students, assignments, students' evaluation, and the workload of a teacher had significant relationship with students' academic performance in biology. In Nigeria, Akiri and Ugborugbo (2009) also found that there is no statistical relationship between teacher effectiveness and academic performance in biology. Schneider (2002) asserts that frequent assessment helps in motivating students to learn by providing feedback thus improving their performance.

According to Creamer (2014), schools which complete syllabi on time have been doing better than those which are not able to do so. Lack of enough teachers causes a delay in the completion of syllabi, which leads to poor performance. A study done in Nigeria by Okoye (2014) affirms that, the quality of the learning environment at the

school depends to a large extent on the quality of the human resources capacity available. Teachers are the most important human resource and remain the backbone of any educational system and the quality of teachers in any educational system determines to a great extent, the quality of the system itself (Okoye, 2014). One key factor in determining excellent examination results in biology is the availability and quality of biology teachers.

Trained teachers represent a significant social investment and their levels of motivation and career commitment is of concern to policy makers (UNDP, 2017). The biology teacher quality depends on their qualification, experience and level of discipline which in-turn, determines the level of commitment. Ubogu (2004) asserts that the quality of the biology teacher is very crucial to determining examination outcomes in a school. He further posits that; the roles of a teacher include; organizing the instructional environment and carrying out the instructional process.

According to Wamulla (2013), quality education requires quality teaching force. Highly qualified teachers are most capable of helping their students learn, have deep mastery of both subject matter and pedagogy. Makau and Sommerset (2013) noted that academic and professional qualification of teachers were crucial factors in influencing performance and those schools with the best qualified teacher tended to be the most successful in examinations. However, many teachers typically lack the expertise to prepare effective pedagogical material, effective teaching methods and to develop valid and reliable tests, hence the students' score on teacher made test often do not accurately reflect the mastery of the content. Wamulla (2013) reported that a teacher who does not have both academic and professional teacher qualifications would undoubtedly have negative influence on teaching and learning of his or her

subject. He further stated that a teacher who is academically and professionally qualified but works under unfavourable condition of service would be less dedicated to his or her work. One of the leading problems in education in Africa as cited by UNDP (2017) is the persistent shortage of both qualified and properly trained teachers.

In Ghana, this problem has not been caused by lack of trained teachers in the job market but largely due to government inability to absorb qualified biology teachers which has a negative impact on the academic achievement of students. Osman (2017) in his study on poor performance in KCPE in north eastern province, Kenya noted that poor performance in biology was mainly a result of unequal distribution of teachers where there was understaffing and also, in most schools the biology teachers rarely attended in-service refresher courses. Simiyu (2002) established that teachers who were involved in marking WASSCE biology exams produces better results in the subject than those who were not. Marking WASSCE biology examinations is a form of training that helps teachers improve their understanding of the subject as well as learning to interpret examination questions. Pearson (2008) noted that in-service training is an important aspect of increasing the biology teachers' effectiveness. He recommended that teacher training courses should be geared towards the improvement of teaching skills and making teachers aware of changes in the biology curriculum. Pearson (2008) further pointed out that in-service training also helped biology teachers to use the available teaching resources more effectively and efficiently.

A teaching method is a way in which a teacher organizes and manages the teaching-learning situation, presents clear explanations and vivid descriptions, assigns and

checks if learning interacts effectively with learners through questions and probes, answers, praise and criticisms (Stanca, 2010). Teaching method is important in teaching and learning process because teaching methods are the ways of imparting knowledge and skills to learners. Biology is activity and discussion oriented. Therefore, lessons devoid of discussions and activities affects students understanding of biology concepts. Whatever method used; the goal should remain to promote students' learning activities. Mushashu (2012) asserts that there is relationship between students' performance and instructional methods used by biology teachers. He concluded that student centered method is more effective than teacher approach. Musili (2015) added that teacher experience and professional training have a significant impact on students' academic performance in biology. Blazar (2016) confirmed that the impact biology teachers have on students' performance is substantial but stressed that little is known about the specific teacher factors which contributes to the academic performance of students in biology. Ganyaupfu (2013) on the other hand asserted that combination of teacher and student-centered method have positive effects on academic performance of students in biology.

Okumbe (2016) posits that teacher working condition has a significant effect on performance. Low status and morale among teachers in Ghana is a normal phenomenon which leads to reduced productivity. Okumbe (2016) further emphasized that if teachers feel they are working much harder than others with similar qualification in other sectors of the economy but are receiving fewer rewards, they will most likely feel dissatisfied with their job.

Studies by Schneider (2002) indicated that lack of motivation and professional commitment produce poor attendance and unprofessional attitude which affects the

performance of the student. Obstacles such as transportation and housing hinder teachers from getting to school on time and staying until school hours are over. Sometimes teachers are forced to do other job to get extra money which may distract them from time to time and energy they spend in the classroom. When teachers are present, learning occur when they engage students in instructional activities rather than attending to administrative or other non-instructional process (Fuller, 2006). Teacher's attitude towards their work, the student, their classroom management and their interaction with student have a great impact on academic performance of students.

On teacher commitment, Danso (2013) argued that the low salaries paid to teachers in Ghana compelled them to engage in other income generating activities. The teachers were therefore not able to prepare students adequately for biology examinations because they were not able to utilize their teaching time properly. He further argues that many trained biology teachers in Ghana opted for teaching profession after failing to secure other professions and were therefore always on the lookout for opportunities elsewhere. These teachers, according to him, were therefore ill motivated and were not committed thereby contributing to students' poor performance in biology examinations.

Teacher factors that significantly affect students' academic performance in biology as reviewed includes; teachers teaching experience, completing of syllabus, paying attention to weak student, assignments, students' evaluation, teaching methodology, professional training, teacher-student ratio, teacher workload, teacher working condition and qualification of teachers. It was also noticed that biology teacher's age and gender have no effect on students' academic performance.

#### **2.4.2 Influence of learning resources on students' academic performance**

An important infrastructural facility is the laboratory. Laboratory is essential to the teaching of biology and the success of any science course much depends on the laboratory provision made for it. On the need for practical work, Osman (2017) stated that practical work is a matter of maximum importance in the learning of biology or any other natural science. In his opinion, a common error observed in biology teaching in schools is that teachers do not include enough practical works in their teaching scheme. According to him, schools do not teach biology practical until second or third term of senior secondary school. The teacher being conscious of the fact that the students will face a practical biology in the West Africa Secondary School Certificate examination begins to give hasty lectures on how to attempt the practical examination (Osman, 2017).

Mosha (2015) pointed out that utilization of laboratory equipment enables learners to focus their attention to important issues and acquire practical skills in biology. In effect, acquisition of such skills is capable of helping students' combat unemployment and poverty. Hence, the need for maximum use of such learning resources cannot be overemphasized.

Omari (2011) found in her study that schools with highest frequency of utilization of these learning resources had highest mean score followed by schools with average and low frequency of utilization respectively. Nambuya (2016) also found that students who are taught with instructional materials in Nigeria perform better than students taught without instructional materials. Similarly, Oghuvbu (2017) found that in Nigeria, instructional materials have a significant impact on academic performance in biology. He asserted that the use of instructional materials facilitates the smooth

delivery of a lesson and it enhances teaching and learning. The use of instructional materials assists students to understand the concept of biology better. As a result of this students who are taught with instructional materials perform better than students taught without instructional materials (Molokomphale & Mhlauli, 2014).

#### **2.4.3 Influence of libraries on students' academic performance**

Fowowo (2015) stated that school library should be well equipped and accessible to all students and teachers. Maric and Sakac (2014) indicated that reading of library materials have positive relation with students' vocabulary, grammar, comprehension, writing and spelling skills. These abilities need well managed library where they improve their skills and academic performance. Ola (2010) suggested that sound prepared library collection is a foremost facility that enhanced high quality education and achievement of high learning standard. Furthermore, Osman (2017) indicated that school library will not become effective if there is not adequate and up to date books and other teaching learning resources. He further stated that those students who were habitual of attending library, got more score as compared to those who fail to use school library. Stanca (2010) distinguished that complete deficiency of ordered school library would continue to bring hurdle for hundreds of students. Fuller (2006) recognized that school library is the source which has significant relation with students' academic achievement. Komakeck (2015) revealed that library has correlation with students' performance and schools which have well operational library facility usually preserve high academic achievement. Fuller (2006) originated that those books which are reserved to read in the school library is directly concern with students' achievement. He further explained that for successful academic performance, it is needed to provide adequate place and trained librarians for secondary school library. He also stated that both teachers and students require library

resources and expertise to achieve the objectives. According to Keith (2004) availability of school libraries help teachers to teach the students effectively. Furthermore, he explained that availability of adequate library facility encourages the learning environment and make the process effective and easy. Adomi (2006) stressed that school library have significant importance for both students and teachers. He discussed that well equipped and proper uses of school library motivate the students and prepare them to solve the problems individually and create self confidence in the students.

Tobin (2005) noted that to achieve the goal of producing good results, schools must have well stocked library. He further emphasized that, library is one of the infrastructural facilities and is an essential factor in teaching-learning process. It forms one of the most important educational services. The relevance and sufficient reading material are some of the factors which can lead to students' good performance; the opposite of it can lead to poor performance in secondary schools (Mosha, 2015).

#### ***2.4.4. Influence of administrative practices on students' academic performance***

A study conducted by Nambunya (2016) on factors contributing to poor performance in some selected schools in Kenya established that headmasters rarely checked the biology teachers' schemes of work and lesson plans. It was also noted that majority of the headmasters and biology heads of department do not at all physically observe classes conducted by the teachers in a given term. These findings indicate that there is less monitoring and reporting of the progress of the school activities and heads of department do not follow up on biology curriculum implementation during the course of the term. Narad and Abdullah (2016) conducted a study to investigate the influence

of inspection and supervision on performance. In their study they established that effective supervision contributes significantly to academic performance. Inspection and supervision are done to assist teachers improve their pedagogic effectiveness and productivity. Instructional supervision is concerned with the pupil or student learning in the classroom and to improve the teachers' classroom performance. According to Molokomphale and Mhlauli (2014), newer and better supervisory techniques must be developed through research effort and applied in order to release the maximum potentials of the teachers. Ubogu (2004) has defined clinical supervision as the phase of instructional supervision which draws its data from first-hand observation of actual teaching events and involves face to face interaction between the supervisor and the teacher in the analysis of the teaching behaviours and activities for instructional improvement. However, many teachers are not observed regularly and those who are observed periodically often report that they do not receive useful or credible analyses of their performance (Stanca, 2010).

Moreover, Maganga and Osei-Mensah (2012) found that schools with suitable rules and regulations, fair punishment and good implementation of students' rules and regulations performed better than school with less suitable rules and regulations. Mbokane (2009) also recommended that effective school discipline should be used to control students' behavior because it had a direct impact on biology students' academic performance. Molokomphale and Mhlauli (2014) concluded that discipline had a positive relationship with academic performance. They asserted that to improve on academic performance in biology, the discipline level of students should be enhanced. The current study sought to establish whether factors surrounding administrative practices as shown in the literature review are impacting on students' academic performance in biology in the Bekwai Municipality.

#### **2.4.5 Influence of school-based factors on biology students' performance.**

School based factors are factors within the school which influenced academic performance. Narad and Abdullah (2016) found that in public schools, the key factors which affected academic performance were modern laboratories and textbooks as reference materials. Within the same country, Ubogu (2004) revealed that the availability of physical resources such as libraries, textbooks, adequate of classrooms and spacious classrooms affected the academic performance of students in biology.

The location of a school has also been found to have a significant impact on the academic performance of students in biology. Stanca (2010) opined that the distance of a school affects the academic performance of students. He emphasized that the longer the distance of a school from students' residence the more tired and hungry the students become hence it will negatively affect their academic performance in biology. He argued that students in community schools will continue to perform poorly if community schools are not provided within their community. According to Mbokane (2009) students in urban areas tend to perform better in the science subjects than those in rural areas. This indicated the location of school has an influence on students' performance in biology. However, Maganga and Osei-Mensah (2012) found that there is no statistical significance relationship between school location and academic performance

Moreover, the size of a class or student-teacher ratio has also been found as a school factor which influence academic performance in Biology. According to Okoye (2014), there is a significant relationship to teacher-student ratio and academic performance in biology. Oghuvbu (2017) argued that if the class size is smaller and is combined with effective teaching, its impact on the academic performance is positive. Similarly, Maganga and Osei-Mensah (2012) found that school factors such as

effective teaching when combined with class size have a positive impact on academic performance in Biology. However, Narad and Abdullah (2016) found that there is no statistical difference between class size of schools in the urban areas and rural areas on academic performance in biology. Stanca (2010) found that class size has no significant impact on academic performance in the learning of biology.

According to Sibanda, Iwu and Olumide (2010), there is a statistical significance difference in school facilities of private and public schools but in terms of academic performance there is no statistical difference. On the other hand, Omari (2011) stressed that school facilities are the most important determining factor of academic performance in biology.

With respect to school environment, Mosha (2015) found that there was no statistically significant relationship between school environment and academic performance in biology but other studies found otherwise. For example, Ahmad, Bakar and Ghani (2013), found that school environment has significant impact on academic performance in biology.

School factors which affected academic performance in biology were numerous as revealed by literatures above. However, it has been proven that the key school factors which directly influence academic performance includes instructional materials, discipline, effective teaching, class size and the school environment.

#### **2.4.6 Student factors influencing students' academic performance.**

From the discussion above, it is evident that students play a critical role towards their academic performance in biology. Students' factors such as developing interest in biology, regular study habit, self-motivation, punctuality in school and students'

personal goals affect their academic performance in the subject. According to Maric and Sakac (2014), students' factors that affect their performance could be classified into internal and social factors. They found that the internal factors that influence students' academic performance in biology included interest in content of subject, internal satisfaction, and aspiration. The social factors also include material reward.

MeenuDev (2016) stated that student level of interest in biology influence their academic performance. Similarly, Kpolovie, Joe and Okoto (2014) asserted that students' attitude toward school and their interest in learning biology influence academic performance in biology.

Komakeck (2015) found that there was a positive relationship between students' attendance to biology class and academic performance. Using correlational approach to assess attendance and academic performance in Nigeria, Oghuvbu (2017) had the same results as Komakeck (2015). He found that there is a positive correlation between academic performance and class attendance. Stanca (2010) also found that class attendance has a statistically significant impact on academic performance in biology. Several studies have found the same relationship.

The attitude of students towards the learning of biology have been found to have a significant relationship with academic performance in the subject. For example, Ahmad, Bakar and Ghani (2013) found that there is a statistically significant relationship between students' attitude towards biology and academic performance. Janssen and O'Brien (2014) argued that although students learning has an impact on academic performance in biology, it is indirect.

Notwithstanding their findings, Manoah, Indoshi and Othuon (2011) confirmed that in the case of biology, students' attitude towards the subject has direct impact on their academic performance. However, Uok and Langat (2015) found that students who had positive attitude towards biology did not affect their biology score.

