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SCHOOL PHYSICAL ENVIRONMENT AND ITS IMPACT ON STUDENTS' ACADEMIC PERFORMANCE IN SOME SECONDARY SCHOOLS IN MFOUNDI DIVISION

Dissertation Submitted in Partial Fulfillment of the Requirement for the Award of a Master's Degree in Education

SPECIALTY:
Curriculum Development and Evaluation

By

NKONGHO Lydia AKO

BA. English Modern Letters

Matricule: 21V3470

Supervised by

Prof. NDI Julius NSAMI, PhD

DATE OF DEFENCE 12 July 2024

Jury

PRESIDENT: DONGO Etienne, Pr
EXAMINER: MBEH Adolph TANYI, CC
SUPERVISOR: NDI Julius NSAMI, MC

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University of Yaounde I

APPROVAL

This Master's dissertation entitled "*School Physical Environment and Its Impact on Students' Academic Performance in Secondary Schools in Mfoundi Division*" has been read and approved by the undersigned as meeting the requirements of the University of Yaounde I (UYI).

By

_____   _____
PRESIDENT OF JURY   CROSS EXAMINER

CERTIFICATION

I the under signed, hereby certify that the thesis titled "School Physical Environment and its impact on students' academic performance in some Secondary Schools in Mfoundi Division-Yaoundé" submitted to the department of Curriculum and Evaluation, Faculty of Education in the University of Yaoundé 1 was carried out by NKONGHO Lydia AKO, Matriculation number (21V3470), was carried out under my supervision. The work has been properly referenced and acknowledged.

Supervisor

Signature**:**_____

Name: Pr. NDI Julius NSAMI

Date:_____

President of Jury

Signature**:**_____

Name:_____

Date:_____

Examiner

Signature**:**_____

Name:_____

Date:_____

Head of Department

Signature**:**_____

Name:_____

Date:_____

DECLARATION

I, **NKONGHO Lydia AKO** with Matriculation number **21V3470** in the Faculty of Education, University of Yaounde 1, hereby declare that this piece of work entitled "*School Physical Environment and Its Impact on Students' Academic Performance in Secondary Schools in Mfoundi Division*", under the supervision of Pr. **NDI Julius NSAMI** is my personal work and all used materials have been acknowledged by means of quotations and references.

NKONGHO Lydia AKO

Student

Signature: _____

Date: _____

DEDICATION

This work is dedicated to my husband Mr NFOR Hycent DZETAH, My children NFOR Princess Channah and MUNZU Precious Sharon MBOKONG,in Blessed Memory of my lovely mother NKONGHO Catherine MBOKONG and to the entire NKONGHO'S family for supporting me throughout my studies.

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LIST OF ABBREVIATIONS

PRSP: Poverty Reduction Strategic Paper.

DSCE: Document de strategie pour la croissance et l'emploi.

ESSP: Education sector strategic plan.

WHO: World health organization.

UNICEF: United nation children's fund.

WASH: Water, sanitation and hygiene.

MHM: Menstrual hygiene management.

UYI: University of Yaoundé 1

ANOVA: Analysis of variance

CEV: Curriculum and Evaluation

ABSTRACT

The purpose of this study is to examine the effect of school physical environment on student's academic performance in some secondary schools in Mfoundi division. This study use a descriptive statistic design and hypothesis were tested using simple linear regression. 221 students responded to the questionnaire for analyses. The following results were concluded The regression equation showed a significant positive relationship between Classroom physical environment as a predictor scores (t = 10.154, p < 0.000) on students' academic performance, The regression equation showed a significant positive relationship between school libraries as a predictor scores (t = 24.778 p < 0.000) and academic performance, The regression equation showed a significant positive relationship between school toilet as a predictor students' academic performance score (t = 16.652, p < 0.000), The regression equation showed a significant positive relationship between school location as a predictor students' academic performance score (t = 43.037, p < 0.000). School physical environment was a positive predictor of student's academic performance in secondary schools in Mfoundi division.

Keywords: *School physical environment, Classroom, School libraries, School toilet and Academic performance.*

RESUME

Le but de cette étude est d'examiner l'effet de l'environnement physique scolaire sur les résultats scolaires des élèves des écoles secondaires du département du Mfoundi. Cette étude utilise une conception statistique descriptive et les hypothèses ont été testées à l'aide d'une régression linéaire simple. 221 étudiants ont répondu au questionnaire d'analyse. Les résultats suivants ont été conclus. L'équation de régression a montré une relation positive significative entre les scores de l'environnement physique de la classe en tant que prédicteur (t = 10,154, p < 0,000) sur les résultats scolaires des élèves. L'équation de régression a montré une relation positive significative entre les bibliothèques scolaires en tant que prédicteur. scores (t = 24,778 p < 0,000) et performances académiques, L'équation de régression a montré une relation positive significative entre les toilettes à l'école en tant que prédicteur du score de performance académique des élèves (t = 16,652, p < 0,000), L'équation de régression a montré une relation positive significative entre l'emplacement de l'école comme prédicteur du score de performance académique des élèves (t = 43,037, p < 0,000). L'environnement physique de l'école était un prédicteur positif de la performance académique des élèves dans les écoles secondaires du département du Mfoundi.

Mots-clés : *Environnement physique scolaire, Salle de classe, Bibliothèques scolaires, Toilettes scolaires et Performance académique.*

CHAPTER ONE

INTRODUCTION

School environment determines the physical structural, personal, and functional factors of the educational institution, which provide distinctiveness to determine the physical schools. The literature on psychosocial school learning environment shows that students' perception of school environment accounts for greater variations in learning outcomes more than other factors such as pre-test performance, general ability, or both (Fraser & Fisher, 1982). The main focus of this study therefore, is to ascertain school environmental factors that affect academic performance of public secondary school students, judging from existing evidences that, success of students is measured chiefly by academic performance which is linked to various environmental factors amongst others; student personal role performance and school environmental factors (Kuert, & Venkat Krishnan, 2016).

Education is an integral part of society that points to socio-economic development (Cheek et al., 2015; Mine, Hiraishi, & Mizoguchi, 2001; Türkkahraman, 2012). It offers citizens opportunities to transform and improve knowledge, behaviour, attitude and skills that empower them to meet social needs and individual growth (UNESCO, 2018). Global initiatives in education have increasingly focused on access, inclusiveness, equity and quality education to facilitate social development (United Nations, 2016). The initiatives' objective is to ensure that all children are enrolled in school and prepared to meet global labour demands (UNESCO, 2013). Education involves teaching and learning and can occur in different contexts through formal, informal and non-formal approaches (Abidogun & Falola, 2020).

Formal education occurs mainly in school systems where learning is organized in a structured environment (Aslam, 2012). In this regard, learning is part of the processes and experiences that students encounter during structured interactions (Gauthier, 2014). Every student learns uniquely and demonstrates different levels of understanding, skills, and outcomes (Wilson & Peterson, 2006). Therefore, knowing the differences in students' abilities and interests is essential for teachers in selecting learning approaches (Mantri, 2013). The learning context determines how teachers structure learning objectives to facilitate effective outcomes (Cameron & Harrison, 2012; Werquin, 2007).

Schools are complex, dynamic systems that influence students' academic, affective, social, and behavioral learning (Crick, Green, Barr, Shafi & Peng, 2013; Gu & Johansson, 2013). Phelan, Davidson and Yu's "Students at the Center" study (1996) demonstrated that classroom and school contexts the operating environment within schools affect the quality and degree of students' learning and potential outcomes. School organizational and classroom practices can influence the amount and depth of students' opportunities to use the educational system as a stepping stone to further education, productive work experiences, and ultimately, a contributing factor toward meaningful and satisfying adult lives within a democratic society (Center for Social and Emotional Education, 2009).

In a school environment, learning is structured according to educational needs of secondary school students,such as healthy classrooms,good teachers, good study routine and explicit curricula that clearly outline objectives and expectations (Ainsworth & Eaton, 2010). The process is facilitated by teachers who employ various approaches to achieve desired learning outcomes measured systematically (Aslam et, 2012; Werquin, 2010). Most research on students' academic performance focused on either school curriculum or classroom environment and academic performance (Dorman, 2001; Dorman & Adams, 2004). With the assertion that education is a fundamental right, it is important to ensure that the school environment is regulated in such a way that it will promote academic performance and achievement by learners. This is because the academic performance of students in the school is largely tied to school environmental factors and teaching styles (Chetty, Handayani, Sabahudin, Ali, Hamzah, Rahman and Kasim, 2019), student personnel management, the quality/quantity of teachers (Nwogu and Esobhawan, 2014; Maphosa and Mahlo, 2015; Aliyu and Ali, 2021) as well as the school environment (Chukwuemeka, 2013; Nsa, Offiong, Udo and Ikot, 2014).

BACKGROUND OF THE STUDY

This research involved school environment and students' academic performance. The background will consist of the historical, contextual, conceptual and theoretical background

Historical background

Historically the construct school environment can be traced back 100 years (Perry, 1908); the scientific study of school environment was not undertaken until 1950s with the birth of organizational school environmental research. March and Simon (1958) and Argyris (1958)

began to analyze businesses and organizations in an attempt to correlate the influences of an organizational environment to such outcomes as morale, productivity and turnover. Research continued throughout the 1960s and early 1970s, examining socioeconomic and race differences to explain achievement with mixed success (Coleman et., 1966; Hauser, 1970; McDill, Meyers, &Riugsby, 1967). By the late 1970s researchers were attempting to associate school environment with students' outcomes in schools. Brookover and colleagues (1978) examined the environment of the school, defined as the set of norms and expectations that were defined and perceived by individuals within the school, and determined that school environment was positively linked to the difference in mean outcomes between schools, even when adjusting for race, and other demographics.

In the early and mid-1990s, studies focused on individual classes or teachers (Griffith, 1995; Stockard & Mayberry, 1992). Griffith, (1995) argued that the relationship between the level of study depended on the level at which the students identified themselves in their school environment. Thus, in an educational environment where classes are held in different classrooms with different teachers, it naturally follows that the unit of school environment measure is the school as a whole, whereas the individual classroom would be the appropriate measurement unit where students spend all or most of their time with their teachers. Since the end of the 1990s and continuing today, researchers have attempted to link school environment to different outcomes including school achievement (Hoy & Hannum, 1997); aggression victimization, bonding connectedness and engagement (Libbey, 2004); and health problem (Coker & Borders, 2001).

Throughout history, education has reflected the ideals of a school environment. It is viewed as the engine that drives social and economic prosperity (Sondzia, 2006). Educational quality emerges in the context of the obligation to establish and sustain the conditions under which children, irrespective of their regional location study. It was in this light that the Dakar Framework for action reaffirmed the world Declaration's commitment, to improve access to schooling with quality (Jomtien, 1990). Dakar framework (2000) stated that countries should Create safe, healthy, inclusive and equitably resourced educational environments conducive to excellence in learning, with clearly defined levels of achievement for all.

According to Dakar framework the quality of learning is and must be at the heart of EFA. All stakeholders' teachers and students, parents and community members, health workers and local government officials should work together to develop environments conducive to

learning (Jomtien, 1990). To offer education of good quality, educational institutions and programmes should be adequately and equitably resourced, with the core requirements of safe, environmentally friendly and easily accessible facilities; well-motivated and professionally competent teachers; and books, other learning materials and technologies that are context specific, cost effective and available to all learners (Jomtien, 1990). Learning environments should also be healthy, safe and protective.

This should include: a) Adequate water and sanitation facilities b) Access to or linkages with health and nutrition services c) Policies and codes of conducts that enhance the physical, psycho-social and emotional health of teachers and learners d) Education content and practices leading to knowledge, attitudes, values, and life skills needed for self-esteem, good health, and personal safety. According to Jomtien, (1990) assessment of learning should include an evaluation of environments, processes and outcomes. Learning outcomes must be well-defined in both cognitive and non-cognitive domains, and be continually assessed as an integral part of the teaching and learning process.

Regional Conference on Education for all Sub-Saharan Africa, (1999) focused on access and equity, quality, capacity building and partnership for sub-Saharan Africa. Improvement of the teaching and learning environment Urgent attention shall be devoted to the development of materials, methodologies and social learning environments that are feasible and sustainable in the local environment and relevant. According to Chitty (2002), learning outcomes being key indicators of educational quality, need to be carried out in an acceptable learning environment with good sanitation facilities. Quality school environment provide a safe, dignified, and healthy learning environment that promotes school attendance and high-performance achievement (UNESCO, 2015).

Contextual background

The Government of Cameroon laid out a primary goal of "spreading education to all the citizens" in its Poverty Reduction Strategy Paper (PRSP, 2003) and the Growth and Employment Strategy Document also known as Document de Stratégie pour la Croissance et l'Emploi, (DSCE, 2009) and has been aiming to achieve a secondary education completion rate of 100% by 2020. Likewise, the Education Sector Strategic Plan (ESSP, 2006) focused on reducing disparities and achieving 100% enrollment and completion rates," as well as improving the efficiency and quality of educational services, as priority issues in education.

And its Action Plan set targets in terms of the constructions of classrooms and toilets, the provision of desks and chairs, and the renovation of classrooms. After primary education in Cameroon became free of charge in 2000, however, the construction of facilities could not catch up with a dramatic increase in the number of students. As of 2008/2009, the actual number of classrooms built remained 47,926, as opposed to the government's target of 67,620 classrooms in public secondary schools (target year: 2015), running short of about 20,000 classrooms. Moreover, because 16,381 classrooms, or 34% of the existing classrooms at public schools, were semi-permanent or temporary buildings, there was high demand for rebuilding them as soon as possible.

At the time of planning, PRSP (2003) and DSCE (2009) Cameroon's national development policy documents– listed guaranteeing and universalizing secondary education to all students and citizens as a priority goal in the field of education. In addition, the ESSP (2006–2013) –a strategic document of the education sector–, and its action plan stated that reducing disparities and achieving 100% enrollment and completion rates, as well as improving the efficiency and quality of educational services, as priority objectives in secondary education, and developed specific plans on the construction of classrooms and the procurement of desks and chairs. At the time of ex-post evaluation, the strategic document (target years: 2013–2020), which was updated in 2013, and its action plan have succeeded to the same policy objectives, although their target figures have been downwardly revised. In light of the above, this project is highly consistent with the development policy and education sector strategy of Cameroon.

Conceptual background

School environment: This is defined as the setting where academic activities occur (Aslam et al., 2012; Shute et al., 2017; UNESCO, 2012; Weinstein, 1979). school environment refers to the physical infrastructure and the distribution of the materials established in the study centre, which must be designed from an ergonomic, ecological, harmonic and aesthetically pleasing perspective, to display the development of skills , fostering creativity and curiosity to learn, similarly, it is favourable to implement dynamic, colourful and vast places that promote noise regulation, lighting and appropriate ventilation, likewise, establishing study corners inside and outside the classroom improves the process academic and positively influences the performance of the student (Quesada, 2019).

School environment has been defined by various authors in various ways. Mege (2014), defined school environment as "factors within the school that influence the teaching and learning process. The school environment includes classrooms, library, technical workshops, teachers' quality, teaching methods, peers, among others that can affect the teaching and learning process." This definition implies that there are various school environmental variables and these may differ from one school to another. Korir and Kipkemboi (2014) postulate that school environmental factors include school structure, school composition and school climate. In addition, school environmental factors may also include safety and order, teacher relationships and collaboration, academic expectations, leadership and teachers' professional development factors.

School environment consist of both material and non-material resources in the school. It includes the teachers, peers, cohesiveness, the subjects and method of teaching. A healthy and attractive school environment makes for conducive learning and promotes students' pride in their schools and their interest to stay in school (Mgbodile 2014). Belanger (2006) on writing on the importance of learning environment states that people's educational life histories are influenced not only by environment where they live or learn. The author further states that learning is more than education provision and that the community in which learners live have a profound impact on their aspiration to learn, their curiosity and their desire to develop their own competency. Nwizu (2013) warned that the environment in which the learner acquires knowledge has a great influence on the cognitive achievement of the learner. It has also been generally agreed that the quality of learning is markedly influenced by environmental and organizational factors.

Academic performance: Diverse definitions of the term academic performance have been propounded by scholars, though with similar connotations. For instance, a critical look at Nja et al (2019); Narad and Abdullah (2016); Abid et al (2016): Coe (2016) and others perspective indicate that, academic performance has to do with the extent to which one has gained knowledge or otherwise through assessment of performance by evaluator with certain level of grades. Whereas, in Zere (2013); Ghecham and Hamada (2018); Tounesia (2012) earlier perspectives, academic performance is educational objective set by students and teachers to be achieved over a time-frame, during which the students are expected to have worked assiduously towards achieving the set objectives. Academic performance refers to how well or badly a student does in his/her study as evaluated through various means such as

quizzes, assessments, field work and examinations during the entire implementation of any education curriculum. Yet in a more specific term, academic performance is how well a public secondary school student in Amassoma performed optimally in his or her academic work (Kapur, 2018).

According to Narad and Abdullah (2016) academic performance is the knowledge gained that is characterized by marks from a teacher and/or educational goals set by learners and teachers to be achieved over a specific period of time. They added that these goals are measured by using continuous assessment or examinations results. Academic performance of students is a key feature in education and it is considered to be the centre around which the whole educational system revolves. Narad et al., (2016) opined that the academic performance of learners determines the success or failure of any academic institution and it has a direct impact on the socio-economic development of a country in the sense that, students are bound to make informed decisions about their career when they performed well in school (Wats, 2006). Similarly, Behanu (2011) asserted that students' academic performance serves as bedrock for knowledge acquisition and the development of skills and the most priority of all educators is academic performance of students (Eke, 2009).

Theoretical background

This study is underpinned by selected theories that relate learning to the environment to establish the relationship between school environment and students' academic performance. This study adopted two theories. The school climate theory and Ecological systems theories are deemed relevant for this study.

The school climate theory was developed by Gregory, Cornell and Fan (2011) to explain the various elements of how students experience their school environment. The theory assumes that the interaction of varied factors creates a school learning environment in a school including the academic activities, safety, community and institutional environment that impact on the cognitive, behavioural and psychological development of students. Thus, school climate, however its form has both direct and indirect effect on students' outcomes in the school, including their academic performance (Gregory, Cornell, & Fan, 2011).

In building the theory further, later researchers theorised elements of school climate that promote positive student development. For instance, Wang and Degol (2015), borrowing from research on parenting styles and child development argued that authoritative school

climate promotes positive student development. They defined a positive school climate as one that offers a democratic atmosphere for students to express themselves. They used two leading indicators for authoritative school climate, which are democratic disciplinary structures and warmth student support (Wang & Degol, 2015). In applying this theory to the current study, the school climate is used interchangeably with a school learning environment to signify various elements of the school environment that affect student learning in both direct and indirect ways. Thus, when the student learning environment is conducive, it will improve the academic performance of the students and vice versa.

Urie Bronfenbrenner, Ecological Systems Theory (2005) Urie Bronfenbrenner (2005) encourages researchers to study the changing relations between children and the environment in which they live. Bronfenbrenner's theory deals with the ecology of child development or the environmental systems that affect the way children develop. He believes that the interactions between a child and its environment are the main focus of human development. Bronfenbrenner proposed five major types of environmental systems and has increasingly giving attention to the microsystem as an important environmental system which impacts greatly on children's development. According to the ecological theory, if the relationships in the immediate micro system break down, the child will not have the tools to explore other parts of his environment.