Afzal, Ali, Khan and Hamid (2010) asserted that students' personal motivation plays a vital role towards their academic performance in the study of biology. They found that both intrinsic and extrinsic motivation has a positive correlation between students' academic performance. They added that intrinsic motivation is a strong predictor towards academic performance than extrinsic motivation. Similarly, Haider (2015) concluded that motivation play an important role in success of student academics. In his study, he found that intrinsic and extrinsic motivation had a positive statistically significant relationship with academic performance. He outlined that students' motivational characteristics such as self-exploration and career focused have a positive impact on academic performance. Using structural equation modelling analysis to assess the effect of motivation on academic performance in biology, Kusurkar, Cate, Vos and Croiset (2013) categorized motivation into Random Autonomous Motivation (RAM), Controlled motivation (CM) and Autonomous Motivation (AM). They found that RAM which they define as intrinsic motivation correlated with academic performance. Additionally, Amrai and Parhon (2011) argued that the academic performance of students in biology is affected by a combination of different motivational factors.

The literature reviewed indicated that students' factors which influence their academic performance in the learning of biology is a combination of several indicators. From this review, it was found that interest in biology, regular study habit, regular class

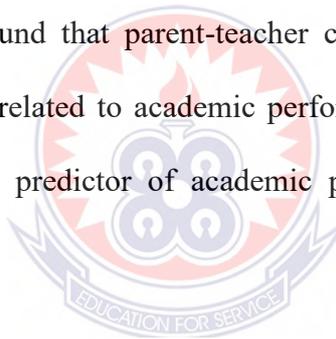
attendance, self-motivation and attitude of student towards learning are key factors which affect their academic performance. All the literature reviewed found that there is a positive relationship between student factors, teacher related factors, administrative factors, learning resources and academic performance. With the exception of Uok and Langat (2015) who found that students who had positive attitude towards biology did not affect their exam score in biology. This implies that if a biology student exhibit positive attitude towards these factors, his or her academic performance will improve if all other things being equal.

#### **2.4.7 Influence of parental factors on biology students' academic performance.**

Recent studies have found that parent involvement have a positive impact on the academic performance of their wards in biology. Creamer (2014) revealed that parents' involvement directly affected the behaviour and attitude of students but indirectly influence their academic performance in biology. In Ghana, Danso (2013) posits that the involvement of parents towards their wards is categorized into home-based and school-based parental involvement. His study revealed that home-based parental involvement has a positive relationship between school-based parental involvement and academic performance. Similarly, Ubogu (2004) also concluded that parental involvement affects the academic performance of students in biology but the direction of the impact was not stated. Additionally, Wamulla (2013) noticed that parental involvement in academic performance of students has different forms. He finds that there is a parents' involvement in educational activities at school, parent-school communication and parents' involvement in home academic activities have an indirect effect on academic performance of students, and the impact of parent-school communication was found not to be a strong predictor to academic performance in biology. It was recommended that parents provide extra classes for their wards and

there should be rules to govern their children's studying behavior in the house. Creamer (2014), also found parent school communication as a positive impact on the academic performance in biology.

Osman (2015) emphasized that students with high level of parental involvement in their academics significantly perform better in biology than those with no parental involvement. Using a multiple mediation analysis, Yusuf, Onifade & Bello (2016) found that there is a statistical significance association between parental involvement and their wards academic performance in the biology. In Pakistan, Kimani, Kara and Njagi (2013) had the same results. They emphasized that parental involvement has a significant effect in improving the academic performance of students in biology. In Ghana, Danso (2013) found that parent-teacher communication, family and home supports have positively related to academic performance in biology. He concluded that the most significant predictor of academic performance is family and home support.



Empirically, parental involvement has been found to have a significant positive impact on the academic performance of their wards in biology but the degree and level of parental involvement varies and this has an indirect effect on the academic performance of their wards.

#### **2.4.8 Influence of parents' level of education on academic performance**

According to Farooq and Berhanu (2011) parents with higher level of education show much interest in the academic performance of their wards. They observed that there is a positive significant relationship between level of parents' education and students' academic performance. The same result was found by Wamulla (2013) that in most Nigeria secondary schools, the level of education of a student parent is positively

related to his or her academic performance. Similarly, Martha (2010), found that parents' level of education has a positive relationship with academic performance. It was also observed by Molokomphale and Mhlauli (2014) that parents with higher level of education serve as a motivation for their children to work hard to achieve their academic goals. They added that such students have higher aspirations for their education. They further found that parents' level of education has some level of impact on academic performance but it is not a major determining factor. They concluded that there are other factors such as learning environment and facilities which is also important factors that influence academic performance in biology. On the other hand, Martha (2010) found that parents' level of education has no statistical impact on their ward's academic performance. The impact of parents' level of education on the academic performance of their wards seems inconclusive. While some studies found a positive significant relationship, others have argued that it is not the sole determining factor of academic performance.

Additionally, studies have also found that there is no statistical significance relationship between parents' education level and academic performance in biology. This creates a gap in the literature hence the researcher sought to fill this gap.

## **2.5 Educational Structure in Ghana**

The educational structure in Ghana is divided into three parts: Basic Education, Secondary Education, and Tertiary Education and its being run on a 6-3-3-4 system (Ministry of Education, 2016). The basic education level which comprises of Kindergarten, Primary and Junior high school last for 9 years; The pre-school education last for 3 years. Pre-school was not considered to be part of formal education in Ghana until 2002 (Ministry of Education, 2016). The aim for

incorporating it was to prepare children for smooth transition into the primary level (Ampiah, 2013). Primary education last for 6 years and is divided into lower primary and upper primary. The aim for this level is to enable children acquire knowledge, develop their attitudes and other skills to be able to solve problems (Ampiah, 2013). The secondary Education last for 3 years; and the tertiary education also last for 4 years (Ministry of Education, 2016). It should be emphasized that from 2007 to 2011 the structure was 6-3-4-4 system. This shows that secondary school lasted for 3 years during the period (Ministry of Education, 2016).

Ministry of Education (2016) outlined seven objectives of secondary education in Ghana as follows: to consolidate and broaden the scope for baseline ideas, knowledge, skills and principles acquired and developed at the primary level; to enhance further development and appreciation of national unity, identity and ethic, personal integrity, respect for and readiness to work, human rights, cultural and moral values, customs, traditions and civic responsibilities and obligations; to promote the development of competency in linguistics ability and effective use of communication skills; to provide opportunities for the acquisition of knowledge, skills, attitudes and understanding in prescribed or selected fields of study; to prepare students for tertiary and higher education, vocational, technical and professional training; to inculcate a sense and ability for self –study, self-confidence and self-advancement in new frontiers of science and technology, academic and occupational knowledge and skills; and to prepare students to join the world of work.

### **2.5.1 The science resource centre policy in 1995**

The government of Ghana in 1995, through the Ministry of Education (MOE) and Ghana Education Service (GES) established Science Resource Centres (SRCs) in 110

senior high schools spread throughout the country. Each centre was intended to be used by a number of Senior high schools known as satellite schools within a 40-kilometre radius depending on the population of the schools. This project was initiated to help bridge the gap between schools with well-resourced science laboratories (both human and material resources) and those with little or no resources, hence ensuring equity in students' learning across the rural-urban divide (Ministry of Education, 2016). The SRCs were equipped with basic science equipment including modern electronic devices and computers to be used in the teaching and learning of science and thereby improving students' performance. In addition, buses were provided to all SRCs for use by satellite schools (Ampiah, 2013). After almost three decades of its (SRCs) implementation, performance of students has not been any better as indicated earlier.

It would be interesting, therefore, to investigate whether factors such as learning resources and others have any effect on students' academic performance in biology.

## **2.6 Empirical Studies on Students' Academic Performance**

This section contains an analysis of research findings on the quality of biology education and student performance in biology. The presentation covers international empirical findings. It is widely recognized that the quality of teachers and teaching lies at the heart of all schooling systems intending to offer quality education. Creamer (2014) conducted a study on the relationship between teachers and student competence in biology in North Carolina in the USA. The research findings disclosed that the quality of teacher's knowledge on the subject matter is a cardinal factor influencing test scores. In this case, the biology teacher's competence made a remarkable contribution to student performance in biology. Similarly, Komakeck

(2015) conducted a study to find out the ways in which teacher's quality and other inputs correlate to students' performance in biology. Data were collected from 50 states of the USA. The findings revealed that teacher quality appeared to be stronger when related to other school inputs. Lessons learnt from the study were reflected in efforts to prepare teachers and support those in service, especially in states wanting to improve student performance in biology. Other studies conducted in India, Guinea, Mexico and China through a review done by Janssen and O'Brien (2014) disclosed that teachers played a key role in improving the student performance in biology. However, teachers' constraints such as transfers, social status, and working conditions that tend to grind down their motivation and commitment to teaching were not seriously considered, although they have a remarkable effect on the biology teachers' work and ability.

Quality of educational outcomes depends heavily on the quality of the individual teacher. Recent research in the United States reported that the biology teachers' quality is the single most important variable in determining student performance in biology (Creamer, 2014). It is no surprise that, improvements in teacher education are frequently suggested as a solution to educational problems. In the United Kingdom, (Creamer, 2014) in research titled; improving the impact of teachers on pupil achievement in UK recommended that, improving the effectiveness of teachers would have a major impact on the performance of the country's schools, increasing the attainment of children across the education system. Teachers are by far the biggest resource in schools. Research has found that teachers are the most important factor within schools that policy makers can directly affect to improve student achievement. Having a very effective rather than an average teacher raises each pupil's attainment by a third of a GCSE grade.

Haider (2015) conducted research on analysis of factors affecting students' biology achievement in Italy. In the findings, he found that students' self confidence in learning biology proved to be the most important predictor of their performance. Research into educational psychology shows that teachers can improve students' self-confidence and self-efficacy by means of specific teaching methods such as engaging students in a creative manner and using collaborative learning or inquiry-based activities (Uok & Langat, 2015).

Ganyaupfu (2013), a professor in the department of applied biochemistry, Barb Hag College of India in his research; secondary school education in Assam (India) with special reference to biology, in his study found that biology performances of schools were positively correlated with their performances in other science subjects other than biology. On the other hand, he stated that student-teacher ratio seems not to affect the biology performance of the schools.

The objectives of his study were; to investigate the academic scenario of secondary schools in Assam with special reference to age, management, teacher student ratio and result of 10th standard school leaving examination, to compare the academic performance in biology with performances in other subjects of secondary schools as reflected by the scores of students' in examination and to investigate the dependency of students' performance on some relevant environmental factors prevailing in secondary schools in the region. In his conclusion, the financial and managerial status of the schools seems to be the major factors influencing academic performance in biology. Appropriate secondary school knowledge backed by perfect learning in biology can make the students competent for future careers.

Ekundayo (2002) carried out a study in Nigeria where the performance in biology was very poor in the secondary schools. Among the factors that contributed to this poor performance were inadequate learning facilities in the secondary schools which include science equipment and laboratories, shortage of qualified and devoted instructors, lack of ability of the students to do well in practical and the teaching methodology used by the teachers. Ekundayo (2002) further emphasized that most of the biology text books used in secondary schools are written by foreign authors who use complex language which is difficult for the learners to comprehend.

In Lesotho, performance in biology has been in the decline due to the following factors: lack of science resources, lack of enough and quality text books, students' perception that science subjects are difficult, student's laziness and too little time allocated to practical lessons (Awelani, 2014).

The researchers classified the factors that led to poor performance into two; direct influences which include teaching strategies, content knowledge and understanding, motivation and interest, laboratory usage and syllabus non completion. The indirect influences include parental roles and language. Mary (2008) argues that a common maxim in the educational profession is that one teaches the way he was taught. This suggests that, for example a biology educator who was educated in an incompetent manner will have learnt bad practice and is likely to use such in teaching others.

Oghuvbu (2017) conducted a study to examine the perception of students and teachers on the causes of poor performance among biology students in secondary schools in Ogun state, Nigeria. Responses of teachers showed that teacher's qualification and students' environment do not influence students' poor performance in biology but teachers' methods of teaching influences academic performance in biology. Student's

response on the other hand showed that teacher's methods of teaching and learning resources contributes to poor performance in biology.

Mosha (2015) conducted a study, the variables that were identified in the study for research questions and data collection instruments were, student's poor academic performance and teachers' qualifications, students' poor academic performance and teachers' method of teaching and students' environment and poor academic performance. These factors form a basis for comparison with the factors causing poor performance among students in secondary schools in Tanzania. Other student related factors based on knowledge acquisition noted were availability of reading materials, student using study timetables and organizing their work, study discussion groups and attending science symposiums, field trips and exhibitions.

Wamulla (2013) examined the relationship between availability of both human and non-human resources for teaching and learning and performance in biology in Kenya Certificate of Secondary Education (KCSE) examination. From his finding's availability of text books, laboratory chemicals and equipment was higher in the high performing schools than in the low performing schools. The findings show that two out of the seven low performing schools that had a science laboratory had a laboratory technician, all the five low performing schools that had a science laboratory did not have a laboratory technician and only one among the seven schools used for the study was fully equipped. There were differences in the availability of teaching and learning resources in the seven schools. The author recommended that the ministry of Education should initiate more training programmes in provision, improvisation and utilization of teaching and learning resources and should help enhance the ongoing science programmes like SMASSE. Wamulla's (2013) research established possible

factors that lead to poor performance in biology in secondary schools in Kenya and even in Tanzania.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Overview**

This chapter discusses the procedures and strategies that were used in the implementation of the proposed study. It dealt with research design, study area, study population, sample and sampling technique, research instruments, validity of instruments, reliability of instruments, data collection procedures, data analysis procedure and ethical considerations.

#### **3.1 Research Design**

Cohen and Manion (2011) asserted that a research design was a plan, structure and strategy of investigation to obtain answers to research questions. In this study, the qualitative research design was used. Qualitative research design was suitable for this study because it enabled an in depth understanding of factors affecting senior high school biology students' academic performance in the Ashanti Bekwai Municipality by studying humans in their natural setting (Creswell, 2012). A descriptive survey design was employed to the participants to enable them provide information about themselves with regard to attitudes, opinions, behaviours or characteristics.

#### **3.2 The Study Area**

Bekwai Municipality is one of the forty-three districts in Ashanti region. Bekwai Municipal is located in the southern part of Ashanti Region. The boundaries of the Municipality are shared to the North with Bosomtwe District, to the South with Adansi North District, to the East with Bosome-Freho District and to the West with Amansie Central District and Amansie West District. The Bekwai Municipality lies within latitude 6° 00N and 6° 30N and Longitudes 1° 00 W and 1° 35 W. The

Municipality covers a total land area of 535.2 square kilometres representing 2.2 percent of the total land area of the Ashanti region (GSS, 2010). Therefore, the Bekwai Municipality has a population density of 220.5 people per square kilometre. This implies that there are approximately 221 persons inhabiting every square kilometre in the Municipality given the population of 118,024. Bekwai Municipal has six public senior high schools and three private senior high schools. The study was conducted in three public senior high schools that offers biology in the Bekwai Municipality. The research was conducted in the Bekwai Municipal since we have a mixture of schools; both public and private senior high schools out of which can be grouped into low versus average performing schools. In the Municipality, Seventh Day Adventist Senior High School is the only school with a science resource centre. The remaining schools rely solely on their school laboratories furnished with few and minor science equipment. Schools without science laboratories in the Bekwai Municipal sometimes travel to the resource center for science practical lessons and others rely on improvisation techniques from the experienced science teachers.