STATEMENT OF THE PROBLEM

The issue of poor academic performance of students in Cameroon has been of much concern to the government, parents, teachers and even students themselves. The quality of education does not only depend on the teachers as reflected in the performance of their duties but also in the effective coordination of the school environment. School environment which includes space for conveniences' planning, accessories planning, the teachers as well as the students themselves is essential in the teaching-learning process. The extent to which students learning can be enhanced depends on their location within and without the school compound, the class size, the structure of their classroom, the relationship between teachers and teachers, teachers and students, students and students, availability of instructional facilities and accessories. It is believed that a well-planned school will gear up expected outcomes of education that will facilitate good social, political and economic emancipation, effective teaching and learning process and academic performance of the students.

The World Bank (2016) reported that the enrolment of secondary schools increases from year to year. This increase, which is not proportionate to improvement of school infrastructure to accommodate the increasing numbers, leads to overcrowding in the classrooms where one class has more than 65 students. In consideration of the crucial role that school environment plays in achieving the desired learning outcomes, the increase in number of student results in the need for additional resources: materials, informational resources, physical resources, and total textbooks per student. According to Dawn (2011), as the number of students in a classroom grows, so do the negative effects on both the teacher and the students. That is a teacher can only devote much attention to one student when he or she has to divide their attention among twenty or more students in a class. As a result, when the number of students in a classroom rises from twenty to twenty-five or thirty to thirty- five, it is impossible to give all students the attention that they need. This is due to limited teaching-learning resources.

In most African countries, the issue of school environmental factors is one of the challenges in schools. The study done by Oden (2019) in Nigeria indicated that the extent to which learning could be committed depends on their location within the school compound, the structure of their classroom, availability of instructional facilities and other related resources. Juan and Visser (2017) who conducted their study in South Africa also revealed the existing strong relationship between the school environmental factors and the whole process of teaching and learning. The study further revealed that school environmental factors contributed to the learners' class activeness and the general academic performance. The literature shows that school learning environment contributes significantly to students' academic performance (Bhavana, 2018; Dincer & Uysal, 2010; Pietarinen et al., 2014). A conducive learning environment is a crucial determinant in students' academic performance (Ado, 2015; Xiong, 2019). In lower-middle-income countries, such as Ghana, there is no extensive research about the influence of school learning environment on students' academic performance. This has caused a limited understanding of diverse factors that impact students' academic performance in senior high schools. This study, therefore, sought to address the gaps by investigating the relationship between indicators of school learning environment and students' academic performance collectively.

For instance in Cameroon in general and Yaounde in particular some of the schools in the urban center are located in the middle of the city that is, not only is there noise pollution but these schools are surrounded by bars (drinking spots) and clubs which acts as a distraction to

most of the students. E.g Lycée Etoug-Ebe is located beside the road which has bars around and students can easily escape from school to go to those bars or at times after school hours instead of going back home they will enter those bars to drink.

Also, schools that are located far from where the students live can lead to late coming, lack of transportation, absenteeism which can also affect students' performance.

There are other factors that can also affect students' performance not only the locations other aspects include: sanitation and wash facilities, school libraries and classrooms, school sanitation and wash facilities has to do with, clean drinking water, provision of hand washing facilities such as soaps and disposable towels and most especially the toilets have to be very clean and in good conditions. Sanitation contributes to data learning and retention among school children more dignity and privacy for everybody especially women and girls. This is because improving water, hygiene and sanitation conditions in schools improves children health's and reduces sicknesses which may lead to absenteeism.

School libraries also helps to develop skills in reading and providing a source of subject information. In Cameroon, some of the public schools do not have school libraries and those that are opportune to have, some of the books are outdated that does not serve any purpose to the students.

More s, public school in Cameroon lac the availability of good classrooms in terms of sizes, ventilations, limited benches as such, all these can influence the performances of students

PURPOSE OF THE STUDY

Main research objectives;

The purpose of this study is to examine the effect of school physical environment on student's academic performance in secondary schools in Mfoundi division

Research objective

- Examine the impact of classroom physical environment on student academic performance
- Assess the effect of availability and usability of library on student academic performance

- Analyse the effect of wash facilities on student academic performance
- Examine the effect of school location on student academic performance

Research question

Main research question;

What is the effects of school physical environment on students academic performance in some secondary schools in Mfoundi division?

Specific research questions;

1) What is the effect of classroom physical environment on student academic performance?
2) What is the effect of library on student academic performance?
3) To what extent does WASH facilities affect student academic performance?
4) To what extent does school location to school affect student academic performance?

Research hypothesis

H_{O1}: Physical classroom environment has no significant effect on student academic performance

H_{O2}: Availability and usability of library has no significant effect on student academic performance

H_{O3}: WASH facilities have no significant effect on student academic performance

H_{O4}: School location has no significant effect on student academic performance

1.3.4. Scope of the study

The study was conducted in public secondary schools in Mfoundi division. Participants were students of lower sixth and upper sixth. The research focused on school physical environment. The study uses four construct which are classroom physical environment, availability of library, WASH facilities and school premises as indicators of school physical environment that influence students' academic performance.

Significant of the study

This research provides empirical evidence into how indicators of school environment interplay to influence students' academic performance. The findings demonstrate factors that

affect academic performance and provide a framework for policies formulation to address the decline in academic performance in secondary school.

The study shows the significance of student-teacher relationships, academic support, school physical environment and school teaching environment on learning outcomes in secondary school. Results of this study would help in disseminating knowledge to the teachers, administrators, and inspectors on the critical role the school environment plays in students' academic success. The findings of the study will help parents and guardians in determining the choice of the type of school for their children and wards. This is because, the children will enjoy good school learning environment that allows for quality school products.

The study will inform teachers and principals about their readiness and strong-will to improve school supervision and management methods to ensure quality teaching and learning. It will help them appreciate the fact good school facilities and equipment stimulates students' academic performance. It will also assist the teachers in the areas of their classroom delivery, teaching effectiveness and increased productivity. The results of the study will help the government and policymakers to formulate effective planning policies and programs to foster schools' academic activities. It will also provide policymakers with knowledge to identify and solve the needs of the schools in terms of building and facilities.

It is hoped that this study would provide information for parents, educators, school managers or administrators, governments, counsellors and the society at large to reflect upon various factors that help students in achieving their academic achievements in schools. In addition, the fact that this study is conducted in public schools, it shares quite a lot of similarities with many other counterparts. In this connection, this study provides a valuable reference for other schools to reflect upon the school environment as it affects the academic performance of students in secondary schools. Lastly, it will aid researchers in their future research undertakings in the aspect of school environment, students' academic performance and their psychosocial development.

DEFINITION OF TERMS

School: School is an educational institution designed to provide learning spaces and learning environments for the teaching of students under the direction of teachers.

Environment: Environment is the sum total of all surroundings of living organism including natural forces and other living things, which provide conditions for development and growth. In this study, environmental factors are factors that affect students from performing optimally in their academics within the students` environment. In a broader perspective, Kuert, and Venkat Krishnan, (2016) believes that, learning environment does not only depict natural forces and living things, but rather, it refers to the social, psychological and pedagogical contexts in which learning occurred that affect the student's attitude and the achievement.

Classroom: Classroom physical environment refers to the learning setting, including arrangement of desks, tables, walls, ceiling, chalkboard, lighting, fittings, decorations and all the physical elements in the classroom (Amirul et al., 2013). According to Suleman and Hussain (2014) physical environment is the physical aspect of the learning setting. The component of the physical environment of classroom includes learners, teachers and the facilities (Lippman, 2010).

School location: School location refers to the particular place, in relation to other areas in the physical environment where the school is sited. Schools are an integral part of a community and are best located close to the learners they serve. The need to travel long distances to school can have a negative impact on enrolment and retention (especially among girls and disabled children), as well as attendance and performance. For example, studies have found that students living less than 1 km from their school perform statistically better than those who walk further (Theunynck, 2009).

Library: a library it is a room or building in which all the learning materials such as books, tape, newspapers etc. are available for public in order to study, learn and borrow it. Library is the most important and essential part in education process.

WASH facilities: Basic sanitation facilities are defined as functional improved sanitation facilities separated for males and females on or near the premises. Improved sanitation facilities include a pit latrine with slab, a ventilated improved pit latrine, a flush toilet, a pour-flush toilet or a composting toilet.

CHAPTER TWO

RELATED LITERATURE REVIEW

CONCEPTUAL LITERATURE

Concept and functions of classroom environment, school libraries, WASH facilities and school location.

Classroom Environment

Brannon (2010) emphasized the importance of the classroom environment as a multifaceted concept that includes the physical, social, and psychological aspects of the learning environment. He highlighted the impact of the classroom environment on student engagement, motivation, and learning outcomes. Muhammad (2019) described the classroom environment as the "physical and emotional setting" in which teaching and learning take place. They emphasized the role of the classroom environment in creating a positive and supportive atmosphere that fosters student learning and achievement.

The concept of classroom environment encompasses the physical, social, and emotional atmosphere within a classroom that influences students' learning and development. It includes the physical layout of the classroom, the way furniture is arranged, the use of space, lighting, temperature, and the overall design elements (Firestone, 2014). Classroom environment also includes the interactions between students and teachers, as well as among students themselves. This includes the tone of communication, the level of respect and support, and the sense of community within the classroom (Matoy, 2021).

Classroom environment is important because it have a significant impact on students' academic performance, motivation, and well-being. A positive and supportive classroom environment can enhance learning outcomes, promote student engagement, and foster a sense of belonging and emotional safety.

CONCEPTUAL FRAMEWORKS

Conceptual framework was drawn from the review of related literature, and theories on school physical environment and students' academic performance

Figure 1: Conceptual frameworks
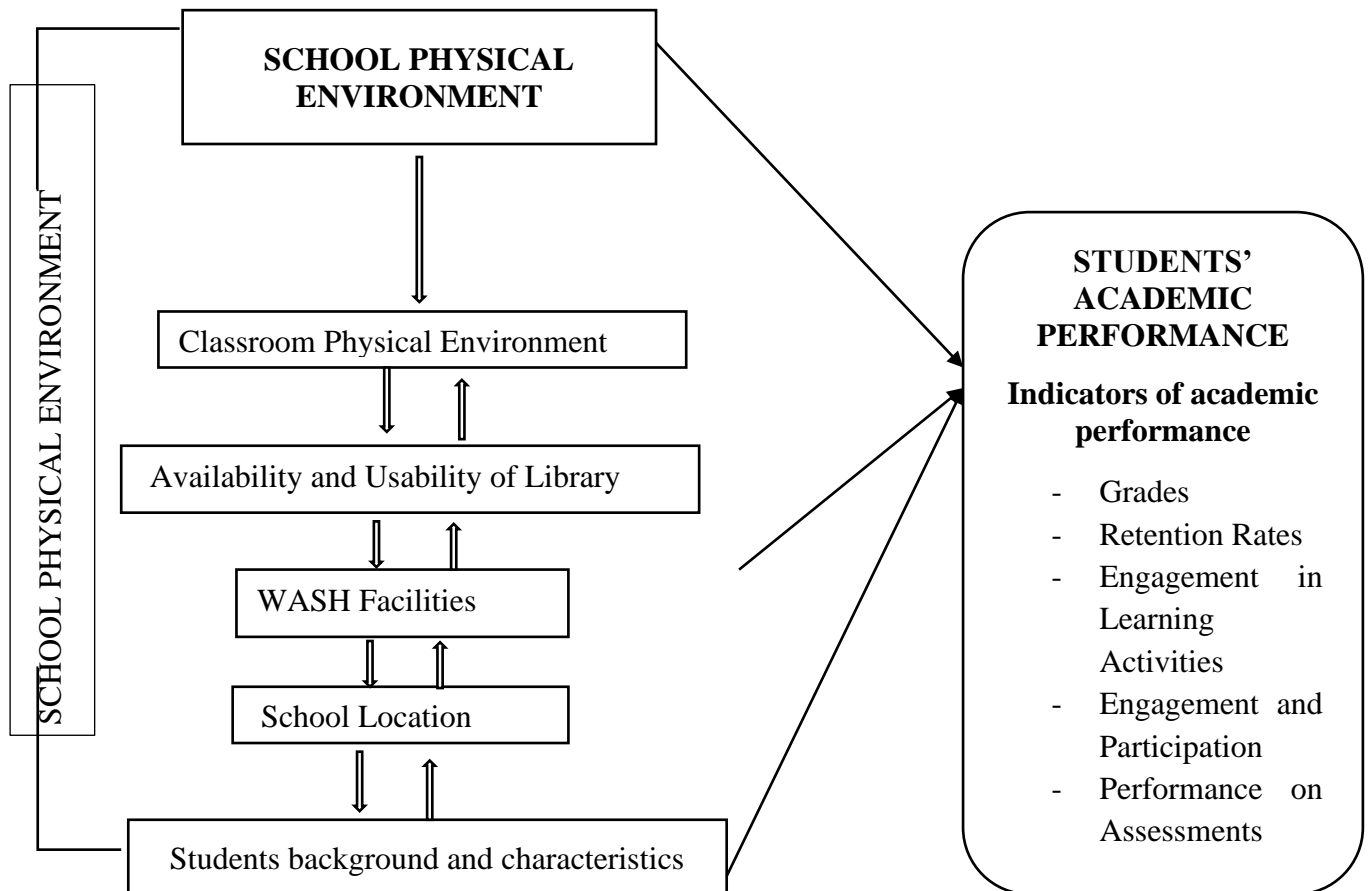
Source: Researcher 2023

Functions of classroom environment

Facilitating Learning: A well-designed classroom environment can enhance learning by providing a space that is conducive to concentration, engagement, and active participation. It can include elements like comfortable seating, appropriate lighting, and minimal distractions.

Supporting Differentiated Instruction: The classroom environment can be structured to accommodate diverse learning styles, abilities, and preferences. This can include flexible seating arrangements, varied instructional materials, and technology integration.

Promoting Collaboration and Communication: The layout and design of the classroom can encourage students to work together, share ideas, and communicate effectively. This can be achieved through group work areas, interactive displays, and open spaces for discussions.

Fostering a Positive Classroom Climate: A positive classroom environment can contribute to a sense of belonging, mutual respect, and emotional well-being among students. This can be achieved through encouraging positive interactions, displaying student work, and promoting a sense of community.

Enhancing Motivation and Engagement: The physical environment of the classroom can impact students' motivation and engagement levels. A stimulating environment with engaging learning materials, displays, and decorations can motivate students to participate actively in learning activities.

Supporting Classroom Management: An organized and well-managed classroom environment can help teachers maintain discipline and manage behavior effectively. This can include clear expectations, structured routines, and designated areas for different activities.

Creating a Safe and Healthy Space: The classroom environment should prioritize safety and health to ensure that students feel secure and comfortable. This can include proper ventilation, access to natural light, and adequate space for movement.

Overall, the classroom environment plays a multifaceted role in supporting students' academic performance and holistic development. A well-designed and thoughtfully organized classroom can create a conducive learning environment that fosters success for all students.

School library

School library it refers to a designated space within a school that houses a collection of books, periodicals, and other materials for educational and recreational use by students and teachers. The American Association of School Librarians (AASL) (2018) supports the position that an effective school library plays a critical role in preparing learners for life in an information-rich society. As defined by AASL, school libraries are "dynamic learning environments that bridge the gap between access and opportunity for all learners" (AASL 2018). Grounded in standards and best practice, school libraries are an integral component of the educational landscape. The school library provides access to a wide array of resources and an environment in which teaching and learning are the primary emphases. The school library provides a space and place for personalized learner success; learners are encouraged to explore questions of personal and academic relevance. Under the direction of a qualified

school librarian, school libraries are instrumental in fostering literacy and teaching inquiry skills to support lifelong learning (AASL 2018).

Merga (2022). Define a school library as "a library designed to cater to the needs of students, teachers, and sometimes parents or members of the community associated with the school." Hughes (2014) describes a school library as "a dynamic, living organism that can provide resources and services that are on the cutting edge of the information and technology revolution." These definitions emphasize the role of the school library as a resource center that supports the educational goals of the school and provides access to a wide range of materials and resources for its users.

Functions of School Library

The school library plays several important functions that can positively impact students' performance. Here are some key functions:

Supporting Academic Achievement: School libraries provide access to a wide range of resources, including books, journals, and digital materials, which can support students in their academic studies and research.

Promoting Literacy and a Love for Reading: By providing access to a diverse collection of books and reading materials, school libraries can help promote literacy skills and a love for reading among students.

Enhancing Information Literacy Skills: School libraries teach students how to locate, evaluate, and use information effectively, which is crucial for academic success and lifelong learning.

Encouraging Independent Learning: School libraries provide a quiet and conducive environment for students to study and research independently, helping them develop self-directed learning skills.

Supporting Differentiated Instruction: School libraries can provide resources that cater to different learning styles and abilities, allowing teachers to implement differentiated instruction strategies.

Fostering Creativity and Critical Thinking: By exposing students to a variety of ideas and perspectives, school libraries can help foster creativity and critical thinking skills.

Promoting Collaboration and Communication: School libraries can serve as a hub for collaborative learning, where students can work together on projects and share ideas.

Providing a Safe and Inclusive Space: School libraries can provide a safe and inclusive space for students, where they feel comfortable exploring new ideas and expressing themselves.

Overall, the functions of a school library can significantly contribute to students' academic performance by providing them with the resources, skills, and environment they need to succeed.

WASH Facilities

WASH facilities in schools refer to Water, Sanitation, and Hygiene facilities that are crucial for the health, well-being, and dignity of students and staff. World Health Organization and United Nations Children's Fund (WHO/ UNICEF) (2015) defines WASH facilities in schools as "adequate, gender-segregated toilets with hand washing facilities, clean drinking water, and soap for hand washing." United Nations Children's Fund (UNICEF) (2018) describes WASH in schools as "access to safe water, basic sanitation, and hygiene education for a healthy school environment." McMichael (2019) defines WASH in schools as "a comprehensive package that includes safe drinking water, adequate sanitation facilities, and proper hygiene practices." Trinies; Garn; Chang and Freeman (2016) defines WASH in schools as "access to improved water supply, sanitation facilities, and hygiene education to promote health and well-being among students and staff." These definitions highlight the importance of WASH facilities in schools for promoting health, dignity, and a conducive learning environment.

Functions of WASH Facilities

The availability and quality of Water, Sanitation, and Hygiene (WASH) facilities in schools can have a significant impact on students' academic performance. Here are some key functions of WASH facilities in this regard:

Health and Well-being: Access to clean water, proper sanitation facilities, and hygiene practices can reduce the spread of waterborne diseases and improve overall health. Healthy students are more likely to attend school regularly and concentrate better in class, leading to improved academic performance.

Dignity and Privacy: Gender-segregated toilets and facilities that ensure privacy and dignity for students can contribute to their sense of well-being and comfort at school, creating a conducive environment for learning.

Hygiene and Disease Prevention: Proper hygiene practices, such as hand washing with soap, can reduce the transmission of diseases like diarrhea and respiratory infections. This can lead to fewer missed school days due to illness, allowing students to stay on track with their studies.

Improved School Attendance: Access to WASH facilities can lead to improved school attendance, as students are less likely to stay home due to illnesses related to poor sanitation and hygiene.

Enhanced Learning Environment: A clean and hygienic school environment can create a more pleasant and conducive atmosphere for learning, which can positively impact students' engagement and academic performance.

Overall, the provision of adequate WASH facilities in schools is essential for creating a healthy, safe, and conducive learning environment that supports students' academic performance and overall well-being.