### **3.3 Population**

According to Miznen (2016) all research questions address issues that are of great relevance to important group of individuals known as a research population. A research population is generally a large collection of individuals that are the main focus of a scientific study. It is for the benefit of a population that researches are done.

All individuals or objects within a population have a common, binding characteristics. The study targeted senior high school (SHS) form 2 students offering biology and biology teachers in the Senior High Schools in the Bekwai Municipality in the Ashanti Region. There were nine (9) SHS in the Bekwai Municipal during the time

the research was conducted. Out of these (six) 6 were public senior high school and three (3) private senior high schools. Out of the nine (9) senior high schools in the Municipality, seven (7) offers elective biology and two (2) do not offer elective biology. The schools used for the study were coeducational (boys and girls). Bekwai Municipal was chosen for the study due to proximity and researcher's familiarity with the area. There were about seven hundred and eighty-five (785) senior high school form 2 biology students and twenty-eight (28) biology teachers in all the seven senior high schools in Bekwai Municipality. Out of the seven hundred and eighty-five (785) biology students, four hundred and eleven (411) were males and three hundred and seventy-four (374) were females.

The target population of this study included all students and biology teachers in senior high schools in Bekwai Municipality in the Ashanti region of Ghana. The accessible population comprises of all form two (2) biology students and the biology teachers in the selected senior high schools in the Bekwai Municipality. The elements of this population are finite and different in terms of age, sex, race and ability in performance.

### **3.4 Sample and Sampling Technique**

The list of all senior high schools in the Bekwai Municipality were obtained from the Municipal Education Directorate in the Ashanti Bekwai. Since it was practically impossible to access all the schools in the Municipality, out of the total number of nine senior high schools within the Municipality, the purposive sampling technique was to select three schools for the study. The purposive sampling technique was used because some of the schools in the Municipality do not offer science or home economics as a program. Also, others were private schools and did not allowed the

research to be conducted in their schools. The schools purposively chosen for the study were; Oppon memorial SHS, Wesley high school and Saint Joseph's SHS. The population of this study consisted of all form two senior high school students studying biology and biology teachers in the Bekwai Municipality. Random sampling and purposive sampling techniques were used to select the participants of this research. Random sampling was used to select students to participate in the research to ensure representation of both sexes hence eliminating gender bias. Twenty-two (22) boys and eighteen (18) girls were selected using simple random sampling technique from the three selected senior high schools. Simple random sampling ensured that everyone in the participating schools had an equal chance of being selected hence elimination of bias. A total of forty (40) students were selected from each sample school. Purposive sampling was used to select the schools and teachers to participate in this research. The main goal of purposive sampling is to focus on Biology teachers only which are best respondents to the research questions and they have experience in teaching the subject. A total of twelve (12) biology teachers were selected from the sampled schools in the Bekwai Municipality.

The sample for the study was one hundred and twenty (120) students comprising of (66 boys and 54 girls) and twelve (12) biology teachers of which only four (4) were females. Table 1 summarizes the sample size of the study.

***Table 1: Sample Size for Students and Teachers***

<b>Category</b>	<b>Population</b>	<b>Sample size</b>	<b>Sample per school</b>
Students	785	120	40
Teachers	28	12	4
<b>Total</b>	<b>820</b>	<b>132</b>	<b>44</b>

**Source: field data, (2021)**

### **3.5 Instruments for Data Collection**

The instruments used for data collection consisted of interviews, questionnaires, and observation. The items were designed to elicit information from the respondents concerning factors affecting academic performance of students in biology among senior high school students in the Bekwai Municipality.

#### **3.5.1 Questionnaire**

The researcher used questionnaire as one of the instruments because of the reasons given by some experienced researchers. According to Stefan (2013), questionnaire is simply an instrument for recording information about a particular issue of interest. Questionnaire contained both open ended and closed ended ones (Likert type items).

It is mainly made up of list of questions, but should also include clear instructions and space for answers or administrative details. The questionnaire was administered to both students and teachers. The student's questionnaire is composed of sections on demographic data with items such as gender, age and school-based items such as teacher related factors, learning resources and administrative practices that influences academic performance in biology. Questionnaires for biology teachers had sections on demographic data items such as age, sex, academic qualification, and teaching experience and school-based factors with items such as method of teaching, availability of teaching and learning materials, workload and motivation and finally strategies adopted to improve performance in biology.

#### **3.5.2 Interviews**

To get information from the key informants on factors affecting students' academic performance in biology, interviews were conducted to biology teachers and students. The interviews were conducted on a one-on-one basis. Semi-structured interviews

enabled immediate feedback from participants hence achieved a high response rate (Chiromo, 2009). In addition, interviews were quick to conduct which allowed the interviews to take place within a short time and enabled the researcher to use them on a relatively large sample (Cohen & Manion, 2011). Semi structured interviews also allow informants the freedom to express their views in their own terms. The researcher could adjust the sequence of questions and probe further to get clarification and in-depth data when semi structured interviews are used. Furthermore, semi structured interviews can provide reliable, comparable qualitative data (Creswell, 2012). This was useful in obtaining detailed information about personal feelings, perceptions and opinions. Thus, the researcher got a comprehensive understanding of issues discussed. Interviews also enabled the generation of primary data (Chiromo, 2009). The interview technique may somehow be disadvantageous in that it is time consuming and can bring about bias as the respondent try to please the researcher.

The researcher interviewed some biology teachers and students. In this, respondents were asked to respond in an open-ended manner to the questions.

### **3.5.3 Observation**

Research carried by Wakefield (2012) revealed that the advantage of conducting observation was that the researcher could observe what people actually did or said, rather than what they said they did. Students are not always willing to write their true views on a questionnaire or tell a stranger what they really think during interview so observation help to solve those problems. Observations were made during lessons and formal discussions. The researcher observed the participants while the people observed were not aware that they were being observed. Observations were done so as to enable the researcher to overcome Hawthorne effect. Chiromo (2009) explains the

Hawthorne effect as the tendency of participants to change their behaviour when they are aware that they are under observation. This technique enabled the researcher to get realistic information of what is happening in the sampled schools on possible factors affecting academic performance of students in elective biology. It also allowed the researcher to study phenomena in its natural setting. Chiromo (2009) stated that data recorded as events occur is more reliable. Observation allowed the researcher to get insights into contexts, relationships and behaviours of the phenomena (Matsa, Mutekwa & Marambanyika, 2015).

### **3.6 Validity and Reliability of Research Instruments**

#### **3.6.1 Validity of the Main Instrument**

Key (2002) purported that validity is the extent to which an instrument measures what is supposed to measure and performs as it is designed to perform. Nworgu (2004) defines validity as a process of validation which involves collecting and analyzing data to assess the accuracy of an instrument.

To ensure validity of the research instrument, the content validity was checked through piloting of research instruments. One school was involved in the pilot study where one (1) heads of department, two (2) teachers and ten (10) students were included to participate. The school which was used in piloting was not used in the actual study. After the analysis of the responses, it was necessary to revise and modify some items. The pilot study helped to improve the face and content validity of the instruments. To achieve the purpose of this study, triangulation method of data collection (interview, questionnaires and observation) was employed. This was done to ensure the information collected was valid by counterchecking contradictory information. The instruments were reviewed and corrected by the supervisor to

examine if they were relevant for collection of the required data. Before administering the research instruments to respondents, the researcher distributed questionnaires and interview schedules to fellow teachers in the science department of Fomena T.I. Ahmadiyya Senior High School. The aim of this review was to check effectiveness of the instruments in tapping the required information for the study. Findings from the review disclosed the necessity for modification of some items. Each item in the questionnaire and interview schedule was crosschecked. Anomalies were modified accordingly before administered to intended respondents.

### **3.6.2 Reliability of the Main Instrument**

Nworgu (2004) defined reliability of an instrument as the consistency with which an instrument measures whatever it purports to measure. In establishing the reliability of the instrument used in this study, the questionnaires were subjected to a single test administration for reliability and the following alpha coefficients were obtained. For students' questionnaire, the Cronbach alpha was 0.75, while that for the teachers it was 0.87. Since these coefficients were more than the required threshold of 0.7, the questionnaire used was deemed to be reliable for use in data collection.

### **3.7 Data Collection Procedure**

An introductory letter was obtained from the school of graduate studies, University of Education, Winneba to the Municipal Director of Education. The Director of Education issued a letter of attestation to be given to the Heads of the sampled schools. The letter of attestation was also shown to the headmasters and mistresses as well as the heads of department in the sampled schools. This would enable the researcher to carry out the research work. The researcher met the heads of these institutions and briefed them on the purpose of the study. The researcher together with

two colleague teachers made personal visit to all the three senior high schools used for the study. The questionnaires were administered with the help of the biology head of department of each school. The questionnaires for biology teachers were administered without any difficulty. The entire sample understood what the whole exercise was about and answered all the questions.

On the part of the students, the researcher explained the questionnaire to them and allowed the students to tick the response that portrayed their opinions as seen on the questionnaire. The questionnaires were distributed by the researcher who also waited and collected them back from the respondents. A total of 132 questionnaires were distributed and the researcher received 100% response from the respondents. Additionally, a section of teachers who were randomly selected were interviewed to solicit their opinion on the likely factors that can affect students' academic performance in elective biology.

Furthermore, in order to verify whether students' academic performance is affected by some existing factors, the researcher observed three biology lessons in each of the sampled schools.

### **3.8 Data Analysis Procedure**

According to Polit and Hungler (2010), data analysis means to organize, provide structure and elicit meaning. The most commonly used method in reporting descriptive survey research is by developing frequency distribution tables, calculating on percentages and tabulating them appropriately. After receiving the completed questionnaires, the researcher inspected all of them for completeness, appropriate marking of responses and suitability for coding. The open-ended questionnaire was analyzed thematically. Data were analyzed using Microsoft excel and Statistical

package for social sciences (SPSS). Descriptive statistical techniques such as; mean, frequency, percentages, bar chart and pie chart were employed to present the analyzed field data from questionnaires to assist in the interpretation of data.

### **3.9 Ethical Considerations**

An introductory letter was obtained from the school of graduate studies, University of Education, Winneba (UEW) which introduced the researcher to the Municipal Education Director (MED) of Bekwai Municipal for permission to conduct the research in the selected area. The Municipal Director of Education issued an introductory letter to the researcher to be sent to the sampled schools. During administration of questionnaires and interviews, the researcher ensured that the confidentiality and anonymity of the participants would be maintained through the removal of any identifying characteristics. The researcher first obtained the respondents informed consent before issuing out questionnaires. Participants were made aware of the type of information the researcher wanted from them, what purpose it would be used for, how they were expected to participate in the study, and how it would directly or indirectly affect them.

High standards of honesty and trustworthiness of the data collected and the accompanying data analysis was upheld.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0. Overview

This chapter contains the results of the study. It presents response rate from questionnaires. It also analyses, presents and interprets data collected in order to answer the research questions. It presents detailed analysis of factors affecting academic performance in Bekwai Municipality namely; learning resource factors, teacher related factors and administrative practices.

#### 4.1. Return Rate

*Table 2: Questionnaire Return Rate*

<b>Respondents</b>	<b>Returned</b>	<b>Not returned</b>
Students	120	0.00
Teachers	12	0.00
<b>Total</b>	<b>132</b>	<b>0.00</b>

Questionnaires were administered to three schools. Each school was issued with forty (40) questionnaires for students and four (4) questionnaires for teachers. There were also interview for students and heads of department. In cases where the head of department was not available, a teacher was interviewed. Interviews were conducted satisfactorily in all the three (3) sampled schools.

From Table 2 it was established that, all the one hundred and thirty-two (132) questionnaires were completed and returned by both the students and teachers. The return rates are 100 % for students and 100% for teachers. This was achieved because the researcher made a follow up of the distributed questionnaires so as to ensure that respondents returned them.

## 4.2. Demographic Information

The study sought to find the students and teachers bio-data by way of age, gender, professional qualification and teaching experience. The information about this parameter is presented below.

### 4.2.1. Distribution of respondents by gender

The gender of sampled students and teachers was obtained and presented as shown in the Table 3:

*Table 3: Respondents Distribution by Gender*

Gender	Frequency	Percentage (%)
Male	74	56
Female	58	44
<b>Total</b>	<b>132</b>	<b>100%</b>

From Table 3 it is evident that, majority of the respondents were male representing 56% while 58 of the respondents were females representing 44%. The percentage of male students was 50% and the percentage of female students was 41%. The percentage of male teachers was 6% and that of the female teachers was 3%.

### 4.2.3. Distribution of students by age

Data on the distribution of students by age is shown in Table 4:

*Table 4: Distribution of Students by Age*

Age (years)	Frequency	Percentage (%)
Below 15	0	0.0
15 – 18	84	70.0
Above 18	36	30.0
<b>Total</b>	<b>120</b>	<b>100%</b>

Table 4 illustrates that, 84 of the students representing 70% were 15-18 years of age while thirty-six (36) students representing 30% were above 18 years of age. Those below 15 years were not found in the total number of students. This implies that the majority of the students were matured enough to understand the factors bedeviling academic performance of the students in the sampled schools in the Bekwai Municipality.

#### 4.2.4. Distribution of teachers by age

Data on the distribution of teachers by age is shown in the Table 5.

**Table 5: Distribution of Teachers by Age**

Age (years)	Frequency	Percentage (%)
Below 30	3	25.0
30 – 50	7	58.0
Above 50	2	17.0
<b>Total</b>	<b>12</b>	<b>100%</b>

The Table 5 shows that, majority of the teachers representing 58% were 30-50 years of age while 25% were below 30 years of age and 17% were above 50 years. From this, it can be deduced that majority of the respondents were matured enough and an indication that they had worked for long enough. This made them suitable to understand the factors that affect the performance of senior high school biology students in the Bekwai Municipality.

#### 4.2.5. Teachers' professional qualification

Data on the Professional qualification of teachers who took part in this study is presented in the Table 6:

**Table 6: Distribution of Teachers' Professional Qualification**

Teachers' qualification	Frequency	Percentage (%)
HND	0	0.0
B.Ed.	8	67.0
M.Ed.	3	25.0
MPHIL	1	8.0
<b>Total</b>	<b>12</b>	<b>100%</b>

From Table 6 it can be observed that, 8 of the teachers representing 67% are Bachelor in education degree holders (B.Ed.). Three (3) of the teachers representing 25% were Master of education (M.Ed.) degree holders while only one (1) teacher representing 8.0% had a Master of philosophy in science education degree (MPHIL). None of the teachers was a higher national diploma holder (HND). This is a clear indication that the schools consist of qualified professionals who are capable of understanding the problems bedeviling the students' academic issues.