School location

The concept of school location can be defined in various ways by different authors, but generally, it refers to the geographical placement or positioning of a school in relation to its surroundings. Parveen & Awan (2019) defines school location as "the physical setting of a school, including its proximity to students' homes, access to transportation, and surrounding community resources." Zuckerman (2021) defines school location as "the spatial arrangement of schools within a community or region, taking into account factors such as population distribution, transportation networks, and land use patterns." Matingwina (2018) defines school location as "the placement of schools within a community to ensure equitable access to education for all students, regardless of their background or circumstances." These definitions highlight the importance of school location in terms of accessibility, equity, and the overall educational experience of students. The location of a school can play a significant role in students' academic performance through various factors.

Functions of School Location

Accessibility: The proximity of a school to students' homes can impact their ability to attend regularly and punctually. Schools that are easily accessible may contribute to higher attendance rates and fewer disruptions in learning.

Community Resources: Schools located in areas with access to community resources such as libraries, museums, and cultural centers can enhance students' learning experiences by providing additional educational opportunities and resources.

Safety and Security: The safety of the school's location can affect students' well-being and sense of security, which can in turn impact their ability to focus and learn effectively.

Social Environment: The socio-economic status and cultural diversity of the community surrounding a school can influence students' social interactions and exposure to different perspectives, which can enrich their learning experiences.

Physical Environment: The physical surroundings of a school, including factors such as noise levels, air quality, and access to outdoor spaces, can impact students' concentration, health, and overall well-being.

Overall, the location of a school can have a multifaceted impact on students' academic performance, highlighting the importance of considering location-related factors in efforts to improve educational outcomes.

SCHOOL PHYSICAL ENVIRONMENT

The Sustainable Development Goal 4 on inclusive and equitable quality education calls for the international community to 'build and upgrade education facilities which are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all'. Proposed indicators include water, sanitation, and hygiene (WASH), electricity, and ICT access, as well as access to adapted infrastructure and materials for learners with disabilities (UNESCO, 2016). Spaces that are safe and healthy have been found to positively affect students academic outcomes (Barrett et al., 2019). Given the sizeable budget allocated to physical facilities, around 10–25 per cent of educational expenditures, it is crucial that funds are well spent and that school locations and facilities support access to education and an environment conducive to learning (Beynon, 1997). The COVID-19 pandemic showed that poor-quality infrastructure (e.g., lack of ventilation) can exacerbate COVID-19 transmission in a school setting (USAID, 2020).

School environment refers to an educational setting's overall atmosphere where academic activities occur (Aslam et al., 2012; Weinstein, 1979). UNESCO (2012) describes the school environment as the physical, social, psychological, and academic conditions that facilitate learning in school. Similarly, Organisation for Economic Cooperation and Development (OECD) describes the school as an environment that helps students to acquire educational

experiences (OECD, 2018). The school environment comprises the school climate, parental involvement and school leadership where knowledge can be attained (OECD, 2018). Some scholars also define school environment as the classroom's physical and social dimensions that influence learning (Guney & Al, 2012; Malik & Rizvi, 2018).

School environment form an integral part of the educational system and are observed as a potent factor to qualitative and quantitative education. According to Ikegbusi (2019), learning can occur through one's interaction with the environment. Environment here refers to facilities that are available to facilitate students' learning outcomes. Such environment includes the library, laboratory, Information and Communication Technology (ICT) centre etc. adequately equipped and properly utilized for efficient and effective learning (Ikegbusi, Egwu & Iheanacho, 2021). According to Ikegbusi (2012) environment constitute a strategic factor in organizational functioning. This is so because they determined to a very large extent the smooth functioning of any social organization or system including schools. She further stated that their availability, adequacy and relevance influence efficiency and high productivity.

Farombi (2018) opined that the wealth of a nation or society could determine the quality of education in that land, emphasizing that a society that is wealthy would establish good schools with quality teachers, learning infrastructures, which such students may learn with ease thus bringing about good academic achievement. Writing on the role of environment in teaching and learning, Balos (2021) submitted that no effective science education programme can exist without the availability of necessary equipment. This is because environment enable the teachers and learners to develop problem-solving skills and scientific attitudes. Ajayi (2020) reiterated that when environment is provided to meet relative needs of a school system, students would not only have access to the reference materials mentioned by the teacher, but individual students would also learn at their own paces. The net effect of this is increased overall academic performance of the entire students.

School physical environment can be described in relation to school or classroom environment (Fisk et al., 2016). According to World Health Organization [WHO] (2004), school physical environment consists of school infrastructure, classroom furniture and arrangement, and school safety. This environment has a strong influence on children's well- being and can directly influence learning and academic performance. The school physical environment consists of buildings, fittings, equipment, instructional materials, laboratories, library and

playground for effective teaching and learning (Debele, 2016). Other aspects that make the school physical environment are machinery, decorative objects, swimming pools, audio-visual machines and playgrounds (Obong et al., 2010). Furthermore, extant literature reports that essential features in school buildings such as temperature, lighting, acoustics, and aesthetic influence students' learning outcomes (Barrett et al., 2015). The findings posit that lack of these vital features in school buildings can hinder students' academic performance. Likewise, congested school buildings and classrooms have been found to negatively affect students' academic performance (Huisman et al., 2012). The school physical environment factors affect teachers' instructional strategies and students' learning engagement that promote students' development and learning outcomes (Darling-Hammond et al., 2020).

School environment refers to both the physical and material resources available to the students and teachers in the school to facilitate the teaching and learning process. The classrooms, the libraries and the laboratories and sanitary facilities are the four main areas of facilities identified in the school system or environment (Onyeji, 2017). Also, Gima (2020) asserted that a favorable physical environment like libraries, furniture, and a playground, is necessary for the educational process. Therefore, educational or school environment have been defined by many educationalists to incorporate things or materials that will enhance teaching and learning. According to Akinyemi, Lawal, and Owosoro (2021) school environment are the instructional spaces and audio-visual aids, as well as other materials resources utilized in educational institutions for the aim of attaining successful teaching and learning.

In addition, Baafi (2020) defined physical school environment and equipment as the location, the school buildings, and other material resources provided in the school for the purpose of enhancing teaching and learning processes. According to these authors, Abdullah (2016) and Nnokam (2018) physical school environment and equipment include the fixed and mobile structures and materials in the school such as the classroom buildings, laboratories, laboratory apparatus equipment, playground, common room, hostels, canteen, school offices the audio and visual aids. To Alimi (2004) school environment are the material resources that are used by learners and teachers to aid the teaching and learning process. While to Neji and Nuoh (2015), the utilization of school environment is the frequency with which the available school facilities such as laboratory facilities, library facilities, textbooks, set books, and other reference materials are used during respective class lessons.

ACADEMIC PERFORMANCE

There is no consensus among educators about the best way to measure students' academic performance, which they consider as one of the most challenging tasks (Chiekem, 2015). The complexity of the challenge is that various approaches can be used to determine learning outcomes, including academic performance (Carini et al., 2006; Lamas, 2015). For instance, while some studies associate student academic performance with examination or assessment outcomes (Odeh et al., 2015), others relate it to success in completing planned learning goals (Bossaert et al., 2011). Some researchers have alluded academic performance to assessment indicators like learning aptitude, academic success achieved through mental abilities, and function of intelligence (Brown et al., 1989; Peng & Kievit, 2020; Yahaya et al., 2012). Other literature refers to student academic performance as grade point average (GPA) of students' scores achieved in a course or feedback on mastery of content in a subject (Ahmad, 2014; Allen, 2005; Mushtaq & Khan, 2012). The diversities in assessment approaches of students' academic performance have exemplified challenges that confront educators in measuring academic performance.

According to (Khan, Ullah, 2021; Ullah, 2020), the performance is the outward demo of thoughtful notions, services, thoughts, and information of an individual that grades signify the achievement score of students. According to Kobal and Musek (2001), academic performance represents the arithmetical scores of students' knowledge and the degree that he gains in schoolwork and the educational system. The achievement score of students may be achieved efficiently if all the factors affect students' educational presentation. Achievement outcome has been considered as a function of two characteristics, "skill" and "will "and these must be considered "and these must be considered individually because keeping the will alone may not assure success if the skill is lacking.

In all educational systems, performance is considered one of the significant factors of students' learning. Cai and Cao (2019) assert that academic performance is not only about students' performance in school, but should also include all aspects of their knowledge, competence and literacy development. Academic performance in a narrow sense refers to the measured performance of students through examinations at a certain study stage. In empirical studies of academic performance, a considerable number of researchers adopt such definitions of academic performance, especially in empirical studies of primary and

secondary school students, researchers often define academic performance as students' examination results, for example, Bao (2008), Ye (2013), Chen (2015), Li (2016), Li and Chai (2018) all define academic performance as a definition of a learner's the performance of teaching and learning assessments, such as final examination results, achieved by the person in school.

Wang (2021) believed that academic performance can be equated with academic achievement. In a study of personality traits and academic achievement of secondary school students, Zhao and Guo (2012) measured academic achievement using students' midterm and final grades in language, mathematics, and foreign language subjects. Through an empirical study, Tang (2016) found that preschool education can improve students' future academic achievement (in the case of mathematical literacy) and can also promote educational equity. Minkowski (2015) believes that academic performance contains values, analytical problem solving and social skills, among others, and Bowie (2015) believes that academic performance value added is divided into three dimensions: core competencies, citizenship, and professionalism possessed.

Aspects of school environment and academic performance

School location*:* Schools are an integral part of a community and are best located close to the learners they serve. The need to travel long distances to school can have a negative impact on enrolment and retention (especially among girls and disabled children), as well as attendance and performance. For example, studies have found that students living less than 1 km from their school perform statistically better than those who walk further (Theunynck, 2009).