#### 4.2.6. Distribution of teachers by working experience

The data on teachers' working experience is presented in the table 7:

**Table 7: Distribution of Teachers by Working Experience**

Category in years	Frequency	Percentage (%)
Less than 5	5	42.0
5 – 10	3	25.0
11 – 15	4	33.0
16 – 20	0	0.00
21 and above	0	0.00
<b>Total</b>	<b>12</b>	<b>100%</b>

Teacher working experience is positively associated with student achievement gains throughout a teachers' career. From Table 7 it is evident that, 4 of the teachers representing 33 % had worked in the teaching service for over 11 years while 3 teachers representing 25% had worked for between 5-10 years and 5 of the teachers representing 42% had also worked for below 5 years. This means that the teachers had the knowledge of whatever problems that are affecting the teaching service particularly in relation to the study variables.

#### **4.3 Analysis in Relation to Objectives of the Study**

This study was predicated on three objectives thus: to establish the Influence of learning resources on students' academic performance in senior high schools in Bekwai Municipality; to investigate the influence of teacher related factors on students' academic performance in senior high schools in the Bekwai municipality; and to assess the influence of administrative practices on students' academic performance in senior high schools in Bekwai Municipality. The following sections relate to the analysis of the findings in relation to the themes as espoused in the objectives that guided the study. These include learning resources, teacher related factors and administrative practices.

### 4.3.1 Presentation of the Results by Research Questions

#### Research Question 1: To What Extent Does Learning Resources Influence the Performance of Senior High School Biology Students in Bekwai Municipality?

The researcher assessed the influence of learning resources on students' academic performance. This is because learning resource plays an important role in students' academic performance and also make the teaching and learning more comfortable. This was done by studying the extent to which factors like: availability of well-equipped library, availability of textbooks, well equipped laboratory, conducive and well-ventilated classrooms in the selected senior high schools influence academic performance in biology.

**Table 8: Presents the responses regarding the school has well equipped laboratory.**

Response	Students		Teachers	
	Frequency	Percentage	Frequency	Percentage
Strongly agree	12	10	2	17
Agree	13	11	1	8
Neutral	27	23	2	17
Disagree	46	38	3	25
Strongly disagree	22	18	4	33
<b>Total</b>	<b>120</b>	<b>100%</b>	<b>12</b>	<b>100%</b>

From Table 8 it can be observed that, 68 of the students representing 56% disagreed that the school has well equipped laboratory while 58% of the teachers disagreed that the school has well equipped laboratory. Conversely, 21% and 25% of students and teachers respectively agreed the schools have well equipped laboratory. However, 23% and 17% of students and teachers respectively took a neutral stand that the school has well equipped laboratory. From the observation checklist, in a particular school, it was observed that though science laboratory was absent, some chemicals

were provided for practical. These are done in the classroom which is overcrowded and poses a great risk since the chemicals may explode causing accidents. Again, not all students participate in the experiment since the resources are limited. During interview with the teachers, one of them confided:

*“A boy accidentally sat on sulphuric acid which had been split on his seat, and was a traumatic experience. The teacher further lamented that he had never carried out experiments on some topics in his teaching in that particular school because there are no resources and sometimes such resources are difficult to improvise”.*

From the foregoing, the adequacy of materials in the laboratories in the schools is below average. This made it very difficult for the teacher to even demonstrate some experiments as a way of facilitating the understanding of biological concepts. The finding concurs with Hofstein and Luneta (2003) assertion that equipped laboratory allows students to learn with understanding and offers an opportunity to engage in a process of constructing knowledge by doing science, enhances attitudes, stimulate interest and motivates student to learn. The study also concurs with Mosha (2015) assertion that utilization of laboratory equipment enables learners to focus their attention to important issues and acquire practical skills in biology. Therefore, inferring from Hofstein and Luneta (2003) and Mosha (2015) assertion, the lack of well-equipped laboratory might contribute negatively to students' performance in biology in the Bekwai Municipality to a great extent.

**Table 9: Displays the response on the statement the students always have the required textbook.**

Response	Students		Teachers	
	Frequency	Percentage	Frequency	Percentage
Strongly agree	26	22	3	25
Agree	3	2	1	8
Neutral	26	22	0	0
Disagree	38	32	6	50
Strongly disagree	27	22	2	17
<b>Total</b>	120	100%	12	100%

From Table 9 it was revealed from the study that, 65 of the students representing 54% disagreed that they always have the required textbooks, an equally high percentage of the teachers representing 67% disagreed that the students always have the required textbooks. However, few students and teachers agreed to the view that the students have the required textbooks representing a percentage of 24% and 33% respectively. 22% of the students were neutral. All teachers interviewed said, students did not have Biology textbooks and that prevented them to extend their understanding of the content presented in class. However, the study established that majority of the students have no biology textbooks so students depended entirely on notes provided by teachers which were not enough indeed.

These findings therefore, concurs with Ubogu (2004) opinion that without Biology textbooks, the skills, concepts and content required by curriculum cannot be taught. In view of this, the researcher concluded that absence of biology textbooks for students might negatively affects the academic performance of students in biology.

**Table 10: Displays the response on respondents regarding teachers having the required and sufficient teaching aids.**

Response	Students		Teachers	
	Frequency	Percentage	Frequency	Percentage
Strongly agree	25	21	1	8
Agree	16	13	2	17
Neutral	18	15	1	8
Disagree	29	24	5	42
Strongly disagree	32	27	3	25
<b>Total</b>	120	100%	12	100%

Table 10 indicates that, 61 of students representing 51% disagreed that the teachers have the required and sufficient teaching aids. Conversely, 34% of the students agreed that teachers use teaching and learning aids during lessons. 18 of the students representing 15% could not decide as to whether the teachers have the required and sufficient teaching aids or not. However, majority of the teachers representing 67% disagreed that the teachers have sufficient teaching aids. Conversely, only 25% of the teachers agreed that the teachers have sufficient teaching aids. From the observation checklist, it was established that only one school had projector and visual aids displayed on the classroom walls. There seemed to be a problem in development and use of teaching aids such as charts, diagrams, photograph and pictures for students to review.

The usage of teaching and learning aids helps in better understanding of the subject matter by the students. From the study findings, it was established that the supply and provisioning of the teaching aids in the study area were found to be inadequate, implying that academic performance of learners was likely to be affected negatively.

**Table 11: Presents the response on the statement the school has a library.**

Response	Students		Teachers	
	Frequency	Percentage	Frequency	Percentage
Strongly agree	86	72	11	92
Agree	29	24	1	8
Neutral	5	4	0	0
Disagree	0	0	0	0
Strongly disagree	0	0	0	0
<b>Total</b>	<b>120</b>	<b>100%</b>	<b>12</b>	<b>100%</b>

From Table 11 it can be observed that, 115 of the students representing 96% agreed that the school has a library. However, 5 of the students representing 4% were neutral. Conversely, 12 of the teachers representing 100% agreed that the school has a library. The researcher therefore, concluded that availability of library is not an issue in the senior high schools in the Bekwai Municipality.

The researcher further probed the respondents on the status of the library as to whether the students always get the required biology textbooks in the library. A good proportion of the students representing 84% disagreed that the students always get the required biology books in the library. An equally high percentage of the teachers representing 71% disagreed that the students always get the required biology textbooks in the library.

This implies that, although the schools have a library but it is not stocked with biology textbooks. From the observation checklist, it was established that none of the school chosen for the study had a spacious and well stocked library. The student-book ratio in the school libraries was averagely 6:1.

In an interview with the teachers on the status of the school library, one teacher said;

*“Since the government is the one who is responsible for supplying books direct to schools via Municipal educational office sometimes it is very difficult to cover the gaps of books insufficiency when books have ragged, because it takes time for the government to give new books with sufficient student- book ratio”.*

Tobin (2005) stated that to achieve the goal of producing good results, schools must have a well-stocked library and students must use the library effectively. The library is a place where students can make references and also adds up to their knowledge. Learners are able to learn more Biology when they have enough textbooks in the library because they can extend their learning after school hours. Tobin (2005) concluded that failure to use the library effectively affects achievement negatively.

In support of Tobin’s (2005) assertion, it was obvious that the absence of well-equipped library has no strong positive relationship with students’ academic performance and might influence performance negatively.

***Table 12: Displays the response regarding the classroom is well ventilated and conducive.***

Response	Students		Teachers	
	Frequency	Percentage	Frequency	Percentage
Strongly agree	40	33	1	8
Agree	27	22	6	50
Neutral	8	7	2	17
Disagree	25	21	0	0
Strongly disagree	20	17	3	25
<b>Total</b>	120	100%	12	100%

From Table 12 it was indicated in the study that, 67 of the students representing 55% forming the majority agreed that classroom is well ventilated and conducive for learning. 7% of the students were neutral and 45 of the students representing 38% disagreed that the classroom is well ventilated and conducive for learning. However, 58% of the teachers agreed that the classroom is well ventilated and conducive for learning. Conversely, 3 of the teachers representing 25% disagreed that the classroom is well ventilated and conducive for learning.

In an interview with the students, one student revealed that:

*“The refuse dump close to the science block creates a pungent odour in the school environment which affects teaching and learning; besides, the leakages in the roofing enables water to drip into the classroom whenever it rains so the teacher always halts the biology lesson anytime it starts raining”.*

*From the observation checklist, it was noticed that the ceiling fans in the science block in one particular school were not functioning which makes teaching and learning uncomfortable in sunny afternoons. Furthermore, the researcher noticed that the students were overcrowded in the classroom. This implies that students may feel uncomfortable during teaching and learning which may have a negative influence on their performance.*

#### **4.3.2 Presentation and Discussion of Results for Research Question Two**

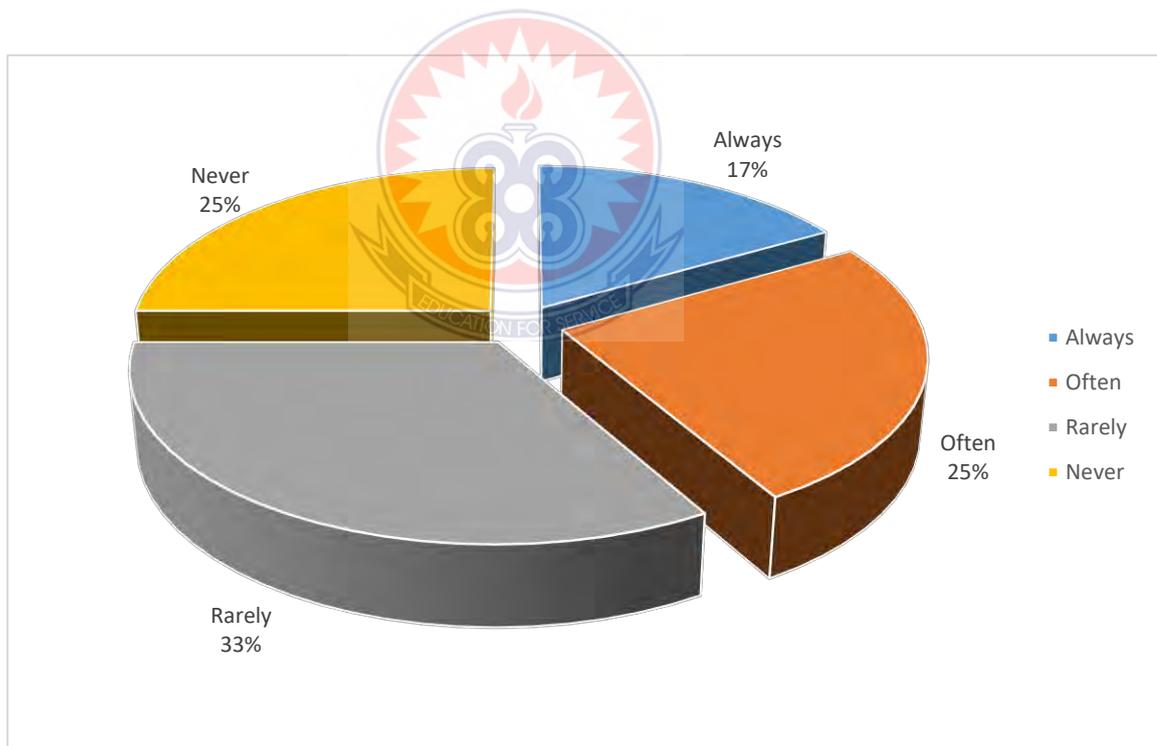
##### **Do Teacher Related Factors Influence the Performance of Senior High School Biology Students' Academic Performance?**

The second object was to examine the influence of teacher related factors on academic performance of senior high school biology students in Ashanti Bekwai Municipality. The research findings are presented according to the research question posed to achieve the objective. The teacher related factors considered in the study

includes; teacher qualification, teacher working conditions, completion of syllabus, prompt marking and provision of prompt feedback on classwork, teacher-student ratio, teacher attitude and teacher improvisation technique.

#### 4.3.2.1 Completion of the syllabus

From Figure 2 there was indication that, completion of syllabus was a major problem for teachers in the municipality. This was through the questionnaire administered to teachers whereby 17% of the teachers responded they always complete the syllabus. However, 25% often complete the biology syllabus. Majority of the teachers representing 33% rarely completes the syllabus on time. Conversely, 25% of the teachers never complete the biology syllabus on time.



**Figure 2: Completion of Syllabus**

Absenteeism and co-curricular activities such as sports and games were given as the main cause of the incompleteness of syllabus. One teacher confided that; the first two weeks of the semester are characterized by half empty classes because students do not

report early. Teachers are forced to repeat what they had already taught when the student resume at school. This causes the class to lag behind.

This finding concurs with Creamer (2014) who noted that inability to complete the syllabus have negative influence on the students' academic performance. The findings moreover, agree with Kimani, Kara and Njagi (2013) who found that completion of syllabus had significant relationship with academic performance in biology. This implies that, the incompleteness of the syllabus might contribute negatively to the students' performance in the sampled schools in Bekwai Municipality.

#### 4.3.2.2 Teaching methodology

The researcher examined the strategies used by teachers to impart knowledge and skills in schools in the Bekwai Municipality. The findings show that lecture method was mostly used followed by activity method as shown in Table 13.

**Table 13: Distribution of Respondents on the Teaching Methods Used by Biology Teachers**

Teaching Method	Frequency	Percentage %
Group discussion	13	11
Lecture	67	56
Activity	21	18
Question and answers	19	15
<b>Total</b>	<b>120</b>	<b>100</b>

Question on teaching methods was administered to the 120 students in the sampled schools. The researcher asked the respondents to identify the commonly used teaching methods and strategies used in teaching Biology in their schools. From table 13 it is evident that, 56% of the student responded that lecture method is commonly used by

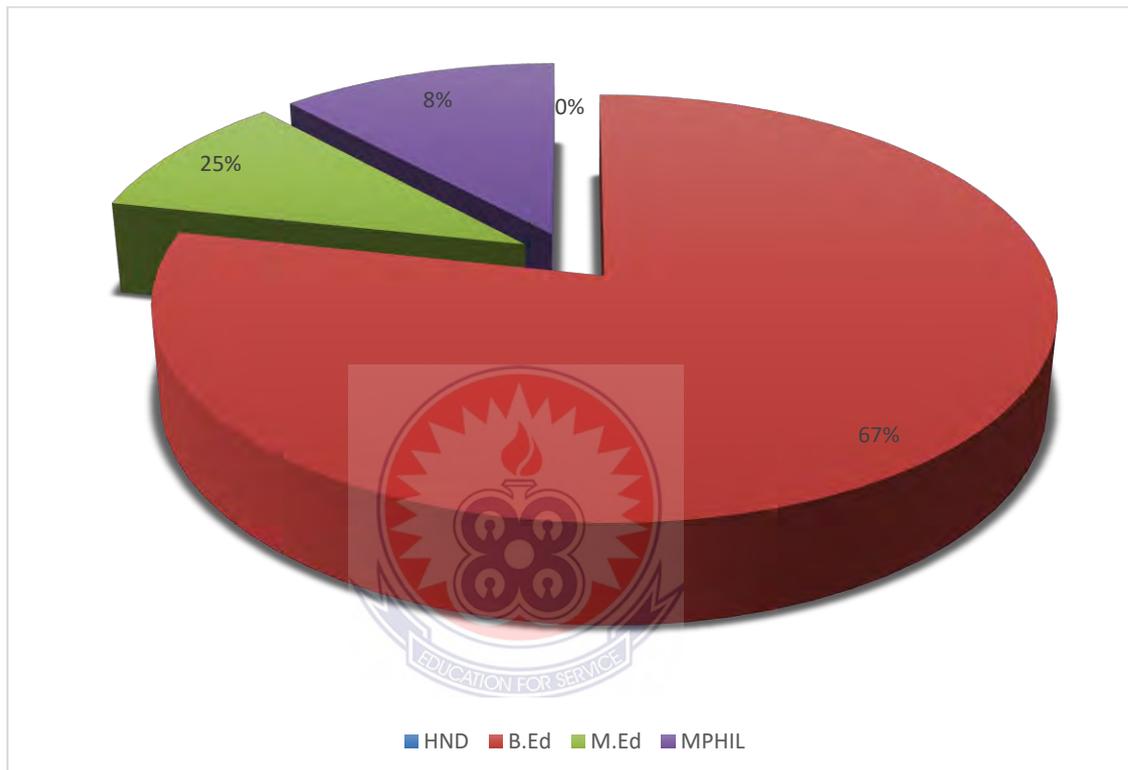
the biology teachers while 15% responded that question and answer method is commonly used. However, 18% of the student responded that the activity method is used. Moreover, 13 of the students representing 11% responded that group discussion method was commonly used by the teachers in the teaching and learning of Biology. Lecture method is one of the non-participatory methods, which according to the educational psychologists has less impact on students learning and understanding of the biology topics. The researcher wanted to know why the teachers used lecture method in their classroom teaching.

In an interview, the respondents said that the teachers always preferred to use lecture method in their teaching simply because of limited time (50 minutes) allocated for a single period in schools. They added that the teachers preferred to use lecture method due to the fact that with the use of lecture method in teaching, teachers can cover their topics or syllabus in time. James (2012) had the opinion that lecture method does not make the learners active participants in the lesson. It does not help the teacher to diagnose specific learners' strengths and weakness and can lead to poor performance. Therefore, with additional evidence from James (2012), it could be deduced that teaching methodology used by teachers influenced academic performance negatively to a great extent in the Bekwai Municipality.

#### **4.3.2.3 Teacher qualifications**

The study found that teachers' qualification has a bearing on academic performance. Majority of the teachers representing 74% responded that teacher qualification affects academic performance to a great extent. However, 26% of the teachers responded that teacher qualification affects academic performance to a moderate extent. None of the teachers responded in favour of Neutral nor No extent at all.

From Figure 3, it can be observed that all the teachers representing 100% had the right qualification, majority of the teachers representing 67% have Bachelor degree in education (B.Ed.) while 25% have Masters in education degree (M.Ed.). None of the teachers had Higher National Diploma (HND). However, 8% of the teachers have Master of Philosophy in science education degree.



**Figure 3: Teachers' Qualification**

The findings agreed with Wamulla's (2013) assertion that, a teacher who was academically and professionally qualified but worked under unfavourable condition of service would be less dedicated to his or her work. The findings further disagreed with those of Kimani, Kara and Njagi (2013). They found that teacher qualifications had no statistically significant relationship with academic performance of students.

Therefore, teacher qualification is not an issue in the sampled schools in Bekwai Municipality but academic performance might still be affected due to unfavorable

working conditions such as absence of textbooks, well equipped laboratory and sufficient teaching aids.

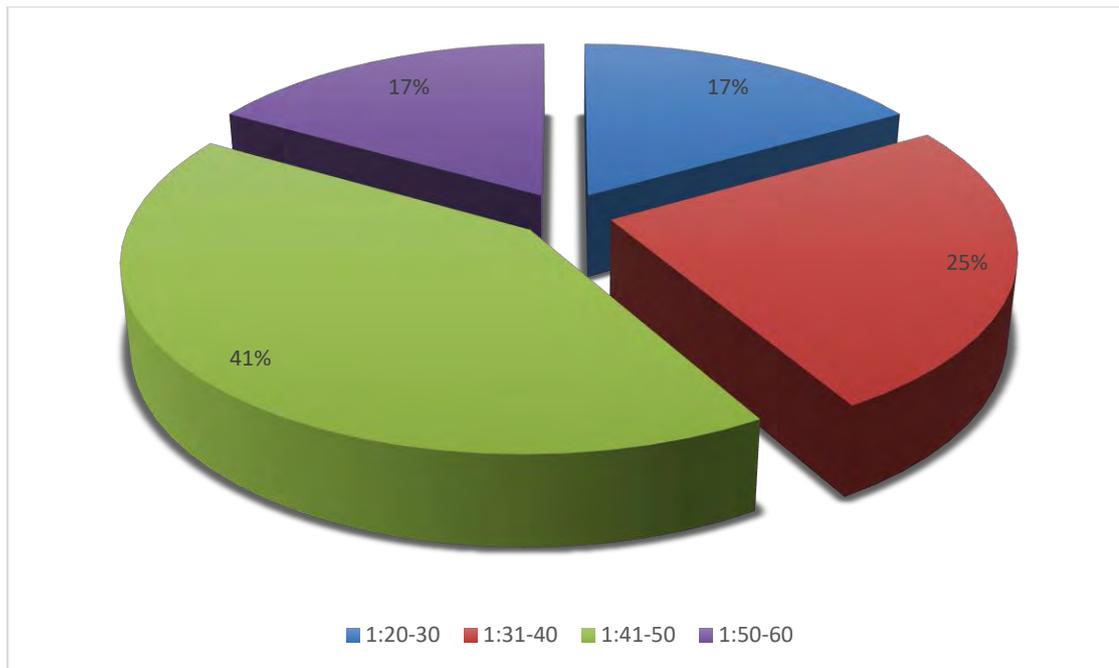
#### 4.3.2.4 Teacher-student ratio

The study examined the influence of teacher-student ratio on students' academic performance in the Bekwai Municipality.

**Table 14: Mean Class Size of the Sampled Schools**

School	Average Class Size
Oppon Memorial Senior High	51
Wesley High School	48
Saint Joseph's Senior High	48
<b>Mean</b>	<b>49</b>

Table 14 depicts that the average class size of the sampled schools is 49 indicating that the teacher-student ratio in the schools is relatively high. Out of the three schools studied, 41% of the teachers responded that the average teacher-student ratio is 1:41-50. However, 25% responded that the student teacher ratio is 1:31-40. Moreover, 17% responded that the teacher-student ratio is 1:20-30. Again, 17% responded that the teacher-student ratio is 1:50-60 as shown in figure 4.



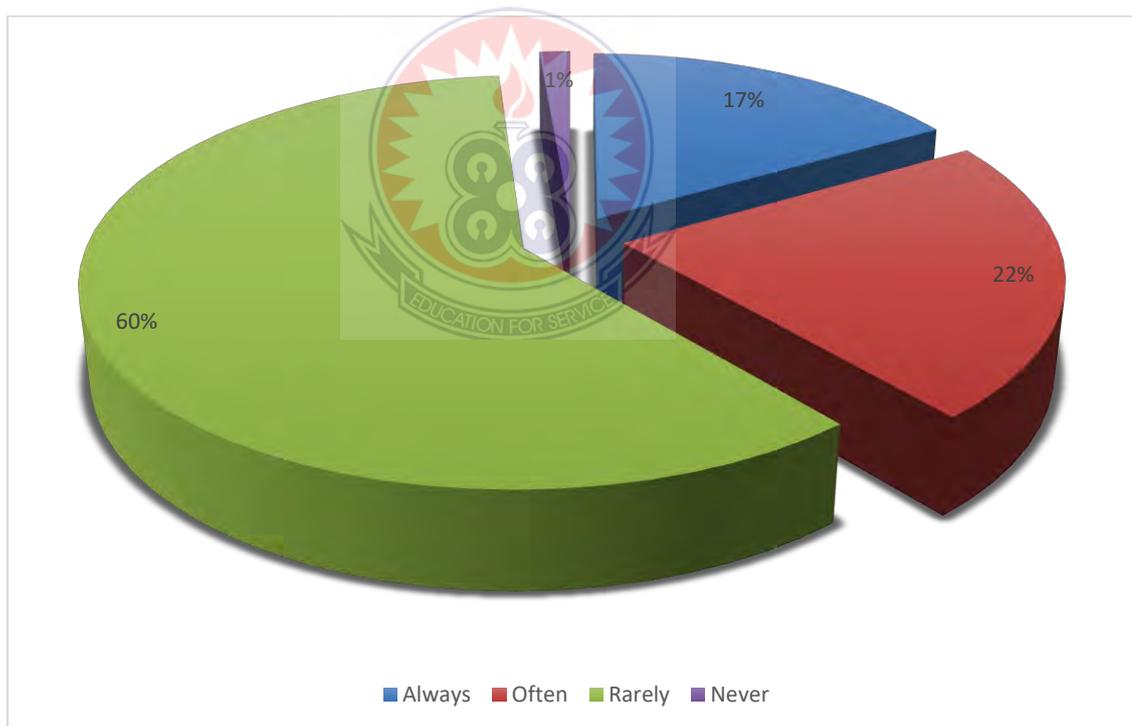
**Figure 4: Teacher-Student Ratio**

From interview with the teachers, it was obvious that there are inadequate classrooms and lack of enough teachers to handle the large student population. The more students a teacher handles, the lower the mean grade. This happens because the teacher is overwhelmed with work such as marking students' exercises. Moreover, teachers are not able to cater for individual needs and differences.

Okoye (2014) had the opinion that high teacher-student ratio did not promote learning because what individual student needed are not satisfied. The teaching methodology that favoured classes with large class sizes was the teacher-centered approach. Okoye (2014) concluded that high teacher-student ratio has negative effect on students' academic performance. The study corroborated Okoye's (2014) assertion that high teacher student ratio contributed to students' poor performance in biology.

#### 4.3.2.5 Provision of remedial lessons

The study established the importance of providing remedial lesson for weak students. Questionnaire was administered to the students on the frequency to which the biology teacher provides remedial lessons for the weak students. Figure 5 illustrates that Majority of the students representing 60% responded that the teacher rarely offers remedial lesson for the weak students while 1% of the students responded that the teacher never offers remedial lesson for the weak students. However, 22% of the student responded that the teacher often provides remedial lesson for them. Conversely, minority of the students representing 17% responded that the teacher always offers remedial lesson for the weak students.



**Figure 5: Provision of Remedial Lesson**

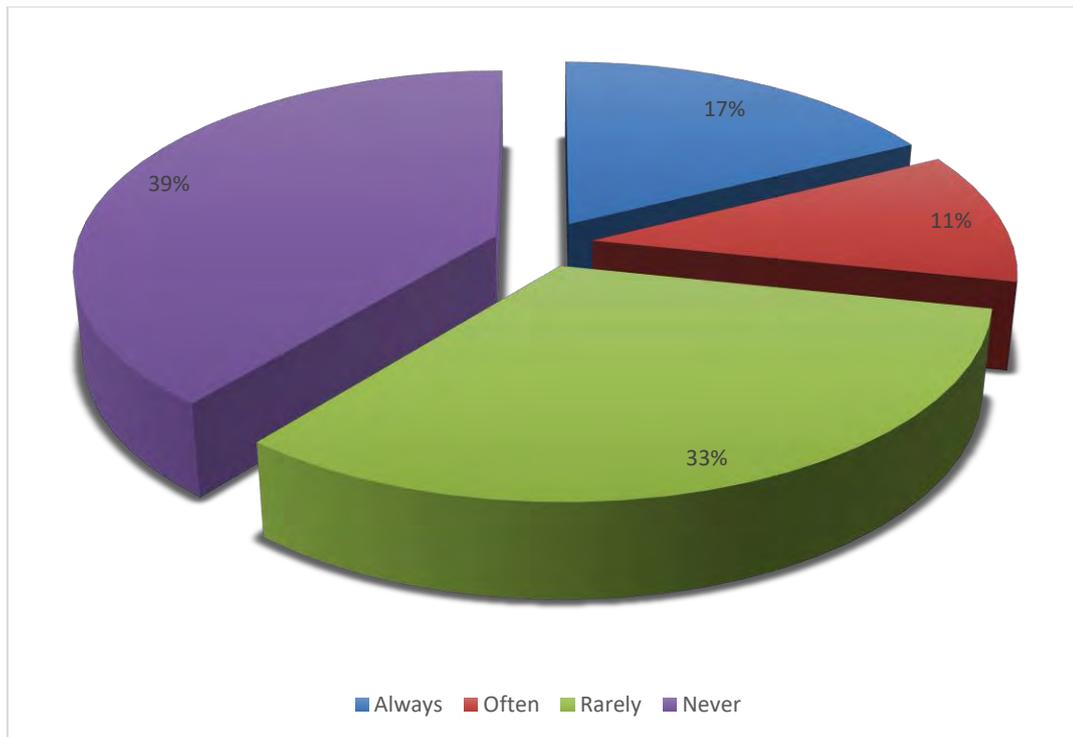
The essence of remedial lessons is to offer intervention for learners who, for whatever, reason is not yet at the level they should be for their grade. Tobin (2005) emphasized that remedial classes is an avenue where teachers discuss challenging

topics with students and provides an appropriate intervention to address them. He further opines that for weak students to do better in the field of biology and science in general, the teacher must engage them in remedial classes.

In an interview with teachers, they attributed their failure to conduct remedial lessons for students to heavy workload and insufficient time. Provision of remedial for weak students contributes significantly to students' performance since it provides the avenue for biology teachers to address the needs of the weak students. From the study, it was established that majority of teachers rarely offers remedial lesson for weak students. The findings of this study agreed with those of Tobin's (2005) that remedial classes were the sole means of improving weak students. This implied that the students' academic performance might be negatively affected to a large extent due to inability of biology teachers to conduct remedial classes for the weak students in the sampled schools.

#### **4.3.2.6 Improvisation of unavailable resources**

The study established the essence of improvisation in teaching and learning of biology. Views were gathered from the students through the students' questionnaire as to the frequency the biology teacher improvises for unavailable resources. Figure 6 depicts that 39% of the students responded that the teachers never improvise for teaching and learning resources that are not readily available in the laboratory. However, 33% of the students responded that their teacher rarely improvises for unavailable resources in the laboratory. 17% of the students responded that the teacher always improvises for unavailable resources while 11% of the students responded that the teacher often improvises for unavailable resources in the laboratory.