School size*:* Evidence on the impact of school size on learning is mixed. Studies from the USA suggest that smaller schools may contribute to better student outcomes as learners, teachers, and parents see themselves as part of a community (Barrett et al., 2019), while in India small schools with fewer facilities and a lack of specialist teachers may be resulting in lower outcomes (Rolleston and Moore, 2018). Data from Senegal showed that school size had no effect on student performance in the early grades, but that attending a large school had adverse effects on student performance by the fourth grade. This may be due to the fact that fourth graders have spent more time in the education system whereas, at the start of the learning process, schools have not yet left their mark on younger learners, whose learning is shaped more by family environment (Koussihouede, 2020). Barrett et al. (2019) also points to the drawbacks of large schools, citing higher transportation costs, higher administrative

overheads, lower graduation rates, higher absenteeism, higher rates of vandalism, and lower teacher satisfaction.

School premises*:* An 'inviting physical environment that ensures the safety and health of learners' helps to enhance the quality of learning (UIS, 2012: 38). Learning assessment data from Latin America shows a clear relationship between school infrastructure and learning even after controlling the socioeconomic level of the families. The two categories that are most clearly associated with learning outcomes are pedagogical and academic spaces, and connection to services (electricity, telephone, and Internet) (UNESCO Santiago Office and IDB, 2017).

The quality of infrastructure affects enrolment and completion rates, and it is an important aspect in parents' satisfaction with and perception of school quality (Gershberg, 2014). There is evidence to suggest that school construction projects can help raise motivation among students and teachers and improve parental engagement, which subsequently leads to improved academic achievement (Neilson and Zimmerman, 2011). Well-designed schools can increase the productivity of school staff and cut financial waste on unnecessary services and maintenance (RIBA, 2016).

Although the literature does not show a strong relationship between students' exam results and their satisfaction with the condition of school facilities, some studies have demonstrated convincing links between student outcomes and specific aspects of classroom infrastructure in OECD countries (Barrett et al., 2019). Table 1 summarizes the evidence gathered from the literature.

Water Sanitation and Hygiene (WASH) facilities: Schools are one of the most successful and cost-effective resources for targeting children and communities with key health and hygiene interventions (WHO, 2004). Basic services such as water, sanitation, waste disposal, electricity, and communications also help ensure that children and teachers attend school and remain healthy there (Barrett et al., 2019). Inadequate WASH facilities affect boys and girls in different ways, and this may contribute to unequal learning opportunities. Specifically, lack of sanitary facilities may mean that female students but also female teachers are absent from school during menstruation (WHO, 2009; Gershberg, 2014).

Classroom physical environment: The quality of the classroom setting is one characteristic of school environment that promotes positive outcomes for students. The climate of the

classroom is seen as a major determinant of the behavior and learning of students. It contributes to the academic success of students and predicts the degree to which they participate in learning, how consistently they attend school, how attentive they are in class, how carefully they complete assignment and how committed they are to staying in school and doing well (Doll, 2014).

Models' evaluation of school environment and academic performance

There are models that evaluate the relationship between school environment and academic performance to determine variations in students' learning achievement (De Clercq et al., 2013). The frameworks provide a foundation for linking students' assessment processes to academic performance and explain the influence of environment on learning outcomes. The context-input-process-output (CIPO) model considers education as a process where inputs are processed into outputs (Hulpia & Valcke, 2004).

The context-input-process-output (CIPO) model is a basic systems model of school functioning, which can be applied to several levels within education, namely system level, school level and classroom level (Scheerens, 2015). The model also functions as analytical framework through which the educational quality can be reviewed (Cuyvers, 2002). According to this model, education can be seen as a production process, whereby input by means of a process result in output. Input, process and output are all influenced by context (Veen, 2015). The context gives input, provides resources for the process and sets requirements to the output. In this way all components of the CIPO-model are interconnected to each other. The CIPO-model is developed by Jaap Scheerens (1990).

Component of CIPO model on school environment and student's performance

Context: Concerns developments that influence education, like technological, demographic and economic developments. National policies for education also provide an influential context, by determining goals and standards. This has an important potential influence upon quality of education (UNESCO, 2005).

Input: Refers to the financial resources and the material infrastructure, like the school buildings and textbooks. In addition to these resources and materials, input refers to the knowledge level of students at commencement, student and teacher characteristics (like gender and ethnicities) and teachers' qualifications.

Process: Includes initiatives to get (desirable) output, like activities. Other process features are didactical and pedagogical approaches, school culture and school climate, peer-group processes and leadership (style).

Output: Contains the results and revenues. Revenues in short term are student achievements, like acquired knowledge of language and mathematics and social competencies. A revenue on mid long-term is obtaining a diploma and examples on revenues on the long term are getting a (paid) job (Onderwijsinspectie, 2010).

Figure 2: Illustration of CIPO model on school environment and student's performance
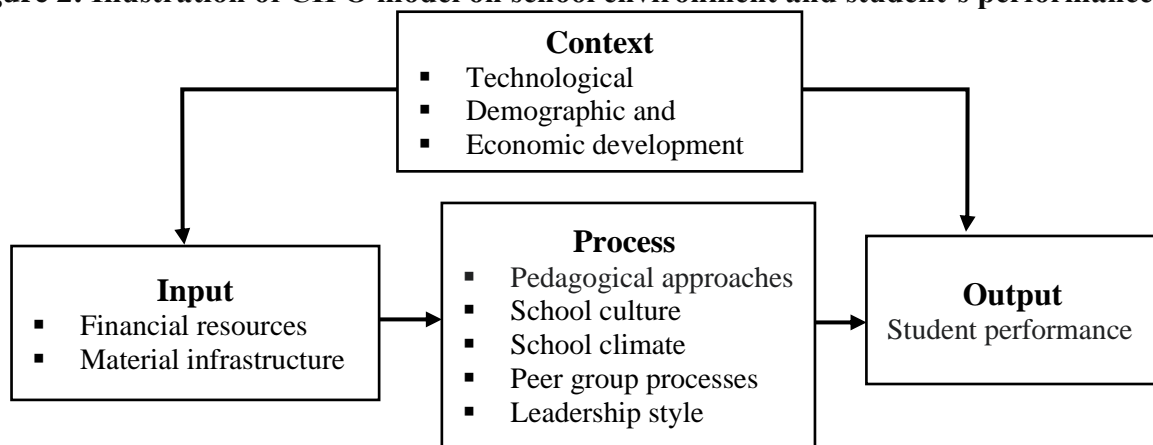
Source: CIPO model (Scheerens, 1990).

The model comprises context, input, process, and output to offer an analytical basis for assessing the quality of the learning process (Chang & Lin, 2018). Context refers to the policies, environment, and approaches that influence students' academic performance. The input entails resources and infrastructure that students need to excel, while the process includes initiatives to achieve learning objectives (Martínez-Abad, 2019). Output is the feedback that accounts for the learning. This model illustrates the vital role school learning environment plays in learning processes and learning output (Hofman et al., 2009).

Educational productivity model: postulates that students' academic performance is the outcome of affective, behavioral, and cognitive activities that show students' learning abilities, including school social environment and instructional factors that affect students' learning (Walberg et al., 1981). The model highlights nine factors that affect students' academic performance, grouped into aptitude, instruction, and school social environment factors (Walberg et al., 1986).

- **Aptitude factors**: encompass ability, prior achievement, and motivation

- **Instructional aspects:** entail time students engage in learning and the quality of instructional interactions.
- **School social environment factors**: include home, classroom, peer groups, and out-of-school social contacts (Bruinsma & Jansen, 2007). These factors can affect learning as well as students' academic performance.

THE INFLUENCE OF SCHOOL ENVIRONMENT AND ACADEMIC PERFORMANCE

Schools are established for the purpose of teaching and learning. It is also more important that the teachers and learners are properly accommodated to facilitate the teaching and learning that go on there. Therefore, school facilities are the space interpretation and physical expression of the school curriculum (Alimi, 2014). Manafa (2018) stated that students are expected to perform brilliantly in their examination as this determines the quality of output of the school. This is one of the parameters used to measure the effectiveness of a school system. According to Philas (2015), the better the performance of the students, the more effective the system is assumed to be. Otchere and Afara (2019) asserted that there is a strong and positive relationship between quality of school environment and students' achievement in schools. In most developing countries it is the general opinion of people that private schools are better in terms of the availability of human and physical facilities and consequently students' performance than in public schools. This situation has made many parents to enrol their children in private schools (Ikegbusi & Adindu, 2022).

Farombi (2018) opined that the wealth of a nation or society could determine the quality of education in that land, emphasizing that a society that is wealthy would establish good schools with quality teachers, learning infrastructures, which such students may learn with ease thus bringing about good academic achievement. Writing on the role of facilities in teaching and learning, Balos (2021) submitted that no effective science education programme can exist without the availability of necessary equipment. This is because facilities enable the teachers and learners to develop problem-solving skills and scientific attitudes. Ajayi (2020) reiterated that when facilities are provided to meet relative needs of a school system, students would not only have access to the reference materials mentioned by the teacher, but individual students would also learn at their own paces. The net effect of this is increased overall academic performance of the entire students.

Ikegbusi, Eziamaka and Iheanacho (2021) asserted that school facilities are needed to develop cognitive areas of knowledge, abilities and skills that are necessary for academic achievement. Moreover, the development of the affective and psychomotor domain is also facilitated by the presence of necessary and relevant school facilities (Hilary, 2017). From the fore going one can see that school facilities play a crucial role in academic achievement of students. This problem of poor performance is more pronounced in ill-equipped schools (Ikegbusi, Onwuasoanya & Chigbo-Okeke, 2016) Mgbodile (2014) and Ikegbusi (2018) pointed out that for effective teaching and learning situation, school facilities and educational goals, should be viewed as being interwoven.

School facilities such as buildings are very essential to the academic development of the students. Apart from protecting the pupils from the sun, rain, heat and cold, school building represents learning environment which has great impact on the comfort, safety and performance of the children (Okechukwu & Oboshi, 2021). According to Limon (2016), facilities form one of the potent factors that contribute to academic achievement in the school system.