**Figure 6: Improvisation Techniques**

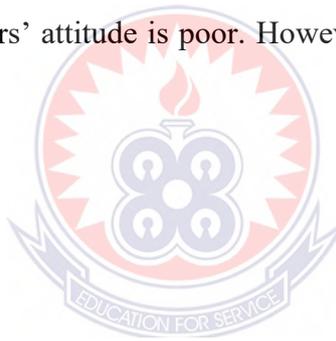
Improvisation plays a significant role in the teaching and learning of science. It provides the skills for the biology teacher to use locally available materials in place of the original ones.

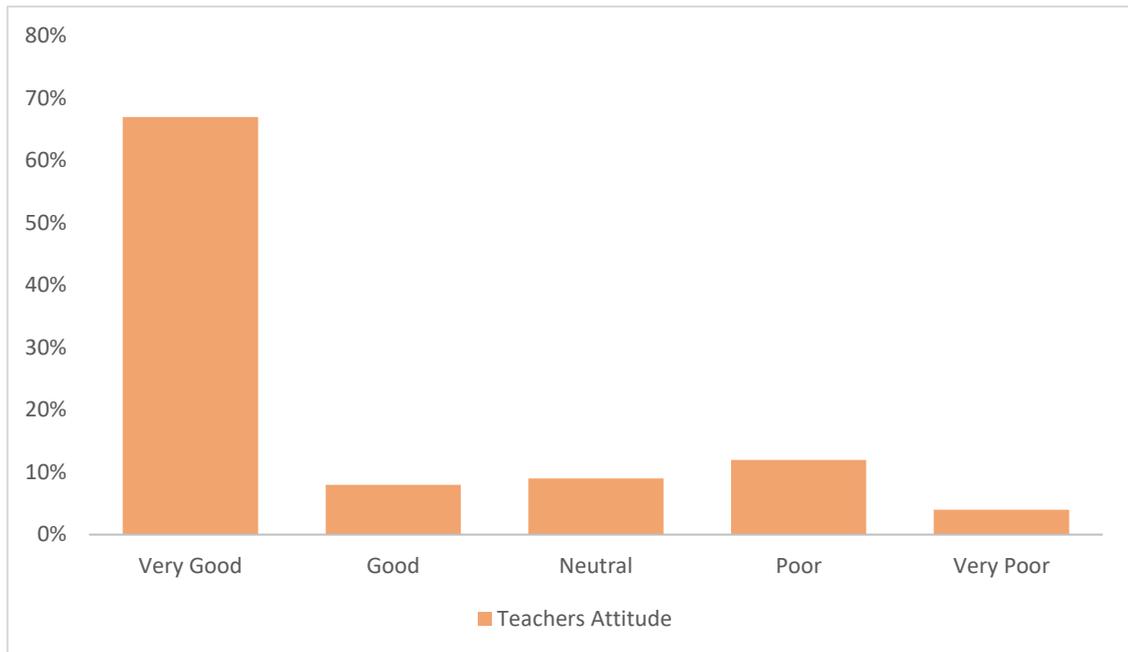
All the teachers interviewed said, sometimes teacher must travel far distance before he or she can get the materials from the local market. The teachers also attributed their inability to improvise unavailable resources to lack of funds to purchase materials from the local market. Some teachers lack the basic knowledge of improvisation techniques. Therefore, teachers should be innovative in the utilization of local materials in their teaching and learning. The study corroborates Mosha (2015) assertion that improvisation makes the teacher and students very innovative and also ensures the continuity of learning. This is because learning can still be effective in the absence of laboratory equipment. This arouses the students' interest and motivates

them in the study of biology. Therefore, failure on behalf of the teachers to improvise for materials that are not available in the laboratory might contribute to poor performance of students to a great extent.

#### **4.3.2.7 Teachers' attitudes influencing performance**

The study found out that teachers' attitude towards the students and towards performance have direct bearing on students' academic performance. However, when the teachers' attitude towards work is indifference and nonchalance, it always shows on the students' performance. At secondary level, the students always need constant motivation and supervision. From figure 7, it can be observed that 79% of the students responded that the biology teachers' attitude is good while 16% of the students responded that the teachers' attitude is poor. However, 9% of the students responded neutral.



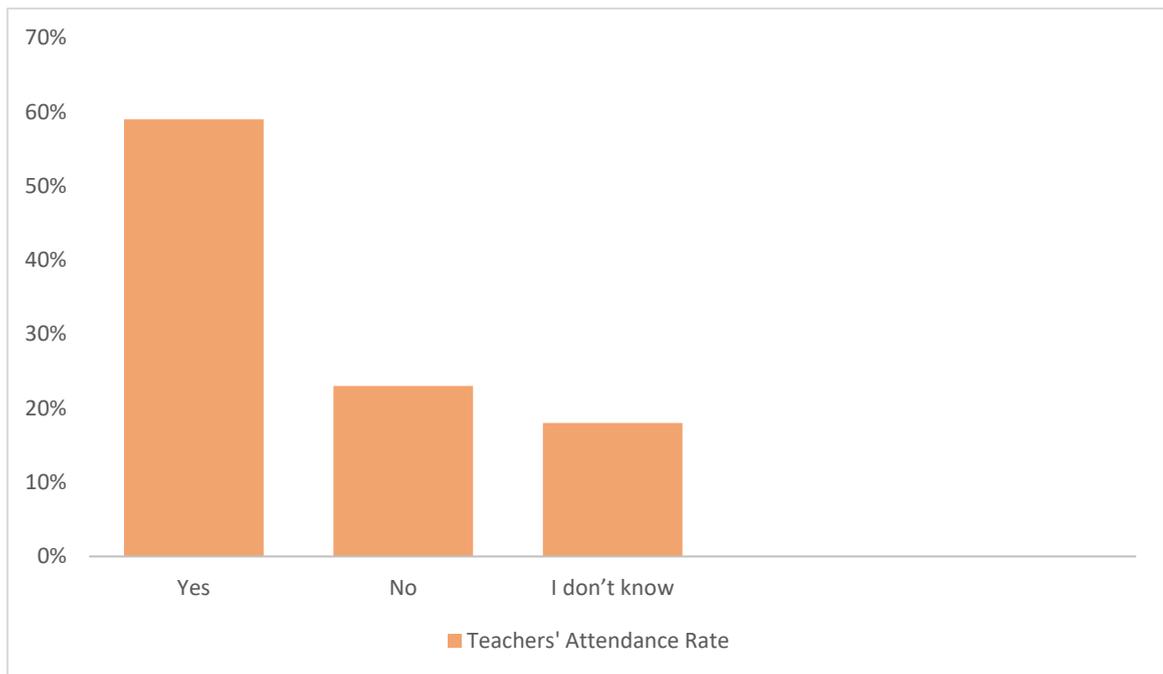


**Figure 7: Teachers' Attitudes**

From the responses, it can be deduced that majority of the teachers' attitude is good. From the interview with students, the teacher's behaviour depicting good attitude include; motivation of students, checking of classwork and punctuality in class. Nevertheless, the few teachers who have a poor attitude is a major concern. Teachers' attitude determines the amount of time and energy they devote to their work. Poor attitude is counterproductive; hence it results in low performance. From the study, it was obvious that the good attitude of the teachers in the sampled schools was not a major determinant of the students' poor performance in biology.

#### **4.3.2.8 Teachers' attendance rate**

Effective participation and attendance of teachers in classes for teaching purpose can also influence students' academic performance. Students' response on teachers' class attendance was satisfying despite of limited number of teachers. From Figure 8, it is illustrated that majority of the student representing 59% showed to some extent satisfaction (YES) on the rate of attendance, 23% were not satisfied (NO), 18% of the students responded I don't know.



**Figure 8: Teachers' Attendance Rate**

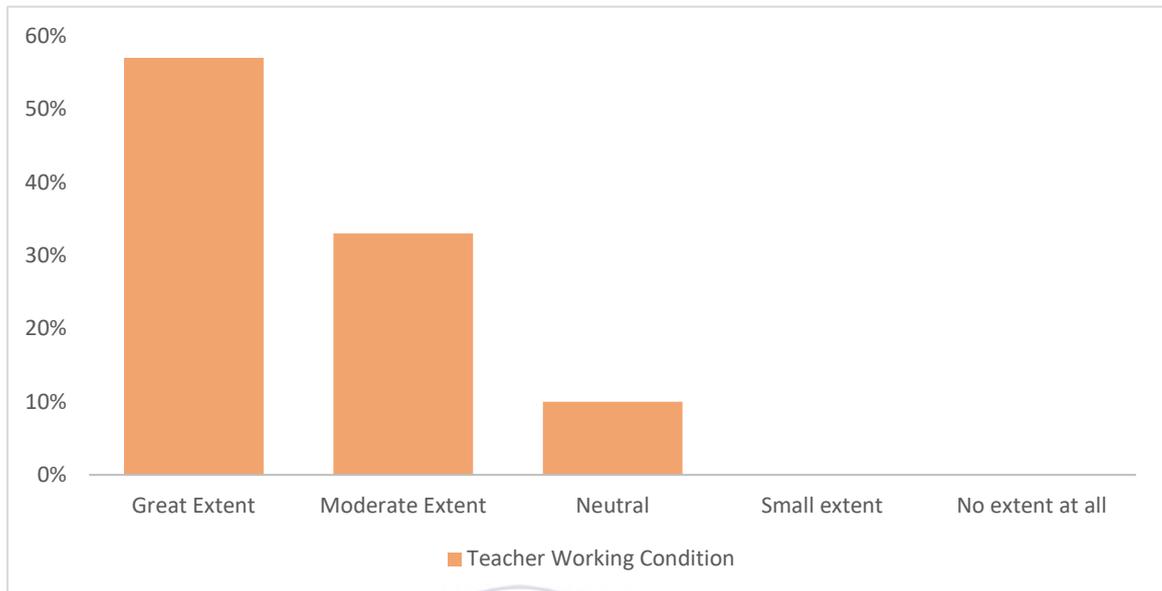
Regular teacher attendance to class ensures continuity of teaching and learning and completion of the syllabus on time. The findings support Ubogu (2004) assertion that absenteeism by teachers reduces the amount of instructional time and this result in the syllabus not being completed. This in turn leads to lower output of work by the students in examinations.

From the study, it can be inferred that the respondents are satisfied with teachers' attendance though there are absenteeism cases which are almost negligible. This implies that teachers' attendance was not a key determinant of poor students' performance in the selected schools in the Bekwai Municipality.

#### **4.3.2.9 Teacher working condition**

Through the teachers' questionnaire, the study established that teacher working conditions have an influence on academic performance. Figure 9 illustrates that 57% of the teachers responded that teacher working condition affects academic performance to a great extent while 33% responded that teacher working condition

affects academic performance to a moderate extent. Ten percent of the teachers were neutral as to whether teacher working conditions affects academic performance or not.

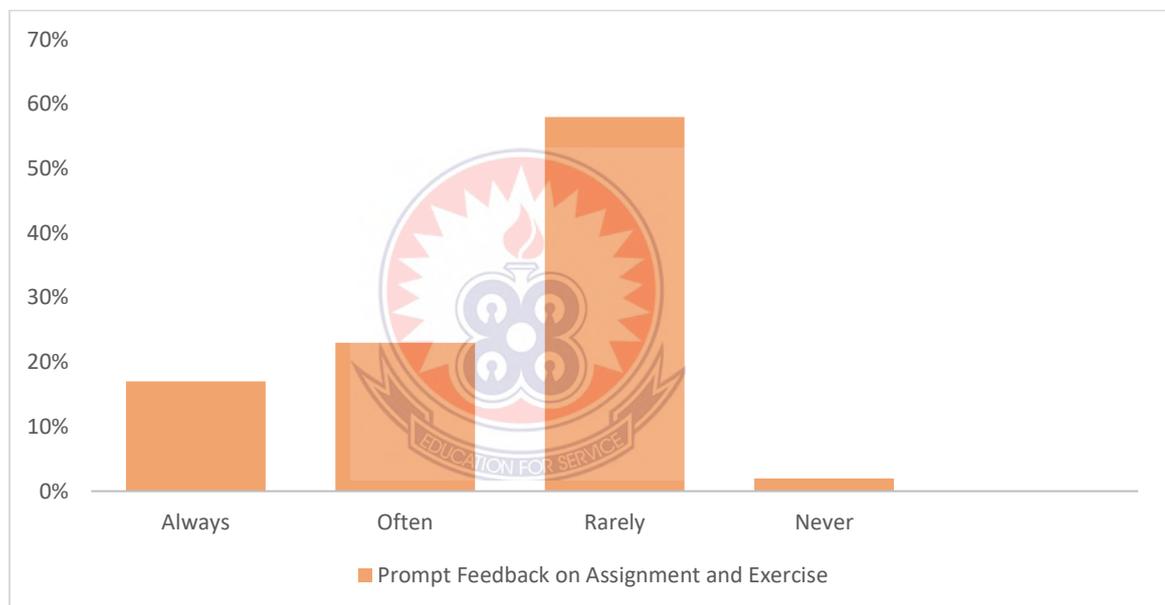


**Figure 9: Teachers' Working Condition**

In an interview, a teacher confided that most teachers are well housed. Though they may be living a bit far from the school, the availability of transport helps them make it to school on time. In most schools' teachers in the biology department are provided with breakfast and lunch that gives them enough motivation. Moreover, professional recommendations are provided to top working teachers in the biology department to motivate them. Okumbe (2016) noted that teacher working condition has a significant effect on performance because teachers working under poor working conditions will most likely feel dissatisfied with their job. Inferring from Okumbe's (2016) opinion, the researcher therefore, established that the working conditions of teachers in the sampled schools have positive relationship with academic performance. Hence, teachers working condition might have no negative influence on academic performance in the sampled schools in Bekwai Municipality.

#### 4.3.2.10 Prompt feedback for students' assignments and exercises

The researcher established the essence and the frequency to which students receive feedback from teachers after evaluation. From the students' questionnaire, 2% of the students responded that they never receive prompt feedback on their exercises while 58% of the students responded they rarely receive prompt feedback on assignments. However, 23% of the students often receive prompt feedback on their exercises. Conversely, 17% of the students responded that they always received feedback on exercises as shown in Figure 10.



**Figure 10: Prompt Feedback of Students' Classwork**

Bellon and Blank (2013) asserted that feedback is an essential part of learning. It helps students understand the subject being studied and give guidance on how to improve their learning. Academic feedback is more consistently related to achievement than any other teaching behavior. They further stated that feedback has significant effect on academic performance of students since it improves a student's self-confidence, self-awareness and enthusiasm for learning.

All biology teachers interviewed, said evaluation is often done in their schools. The delay in feedback is caused by delay in marking. The essence of giving assignments and exercises is to provide reinforcement and motivation through feedback. Delayed feedback is ineffective according to behavioral psychologists. The teachers further emphasized that, the main reason for lack of prompt feedback on students' work was due to high teacher-student ratio. This causes the teachers to be overwhelmed with work and not having enough time to mark exercises on time. The views expressed by the students' concurred with the findings from Bellon and Blank (2013). From the study, the lack of prompt feedback of students' classwork might have a negative influence on academic performance of students in the sampled schools.