School environment is of much importance in schools, and posited by Owoeye and Yara, 2011) that facilities form an important pillar in the academic achievement of students. The authors further noted that availability, relevance, adequacy, and proper utilization of school facilities such as the entire school layout, playground and recreational equipment, buildings and accommodation, classrooms and furniture, libraries, laboratories, and their apparatus, and other instructional materials contribute to academic achievement. This is supported by Wunti (2014) that school facilities are the engines of growth, enhancer, and enablers of which support the teacher and the learner for effective and efficient teaching and learning for the attainment of goals and objectives of education. Baafi (2020) based on their empirical data, determined that adequate school facilities create an environment that is conducive to learning for students.

According to Alimi, Ehinola, and Alabi (2012), infrastructure such as school buildings, classrooms, labs, libraries, and recreational equipment are the key to increasing academic attainment in the educational system. While Akomolafe and Adesua (2016) stated that experience shows that having good physical amenities available makes pupils have a greater interest in learning, which would result in higher performance. Cheryan, Meltzoff, and Kim (2011) noted in their studies that facilities are essential to boosting student achievement and

creating a competitive atmosphere among them. According to earlier research by Ikoya and Onoyase (2008) and Adeogun (2008), there are substantial connections between the school environment and students' views toward education.

The research by Bello (2012) found that the low academic performance of children would continue if instructors were not encouraged to make good use of the available school amenities. This is supported by Philias and Wanjobi (2012) that lacking school facilities for teaching and learning is negatively affecting the academic achievement of secondary schools. Similarly, Simons, Hwang, Fitzgerald, Kielb, and Lin (2010) found that kids who attend schools with poor indoor air quality experience tiredness, lethargy, and difficulty focusing on class. Due to their medical issues, some students missed classes and ineffective management and inadequate maintenance of school facilities have an impact on learning. This demonstrates the importance of facility management including the management of buildings and technical systems, in ensuring the efficient and successful operation of facilities (Alimi, Ehinola & Alabi, 2012). Further, to ensure smooth operation and effective management of the upkeep of the facilities, the budget and maintenance costs must be distributed effectively. In conclusion, appropriate system management of educational facilities is crucial to assisting the business in achieving its educational aims and objectives.

Ikegbusi, Eziamaka and Iheanacho (2021) asserted that school environment is needed to develop cognitive areas of knowledge, abilities and skills that are necessary for academic achievement. Moreover, the development of the affective and psychomotor domain is also facilitated by the presence of necessary and relevant school facilities (Hilary, 2017). From the fore going one can see that school environment play a crucial role in academic achievement of students. This problem of poor performance is more pronounced in ill-equipped schools (Ikegbusi, Onwuasoanya & Chigbo-Okeke, 2016). Mgbodile (2014) and Ikegbusi (2018) pointed out that for effective teaching and learning situation, school facilities and educational goals, should be viewed as being interwoven. School facilities such as buildings are very essential to the academic development of the students (Okechukwu & Oboshi, 2021). According to Limon (2016), facilities form one of the potent factors that contribute to academic achievement in the school system.

Classroom physical environment and academic performance

Class environment refers to utilization of available physical, instructional facilities and maintenance of discipline in classroom for effective teaching and better students' learning (Williams, 2016). It is an amalgamation of internal and external factors like curriculum, methods of teaching, teachers' behavior and interaction with students, learning atmosphere, academic and social environment and support services used in classroom for teaching and learning process (Jawaid&Aly 2014). It is a wide variety of techniques and skills used in classrooms enables teachers to keep students attentive, organized and actively participating in classroom activities to produce productive results (Arshadet al. 2018). It includes planning, organizing, communicating and mentoring. It also demands teachers' professionalism, taken of initiatives, dedication, devotion, job commitment, and willingness to adjust themselves at students' socio-cultural and intellectual caliber (Abel, 2011).

Classroom environment has a positive impact on students' academic achievement, as by provision of physical facilities like furniture, electric supply, painted walls, models, charts, overhead projector and other ICT related instructional material, students take much interest in classroom activities which help them to get high marks in examinations (Kausar, Kiyani & Suleman 2017). Provision of physical facilities to schools like well-equipped library, clean drinking water, well-furnished classroom, laboratory with related appliances are the main factors play vital role for better teaching and uplifting students' learning (Omae, et al. 2017). School support facilities like I.T Lab, tablet, first aid box, classrooms having ventilation, store room, cooling and heating systems, staff room, well equipped library with adequate books plays vital role for provision of quality teaching and learning (Arshad, Ahmed &Tayyab, 2019). It was found that lack of conducive classroom environment; non-supportive teachers' attitude, lack of pedagogical skills and students' disruptive behavior create hindrances for effective teaching and better students' learning (Ahmed, Faizi& Akbar, 2020). Conducive classroom environment helps both teachers to teach effectively and students to learn with ease and perform better academically. Use of proper available teaching and learning resources in classrooms enhances learning outcomes of students. It has positive impacts on improving students' learning (Qamar et al. 2018). It is comprised on various components like room size, lighting, temperature, walls, ventilation, whiteboards, mats, seats, floor, PCs and other material prove fruitful effects on students' learning (Suleman & Hussain, 2014). School facilities like school buildings, electricity, natural/artificial lighting and ventilation in classrooms, drinking water, wash rooms and playground were the main attributes to improve students' learning (Awan, 2018). Students' academic achievement in

well-furnished and small class size room with better facilities was found better than students having large class size classes (Olufemii& Olayinka, 2017).

Characteristics of a conducive classroom environment

The success of students is greatly influenced by their learning environment (Mauro, 2009). There are two aspects of a conducive classroom environment - good classroom organization and management and an appealing physical environment to promote effective learning (Sivalingam, 2009; Chitravelu, Sithamparam & Teh, 2005). There are several attributes of classroom physical environment i.e., visual factor, acoustic factor, thermal factor, spatial factor and time factor.

Visual factor: refers to the quality of lighting in different parts of the classroom. It is determined by the level of natural and artificial light available in the classroom. It also refers to the way by which the classroom environment is arranged i.e., visually interesting, creating a favorable atmosphere and any unwanted disruptions e.g., windows overlooking playgrounds etc. Physical environments must be designed to enhance visual stimuli. This includes body movements, environmental cues, objects, and written language (Sells, 2013). Sufficient daylight in classrooms is important because it has been shown to improve study and health, awareness and feelings of well-being in classrooms. The lack of natural daylight reduces visual comfort and in turn affect academic performance (Smith & Bradley, 1994).

Acoustic factor: is an important factor as we mostly depend upon verbal communication in our classroom. Noise level mainly depends upon school design, classroom organization and teaching methodologies applied during a lesson (Basit, 2005). Poor classroom acoustics can adversely affect learning environment for many students. Constant noise exposure can damage cognitive performance and functioning (Fadeyi, Alkhaja, Sulayem & Abu-Hiljeh, 2014). By properly designing acoustics, a healthy physical setting will promote positive social behaviors and boost a child's interest to attend school consistently (Fadeyi et al., 2014).

Thermal factor: refers to the heating and ventilation of the classroom and are generally out of the teachers' control as they are climate variables (Li & Yao, 2012). Classroom heating and ventilation plays a fundamental role in making classroom atmosphere favorable and comfortable and hence affects the behavior and performance (Fadeyi, Alkhaja, Sulayem & Abu-Hiljeh, 2014).

Spatial factor: relates to the space management and has a great impact on behavior particularly on communication. Clearly defined spaces within the learning space used for different purposes, and that ensure students know how to behave in each of these areas (Quinn, Osher, Warger, Hanley, Bader, & Hoffman, 2000; Stewart & Evans, 1997; Walker, Colvin, & Ramsey, 1995). To promote attentiveness among students, seating arrangement in classroom should be properly organized (Borah, 2013; Bettenhausen, 1998; Stewart & Evans, 1997). Layout of tables and chairs in rows would facilitate task behavior and academic learning; whereas more open arrangements, such as clusters and u-shaped would encourage social interactions and eye contacts among students (MacAulay, 1990; Walker & Walker, 1991)

Time factor: refers to the amount of time a student is participating in learning process i.e., the number of minutes the student is actively participating in teacher directed lessons and activities (Basit, 2005). Therefore, it is concluded that physical environment of classroom comprises of classroom size and structure, furniture, seating arrangement, instructional technologies, room heater, ceiling fans, curtains, cupboard, equipment's, lighting, ventilation etc.

Figure 3: Framework for conducive physical learning environment

• Natural daylight
• Visual interactive learning

• Well defined space
• Flexible area for group activities
• Well organised seating arrangement

Visual factors

Spartial factors

Thermal factor

Acoustic factor

• Natural ventilation
• Good quality funitures

• Far from noise harzard
• Sound insulator
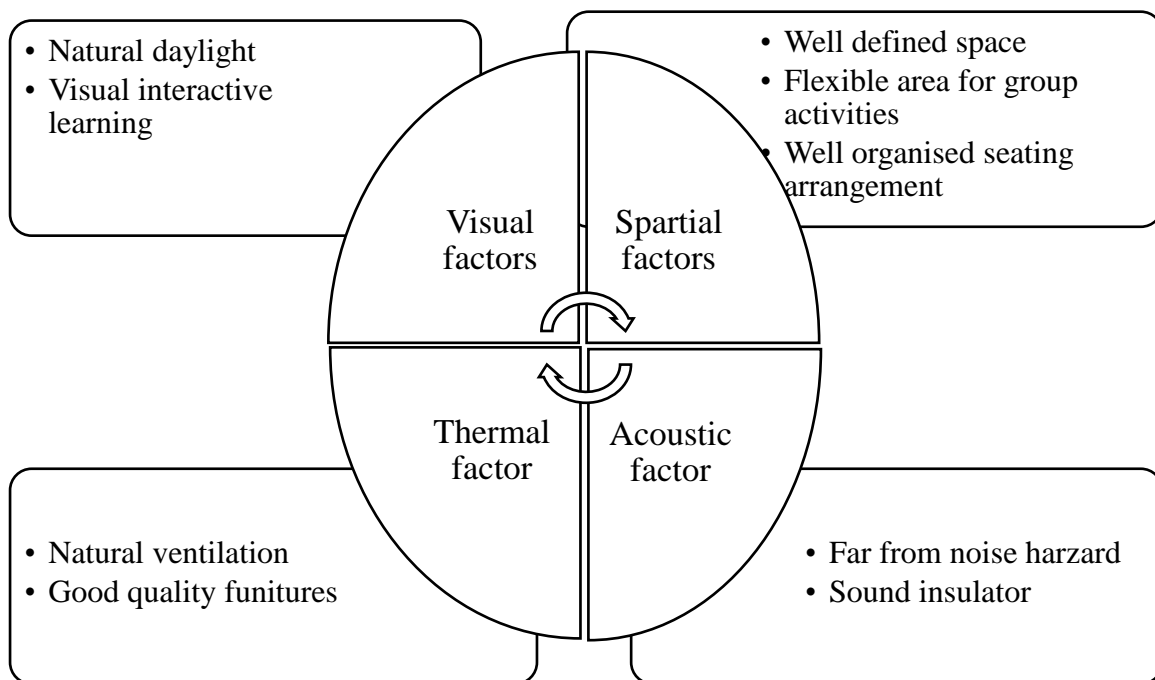
Source: Ahmad et al (2015)