#### **4.3.3 Presentation and Discussion of Results for Research Question Three**

##### **To what extent does administrative practices influence the performance of senior high school biology students in Bekwai Municipality?**

The second objective sought to assess the influence of administrative duties on students' academic performance, this is because instructional leadership and management is touted as the epitome of good academic performance. In order to achieve this, it was important to gather teachers' views on the frequency of performing the various administrative duties in school by heads of department. The administrative duties considered in the study include; vetting teachers' scheme of work and lesson plan, discussing academic interventions, supervising teachers for a complete coverage of the demands of the syllabus on time and checking teachers' punctuality and regularity in classrooms. Analysis of administrative duties performed by heads of department from teachers' perspective is discussed.

#### 4.3.3.1 Checking tutors' punctuality and effective use of instructional time

The influence of supervision on students' academic performance was assessed. This was indicated in the teachers' questionnaire. From Table 15 it can be noticed that, 50% of the teachers responded that the head of department often supervises teacher punctuality and effective use of instructional time. However, 25% of the teachers agreed that head of department always supervise them. Moreover, 17% responded that they are rarely supervised by the head of department while only 8% responded that the head of department never supervises them.

**Table 15: Response on Supervision of Teachers by Heads of Department**

Response	Frequency	Percentage%
Always	3	25
Often	6	50
Rarely	2	17
Never	1	8
<b>Total</b>	<b>12</b>	<b>100%</b>

The results portray high commitment of heads of department to the checking of teachers' punctuality and effective use of instruction time. The heads of department ensured that teachers kept to time for lesson delivery as indicated on the time table. This finding is corroborated by the views of some of the biology heads of department who were interviewed. One of them affirmed that:

*“Occasionally, I go round to check if the teachers are in the classroom teaching at the time stated on their respective time table. However, because I have a lot to do as the head of department, I have delegated*

*the duty of regular supervision of instruction to some of the teachers, but I bear the ultimate responsibility”.*

The practice of the head of department to the practice of ensuring teachers' punctuality and effective use of instructional time is in tandem with the view of Enaigbe (2009) who found that the instructional supervision of the school head includes seeing to it that teachers engage in meaningful instructional activities and keep allocated instructional time. This could help to enhance the attainment of instructional objectives, culminate in timely completion of syllabus and improve students' performance. During the interview with teachers, majority of the teachers indicated that the visit by the head of department inculcated in them the habit of preparing adequately for their classes. The monitoring of teachers' instructional delivery by heads of department ties in with the findings of Malunda, Onen, Ousaazi and Oonyu (2016) on instructional supervision and the pedagogical practices of secondary school teachers in Uganda which revealed that science head of department supervision of lesson delivery through classroom observation has statistically significant effect on pedagogical practices and students' performance in public secondary schools in Uganda. Inferring from Malunda et al (2016) and Enaigbe (2009) revelations, it implies that supervision was not a determinant of the students' unsatisfactory performance in the sampled schools.

#### **4.3.3.2 Vetting of scheme of work and lesson notes prepared by tutors.**

On the issue of whether heads of department vet scheme of work and also helped their teachers to select appropriate teaching and learning resources for their lesson? Questionnaire was established to teachers to depict the frequency at which the Heads of Department vets lesson notes and scheme of work. It was evident that, majority of the teachers representing 67% responded that vetting of scheme of work is rarely done

while 17% of teachers responded that it is always done. However, 8% of the teachers also agreed that the head of department often vets their lesson note. Moreover, 8% of the teachers claimed that vetting of lesson notes and scheme of work is never done in their schools as indicated in Table 16.

**Table 16: Teachers' Response Regarding Vetting of Teachers' Schemes of Work**

<b>Response</b>	<b>Frequency</b>	<b>Percentage%</b>
Always	2	17
Often	1	8
Rarely	8	67
Never	1	8
<b>Total</b>	<b>12</b>	<b>100%</b>

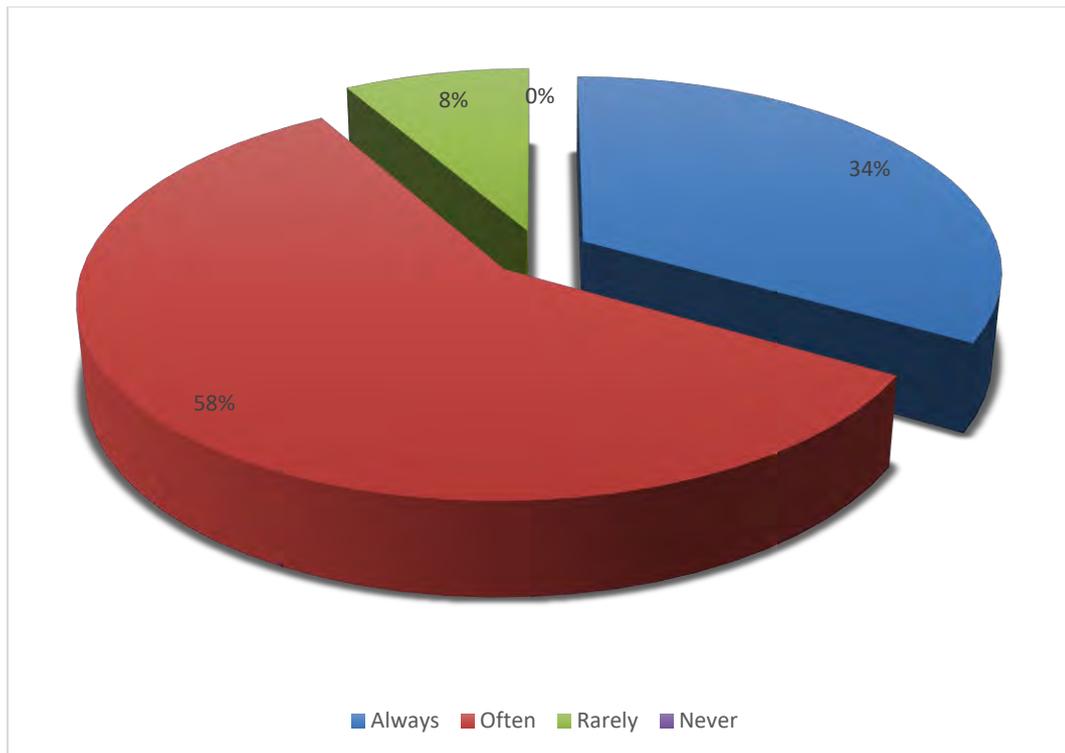
Lesson plan forms a major component of teaching and learning process. Considering the teachers' scheme of work. The lesson plan constitutes the fundamental basis for any teachers' professional delivery. It is worrying that less attention is paid to its preparation by heads of department in the sampled schools. A study by Too, Kimutai and Kosgei (2012) found a positive relationship between Heads of Department inspection of teachers' scheme of work and performance of students in exams. The science Head of Department poor performance of this responsibility is likely to negatively affect the teachers' role performance in terms of preparation of good instructional documents is not checked. This is likely to affect teachers' ability to deliver lessons effectively. This finding resonates with the views of some of the sampled teachers who were interviewed. One lamented that:

*“My head of department never makes sure the needed teaching and learning resources are even provided, let alone help the teachers to select the appropriate ones for their lessons. He is mostly interested in ensuring that we go to class on time. He does not have time for vetting of lesson notes. He rather concentrates on other duties”.*

The findings of the study portray that the head of department scarcely engage in vetting teachers’ scheme of work. This finding is at variance with Too, Kimutai and Kosgei (2012) and Osakwe (2010) who posited that there is significant relationship between vetting of scheme of work and performance. This implies that there is the likelihood that teaching and learning might be affected which may lead to poor students’ performance.

#### **4.3.3.3 The Head of Department’s supervision of the Teachers’ Assessment Practices.**

The study established the importance of Heads of Department supervision of the teacher’s assessment practices on academic performance. This was established in the teachers’ questionnaire to solicit for views from teachers. From the finding, it was observed that 58% of the teachers agreed that the Head of Department often engaged in assessment practices supervision while 34% responded that the heads of department always engage themselves in assessment practices supervision. However, 8% of the teachers agreed that such activity is rarely carried out by the heads of department in their schools as illustrated in Figure 11;



**Figure 11: The Head of Department’s Supervision of Continuous Assessment**

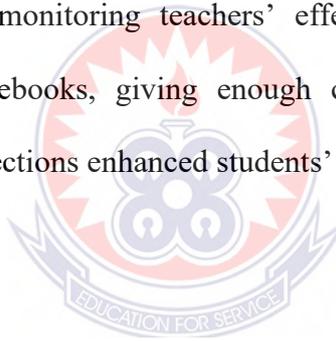
Results on the practice of Heads of Department ensuring that continuous assessment records are kept up-to-date portrays Heads of Department demonstration has a lot of interest and commitment to this activity. This is likely to reflect in regular assessment of students and make it easier to identify weakness in students’ performance as well as implement corrective measures on time when the need arises. The finding further agrees with an idea expressed by the teachers during their interview. In fact, one of them said:

*“Teachers in my school are expected to complete students’ continuous assessment records at least one week before school reopens for next semester. Teachers who fail to meet set deadlines are cautioned for the first offence and given queries to answer in subsequent cases. This can eventually lead to stiffer punishment such as release from the school if it persists”.*

The view also resonates with the opinion expressed by one head of department who reiterated that:

*“With students’ assessment, I check students’ record and sometimes demand for their books. Also together with the headmaster academics, we meet teachers to decide on the number of exercises each teacher need to give to their students so that I can be checking to ensure they are on course”.*

The views expressed by the teachers and the heads of department is in agreement with the findings of Adewale (2014) that Head of Department monitoring or checking of students’ notebooks or exercise books had a significant effect on academic achievement of students. This finding is also in tandem with Enaigbe (2009) who established that heads’ monitoring teachers’ effective use of instructional time, checking of pupils’ notebooks, giving enough classwork, marking assignments, writing and marking corrections enhanced students’ academic performance.



## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 Overview**

This chapter presents the study in a summary and makes conclusions based on the results obtained from investigating the factors affecting performance of senior high school biology students in the Bekwai Municipality. The recommendations from the findings and suggestions for further research are also presented.

#### **5.1 Summary of the Major Findings**

The study aimed to investigate the factors affecting academic performance of senior high school biology students in the Bekwai Municipality. The study was guided by three objectives thus: to establish the influence of learning resources on academic performance of senior high school biology students in the Bekwai Municipality; to assess the influence of administrative practices on performance of senior high school biology students in the Bekwai Municipality; and to investigate the influence of teacher related factors on academic performance of students in the Bekwai Municipality.

The study adopted a descriptive survey design to collect data. In the study, questionnaires, interviews and observation were used as tools for data collection. Upon analyzing the collected data, the following are the studies major findings:

### **5.1.1 Influence of learning resources on students' academic performance**

The importance of learning resources cannot be overemphasized. Learning resources play a vital role in influencing academic performance of learners in biology. They are the media for the delivery of the curriculum objectives. It was found from the study that inadequate teaching and learning resources are among the factors that have accounted for the low academic performance of the students. None of the respondents of the school indicated that their school had enough teaching and learning resources to support their studies. Students perform better when they have enough teaching and learning resources like textbooks, libraries and well-equipped science laboratory to aid their studies. This study found that learning resources were not adequate as seen from the view point of the respondents. In particular, the students disagreed to most statements such as the students always get the required books in the library. Similar views were expressed by teachers. Overall, from the study findings, the supply and provisioning of the learning resources in the study area were found to be inadequate which was detrimental to the effectiveness of the students' performance in the selected schools and they catalyse the persistent students' poor performance in Bekwai Municipality.

### **5.1.2 Influence of administrative practices on students' academic performance**

Some of the administrative practices which Biology heads of department perform include vetting teachers' lesson notes and schemes of work, evaluating teachers' performance, checking tutors' punctuality and regularity in classrooms. In addition, the heads of department always hold regular meetings with tutors under his supervision to address issues such as challenging topics, and discuss academic interventions to address them. From the findings, the commitment of heads of department to the practice of ensuring teachers' punctuality and effective use of

instructional time and seeing to it that teachers engage in meaningful instructional activities and keeping allocated instructional time could help to enhance the attainment of instructional objectives, culminate in timely completion of syllabus and improve students' performance. The frequent supervision during instruction denotes that the head of department have not neglected their role as frontline inspectors of their departments which help improve the effectiveness in teaching and learning. Effective supervision which keeps teachers on their toes and also assist them to improve on their methods of delivery is done often enough in the schools in the Bekwai Municipality. The findings also show that lesson plans are not vetted regularly by the heads of department. This contradicts the expectations from senior high school heads' who are admonished to critically and consistently examine various items of the lesson plan for effective instructional delivery. The biology heads of department do not monitor teachers' lesson notes often due to busy schedules. Vetting of lesson notes enables the teachers to sequentially plan their lessons. Results on the practice of heads of department ensuring that continuous assessment records are kept up-to-date portrays heads of department demonstration of a lot of interest and commitment to this activity. Furthermore, the study proves that heads of department rarely engage teachers to address challenging topic, and discuss academic interventions to address them. From the analysis, the study found out that there was a very strong positive relationship between administrative practices and academic performance.

### **5.1.3 Influence of teacher related factors on students' academic performance**

The research data gathered and analyzed has establish the effect of teacher related factors on academic performance. From the study findings, teacher qualification is not a problem in the Bekwai Municipality since majority of the teachers have the right professional qualification and most of them being bachelor degree holders. Teacher's qualification plays a very important role in their level of delivery in the classroom. A teacher's knowledge of the subject matter coupled with all the educational materials have great influence on teaching and learning.

However, other factors could influence teachers' performance such as teachers' attitude towards the student, teachers' improvisation techniques, prompt marking and prompt feedback on assignment and exercises, and provision of remedial for weak students.

Moreover, the study found out that teacher attitude, teacher qualification, teacher working condition was not a contributing factor to the students' unsatisfactory performance. However, teacher-student ratio, completion of syllabi, teacher improvisation technique, provision of feedback on classwork, provision of remedial lessons for the weak students influenced academic performance to a great extent. Overall teacher related factors were found to be significant in improving academic performance in the Municipality.

## **5.2 Conclusion**

In this study, the factors that were investigated include; teacher related factors, learning resources and administrative practices. In view of the findings, the conclusions were made.

### **5.2.1 Influence of learning resources on students' academic performance**

This study found that the supply and provisioning of the learning resources in the study area was inadequate. Since learning resources are critical determinant of performance, the inadequacy of these materials in the study area is likely to affect academic performance to a great extent. It can therefore be concluded that unavailability of learning resources affects students' academic performance in biology negatively, while their adequacy and availability will positively affect students' academic performance in biology to a great extent.

### **5.2.2. Influence of administrative practices on students' academic performance**

This study found a strong positive and significant relationship between academic performance and administrative practices by heads of department. This therefore implies that academic performance and administrative practices are statistically dependent. Thus, academic performance of learners is highly predicated on administrative practices. This means that if heads of biology department are highly engaged in assessment practices supervision, vetting scheme of work and lesson note, and engaging teachers to discuss challenging topics, and discussing academic interventions, performance in biology will greatly improve.

### **5.2.3 Influence of teacher related factors on students' academic performance**

This study found that teacher related factors were positively related to academic performance. In particular, teacher class attendance, qualification and workload were critical in determining the performance of the learner. Also, teacher related factors such as teachers' improvisation techniques, provision of prompt feedback on assignments, teacher working condition and teachers' attitude towards students were found to be significantly related to academic performance. It was therefore concluded that teacher related factors and students' academic performance is statistically dependent. This implies that teachers' attendance, work load and qualification are critical in influencing learners' performance. Good teacher working condition coupled with higher qualification and a reasonable workload play a critical role in improvement of school performance.

### **5.3 Recommendations**

Since learning resources play a vital role in enhancing performance of the learners, the study recommended a need for all stakeholders to ensure schools are stocked with relevant and adequate learning materials if academic performance is to be improved. In particular, headmasters and the school management should ensure that relevant materials are procured for use by both the students and teachers.

Also, parents can be asked to support the initiative through buying textbooks for their children to ease the burden of the schools in availing the relevant study materials to learners.

Furthermore, teachers should often give students prompt feedbacks on students' assignments and homework after marking. This encourages and also provides reinforcement and motivation for students.

Teachers should also improve on their improvisation techniques to enable them use locally available materials in the environment and recognize the environment as a laboratory. This would make the teacher to carry out practical lessons in the absence of well-equipped laboratory. The Municipal education directorate should organize workshops and trainings for teachers to make them understand the benefits of improvisation.

Moreover, Heads of department should intensify the routine supervision of teachers and vetting of scheme of work by teachers to ensure adherence to the dictates of the professional records. This effort must be supported by the quality assurance officers from the Ministry of Education who should be doing external quality reviews on a regular basis.

Efforts to remunerate teachers properly in order for them to be satisfied and motivated to work should be encouraged. In this endeavor, the National Teaching Council (NTC) should ensure that teachers' salary and allowances are improved to enhance their morale. Equally, Headmasters must institute internal mechanisms of motivating teachers like rewarding top academic achievers and organizing capacity building seminars for teachers with the aim of improving satisfaction levels among them.

#### **5.4 Suggestions for Further Research**

The suggestion for further studies includes;

1. The study can be replicated in other schools in the municipality to find out if the same factors investigated in this study influence academic performance of the learners in biology.
2. A study should be done to establish the other factors that contribute to a greater extent to academic performance among learners in biology.

3. The study should be further replicated in Junior high schools and colleges of education to find out the extent to which the factors established in this study influence performance.



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## APPENDIX A

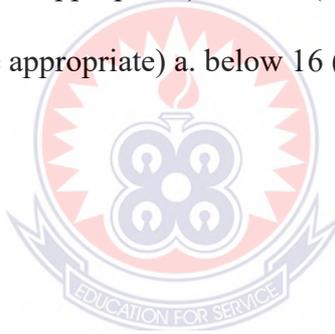
### STUDENTS QUESTIONNAIRE

#### **Part One: Introduction**

I am Emmanuel Okyere, a postgraduate student of the Department of Science Education at University of Education, Winneba. Currently, I am conducting a research on the factors affecting students' academic performance in biology as per requirement for the programme. In this case, I am kindly requesting you to spare some few minutes to fill in this questionnaire. I wish to ensure you that, the information you provide will be treated with absolute confidentiality and will only be used for academic purpose and not otherwise.

#### **Part Two: Demographic Information**

1. Name of your school \_\_\_\_\_
2. Gender (please tick where appropriate) a. Male (  ) b. Female (  )
3. Age: (please tick where appropriate) a. below 16 (  ) b. 16 – 18 (  ) c. above 18 (  )



**Part Three: Learning resources**

4. Kindly indicate your level of agreement with respect to the following on learning resources in your school **(PLEASE TICK)**.

SA– Strongly Agree, A – Agree, N – Neutral, D – Disagree, SD – Strongly Disagree.

S/N	ITEM	SA	A	N	D	SD
1	The students always have the required textbooks.					
2	The school has a library.					
3	The school has well equipped laboratories.					
4	Students always gets the required books in the library.					
5	Teachers have the required and sufficient teaching aids.					
6	Students are overcrowded in the classroom					
7	The classroom is well ventilated and conducive for learning.					

### **Part Four: Teacher Related Factors**

**Instructions:** Please Kindly tick where appropriate to indicate your level of agreement with the following questions

5. How frequent do your Biology teacher attend the Biology lessons?

Always ( ) Often ( ) Rarely ( ) Never ( )

6. Are you satisfied with teachers' class attendance?

Yes ( ) No ( )

7. Do teachers frequently give assignment and exercises?

Yes ( ) No ( )

8. How frequent do you receive feedback on exercises and assignments?

Always ( ) Often ( ) Rarely ( ) Never ( )

9. How can you describe the teachers' attitude towards teaching in your school?

Very Good ( ) Good ( ) Neutral ( ) Poor ( ) Very Poor ( )

10. Do teachers use suitable techniques that makes learning easier?

Yes ( ) No ( )

11. How frequent do the Biology teacher offer remedial classes for weak students?

Always ( ) Often ( ) Rarely ( ) Never ( )

12. How frequent do the Biology teacher improvise for materials that are not readily available in the biology laboratory?

Always ( ) Often ( ) Rarely ( ) Never ( )

13. The teacher uses different teaching methods other than lecturing.

a. strongly agree ( )      b. Agree ( )      c. Neutral ( )  
d. disagree ( )      e. strongly disagree ( )

14. How frequent do the teacher motivates you or reward you when you do well in your work?

Always ( ) Often ( ) Rarely ( ) Never ( )

15. What are the main methods or techniques frequently used in teaching and learning?

b. Lecture ( )      b. Group discussion ( )      c. Activity method ( )  
d. Question and Answers ( )

***Thank you very much for taking your time to fill this questionnaire***

## APPENDIX B

### TEACHERS QUESTIONNAIRE

#### Part One: Introduction

I am Emmanuel Okyere, a postgraduate student of the Department of Science Education at University of Education, Winneba. Currently, I am conducting research on the factors affecting students' academic performance in biology as per requirement for the programme. In this case, I am kindly requesting you to spare some few minutes to fill in this questionnaire. I wish to ensure you that, the information you provide will be treated with absolute confidentiality and will only be used for academic purpose and not otherwise.

#### **Part Two: Demographic Information**

1. Name of your school \_\_\_\_\_
2. Gender (please tick where appropriate) a. Male ( ) b. Female ( )
3. Age (please tick where appropriate) a. below 30 ( ) b. 30 – 50 ( ) c. above 50 ( )
4. Years of teaching experience
  - a. Less than 5 ( )
  - b. 5 - 20 ( )
  - c. 21 and above ( )
5. Academic qualification
  - a. HND ( )
  - b. BEd ( )
  - c. MEd ( )
  - d. MPhil ( )

#### Part Three: Questions on Teacher related factors

6. Are you satisfied with your current job as a Biology teacher?
 

Yes ( )                      No ( )
7. To what extent are you satisfied with your current job as a biology teacher?
 

To large extent ( )                      To a moderate extent ( )

To a small extent ( )                      Not satisfied at all ( )
8. How frequent do you complete the Biology syllabus on time?
 

Always ( )    Often ( )    Rarely ( )    Never ( )
9. Do you offer remedial lessons for weak students after normal classes?
 

Yes ( )                                      No ( )
10. What is the average teacher-student ratio in your school?
 

1:20 - 30 ( )    1:31 - 40 ( )    1:41-50 ( )    1:51-60 ( )
11. List two motivating factors and demotivating factors of your current job as a teacher

Motivating factors	Demotivating factors
1.	1.
2.	2.

12. The average number of lessons a teacher has per week.

15 and below ( )    16 – 25 ( )    26 – 35 ( )    36 and above ( )

13. Please indicate the extent to which the following teacher related factors affect academic performance of students in biology in your school **(PLEASE TICK)**.

ITEM	Great Extent	Moderate Extent	Neutral	Small Extent	No extent at All
Completion of Syllabus					
Teacher Qualification					
Teacher working condition					
Heavy Workload					

#### **Part Four: Questions on Administrative practices**

In the table below, indicate the extent of your level of agreement to which your Head of Department engages in the activities provided **(PLEASE TICK)**.

A – Always, O – Often, R – Rarely, N – Never.

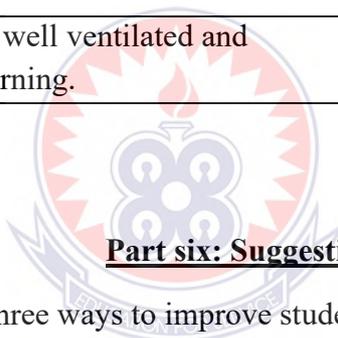
S/N	ITEMS	A	O	R	N
1	Vetting of scheme of work and lesson notes prepared by tutors.				
2	Providing professional recommendations and evaluating their performances				
3	Checking tutors' punctuality and effective use of instructional time.				
4	Assessment practices supervision				
5	Holding regular meetings with tutors under his supervision to address issues such as challenging topics, and discuss academic interventions to address them.				

**Part Five: Questions on learning resources**

Kindly indicate your level of agreement with respect to the following learning resources in your school.

SA – Strongly Agree, A – Agree, N – Neutral, D – Disagree, SD – Strongly Disagree.

S/N	ITEMS	SA	A	N	D	SD
1	The students always have the required textbooks					
2	The school has well equipped laboratories					
3	Students always gets the required books in the library					
4	Teachers have the required and sufficient teaching aids					
5	Students are overcrowded in the classroom					
6	The classroom is well ventilated and conducive for learning.					



**Part six: Suggestions**

In your opinion, suggest three ways to improve students’ academic performance in biology

- 1) .....
- 2) .....
- 3) .....

*Thank you very much for taking your time to fill this questionnaire*

## **APPENDIX C**

### **INTERVIEW GUIDE FOR RESPONDENTS**

I am Emmanuel Okyere, a postgraduate student of the Department of Science Education at University of Education, Winneba. Currently, I am conducting a research on the factors affecting students' academic performance in biology as per requirement for the programme. In this case, I am kindly requesting you to respond the following questions in honesty. I wish to ensure you that, the information you provide will be treated with absolute confidentiality and will only be used for academic purpose and not otherwise.

### **INTERVIEW GUIDE FOR TEACHERS**

1. What is your qualification and experience in teaching?
2. What resources are available in the school that are used in teaching biology?
3. What teaching method is suitable for teaching and learning of biology?
4. How does the biology teacher evaluate students' performance?
5. How is the heads of department attitude towards supervision in the teaching of biology?
6. How is the teacher working conditions in the school?

### **INTERVIEW GUIDE FOR STUDENTS**

1. What resources are available in the school that are used in teaching and learning of biology?
2. Which methods does the biology teacher use when teaching?
3. What is your teachers' attitude towards teaching biology?
4. What is the perception of students towards learning biology?
5. How conducive is the classrooms towards learning?

## APPENDIX D

### GENERAL CLASSROOM OBSERVATION SCHEDULE

NAME OF OBSERVER	NAME OF SCHOOL	TIME	DATE	SIGNATURE OF THE OBSERVER

	Good	Average	Poor
<p><b>Teacher initiates active interaction and participation</b></p> <ul style="list-style-type: none"> <li>• The teacher creates purposeful activities that engage every student in productive work.</li> <li>• The teacher's instruction is very interactive (lots of question and answers)</li> </ul>			
<p><b>Learning time is maximized</b></p> <ul style="list-style-type: none"> <li>• Teacher starts lesson on time.</li> <li>• Teacher makes sure that students are involved in learning activities until the end of the lesson.</li> </ul>			
<p><b>The teacher interacts with all students</b></p> <ul style="list-style-type: none"> <li>• The teacher gives turn to and/or involves those students who do not voluntarily participate on classroom activities.</li> </ul>			
<p><b>The teacher attitude</b></p> <ul style="list-style-type: none"> <li>• Provision of immediate feedbacks on classwork</li> <li>• Teacher class absenteeism</li> </ul>			
<p><b>Usage of teaching and learning resources</b></p> <ul style="list-style-type: none"> <li>• Student-textbook ratio.</li> <li>• The laboratory is well utilized for practical.</li> </ul>			

## APPENDIX E

### LETTER TO THE DISTRICT DIRECTOR TO SEEK APPROVAL

Fomena T I Ahmadiyya Senior High School  
P. O. Box 7  
Fomena-Adansi  
22<sup>nd</sup> June, 2021

The Municipal director  
Ghana Education Service  
Bekwai Municipal

Dear Sir,

#### SEEKING APPROVAL TO CONDUCT A RESEARCH IN THE MUNICIPAL

I am Emmanuel Okyere, a student pursuing a Master of Philosophy in Science Education at University of Education, Winneba. I wish to conduct a research in some selected senior high schools in the Bekwai Municipal. The rationale for the research is to investigate the factors affecting performance of students in Biology in the Bekwai Municipal.

The factors that will be investigated includes; teacher related factors, learning resources and administrative practices.

I would be very grateful if my request is granted.

Yours faithfully,



Emmanuel Okyere

(0548240759)

## APPENDIX F

### INTRODUCTORY LETTER FROM GHANA EDUCATION SERVICE

# GHANA EDUCATION SERVICE

*In case of reply the number and  
Date of this letter should be quoted*

O.1/VOL.III/138

Our Ref No

Your Ref No



Municipal Education Office  
P. O. Box 110  
Bekwai- Ashanti

23<sup>rd</sup> September, 20 21

ALL HEADS OF SHS CONCERN  
BEKWAI MUNICIPAL

#### INTRODUCTORY LETTER

NAME: MR. EMMANUEL OKYERE

The Municipal Directorate of Education wishes to introduce to you Mr. Emmanuel Okyere, a graduate student at the University of Education, Winneba.

He wants to conduct a research in your school titled "Investigating the factors affecting students' academic performance in Biology".

We would be very grateful if he is accorded the necessary assistance.

Thank you.

A handwritten signature in black ink, appearing to read 'Leticia Obeng'.

LETICIA OBENG (MRS)  
(MUNICIPAL DIRECTOR)

## APPENDIX G

### INTRODUCTORY LETTER FROM FACULTY OF SCIENCE EDUCATION (UEW)



Our ref. No.: ISED/PG.1/Vol.1/14

Your ref. No.:

Date: 11<sup>th</sup> May, 2021

#### TO WHOM IT MAY CONCERN

Dear Sir/Madam,

#### LETTER OF INTRODUCTION MR OKYERE, EMMANUEL

We write to introduce, Mr Okyere is a postgraduate student of the Department of Integrated Science Education, University of Education, Winneba, who is conducting a research titled:

*Investigating the factors affecting students academic performance in Biology.*

We would be very grateful if you could give him the assistance required.

Thank you.

Yours faithfully,

  
ALEXANDRA N. DOWUONA  
PRINCIPAL ADMIN. ASSISTANT  
For : HEAD OF DEPARTMENT