Availability and usability of School Library

The importance and uses of the library cannot be underestimated. Libraries and books give great assistance to both the teachers and the learners (Ikegbusi, 2012). Library utilization entails the effective use of the vital services provided by the library. A library that is not being utilized is as good as dead, as it cannot justify its existence (Onanuga, Ilori, & Ogunwande 2017). The functionality of library services could be achieved if students use them correctly. As a result, services have no value to them until they are used (Madiba, 2016). It is expected for an academic library to be well equipped to make provision for quality services that will substantiate its presence as an essential component of any high-profile academic institution. Hiscock (1986) maintained that in order to justify its existence, the academic library needed to demonstrate a positive link between its use and the educational performance.

According to Estabrook, et, al, (2016), Library usage varies between academic schools and there are often pedagogic reasons for low usage, but it would appear that in some subjects, students who read more books achieve better grades (Goodall and Pattern 2010). Students in schools with adequate library services learn more and perform better on standardized tests than students in schools with under-resourced libraries. Hence, the availability of resources from libraries is an indispensable requisite in students' learning. Subsequently, students' usage of these services is a critical indicator of the significance of library services (e.g., Lance, 2002; Fasola, 2015).

The ultimate goal of school libraries is to help students' access information. The main point is how often students benefit from the libraries. Students may need to be encouraged for the effective use of libraries. Besides, it is also crucial that teachers guide the students in younger ages. Libraries may be required to be developed and designed for this purpose. In the current situation, it has been determined that libraries are not popular centers of interest frequently preferred by the students (Akman and Akman, 2017) and that school libraries are far from international standards in most African countries (Y lmaz, 2015).

Availability and Utilisation of Library and students' academic performance

Scientific evidences from past studies (Appleton, 2006; Campbell, 2006; Cox & Margie, 2012) demonstrated that poor academic performance among students in secondary schools is evident all over the world. According to Fawcett (2013) school library facilities in secondary

schools must be accessible for all members of the community. In developed countries where a culture of reading has developed, the role of books and libraries for educational achievement is highly relied to the role of library facilities to afford adequate and relevant evidences and to support students to differentiate appropriate information related to socio-economic, scientific, technology and culture among community members (Campell, 2006).

In developing world, where a culture of reading has not developed, the role of books and libraries for educational achievement is not highly relied (Franis, et al., 2010). In these countries the main challenge is to motivate pupils, to read for self-study and adult for lifelong learning as it is the continuing, volunteering pursuit of skills, knowledge and experiences in order to advance in professionalism. In African countries, the formation of library has been associated with the purpose to achieve academic performance. According to Way (2011), Most of current programs on the provision and utilization of library in some African countries took into consideration the vital role of library facilities in enhancing students' academic performance.

Accessibility and utilization of library information resources are key factors in the provision of quality services in different types of libraries. In addition to that Abdullahi (1998) points out that, the usefulness of a library depends upon its proper organization which includes the accessibility and availability of information resources, their arrangement and the situation of the library. Also, the successful library services depend mainly on satisfaction level of its users with the relevant library information resources, user-centric library services and library staffs' supportive attitude (Bhatt, 2013).

Availability of information is central to human development, but insufficient knowledge may create problems resulting in abject poverty, ignorance, hunger, illiteracy and so on. Aguolu (2002) noted that for any library to flourish in any society, the economy must be sufficiently vibrant. The author went further to say that; To succeed in any aspect of human endeavor, availability and accessibility to timely and up-to- date information materials are very essential. In the same line of thought. Maram, (2002) and Tofi (2019) confirm that unavailability of library resources in most educational institutions have negative effect on the use of library resources.

According to Sheba (2001) the gap in the availability of library resources relevant to the needs of users perhaps made the UNESCO in 2005 to campaign for the establishment of national information system in all countries with a view to meeting the information needs within a given country. Contribution to the concept of availability, Popoola (2001) perceives availability of library resources as a sine-qua-non to effective library services. The author further asserts that the task of the library is that of collecting, sorting and organizing books and book materials and making them available to the users. This implies that availability of books and book materials is central to information provision in school libraries, and it can be used as a measure of library performance.

Several studies have been conducted on the use of library information resources. Among others are Agyekum and Filson (2012) who noted that most of the students use library resources and services to supplement their class notes, assignments and helped them in examination preparation. On the other hand, Clabo (2002) revealed that students used school library information resources for recreational readings, for reference purposes, doing their school homework, teacher requirements and reading news from newspapers. Orji (1996) and Abdullahi (2008) found out that pupils use school library for many reasons such as the preparation of examination, for leisure, recreation, academic work and to see or meet friends and people.

According to Suskie (2009). The school library is a fundamental part of teaching and learning in secondary schools that afford resource accessibility which support the curriculum. In secondary schools' pupils use library to file their knowledge and to supplement what they are taught by their teachers. According MINEDUC (2009) failure to achieve expected outcome for students in secondary schools is influenced by negative attitude of reading books. Muvunyi, (2016) evidenced that children in middle schools who have library facilities had 18% of high performance compared to those who are studying where there are no library facilities. A study conducted by Asikhia (2010), contended that the inability to attain expected results is caused by the lack of attaining the standard level of education outcomes.

Importance of school libraries

The library especially the school library has a major role to play towards the provision of functional education at early stage of schooling. Daramola (2013) posits that the significance of a library in school environment is inestimable, most especially at the foundation stage of

education. The development of reading habit in the life of people takes its root from early use of school libraries. Morris (2004) points that school libraries are established to provide a range of learning opportunities for both large and small groups as well as individuals with a focus on intellectual content and information literacy to enhance and improve the intellectual content of school libraries, they must be subjected to sound policy formulation and effective implementation.

Udofia (1997) notes that school library helps in encouraging the development of skills in reading, prompting readers to literary appreciation, providing a source of subject information and intellectual development as stimulating factor in education. Omehia (2005) adds that school libraries are needed by pupils and students all over the world. It is upon this background that sound education will be built. With the assertions of these authors, the importance of school libraries in the life of secondary school children as it concerns school education cannot be discountenanced.

Adedeji (2004) and Ajayi (2007) illustrate the importance of school library in attaining the educational objectives by: Developing in the entire citizenry a strong consciousness for education and strong commitment to its vigorous promotion, Catering for the learning needs of young persons, their schooling through appropriate forms of complementary approaches to the provision and promotion of basic information resources, Ensuring the acquisition of appropriate level of literacy, numeracy, manipulative, communicative and life skills as well as the ethical, moral and civic values needed for laying a solid foundation for lifelong learning.

The collections of the school library must be adequate and relevant. Obi (2009) illustrates that school library collections are provided to achieve the following: provision of information sources required for school education, improving the reading skills and learning habits of pupils, providing pupils with the skills required to transform the gathered information into knowledge, assisting pupils to broaden their knowledge by reading fictions which form 75% at the library collections, helping pupils and secondary school students develop the habit of using libraries later in life.

School library being a part of an educational set-up, plays a key role for the development of young minds. School Library functions:

- It provides documents for pupils and teachers.
- It develops and promote reading.
- It encourages research and study from many information sources.
- It provides recreational and leisure time reading.
- It emphasizes the pedagogical principles of self-education for furthering individual.

Challenges facing students in the utilization of school library

Empirical studies have identified several challenges facing students in using school libraries. According to (Benard and Dulle, 2014) lack of current reading materials; shortage of sitting facilities and lack of informational professional/ librarians for processing reading materials. Ladelunuri (2012) adds that poor performance of secondary schools is attributed to the lack of current text and reference books in the school libraries (Benard and Dulle, 2014). On the other hand, lack of professional librarians for processing reading materials in most of the schools' libraries in the study area is a major problem, hindering students from using school libraries.

A lack of full-time teacher-librarians and resources results in allocated library space being wasted, or poorly stocked libraries with a range of unsuitable and outdated books (MediaWiki 2008). Despite the fact that the South African Human Rights Commission (2006) identified school libraries as basic infrastructure for the provision of basic education, and the National Reading Strategy asserts that libraries are 'the backbone of reading communities' (SA. DoE 2018), the lack of dedicated funding results in underdeveloped school libraries as the available funding is stretched over a number of subjects.

Currently, most school libraries that operate in most African countries are not optimally utilized and remain locked most of the time because there is no one taking responsibility for the running and management of the library (Mahwasana 2008). Paton-Ash (2012), citing Zinn, observes that 'by 2000, specialist posts were abolished in schools, the training of school librarians trickled to zero'. According to Paton-Ash (2012), the fact that there is no budget for school librarian posts has implications on the services provided by school libraries, as the responsibility for running the library is allocated to personnel who are full-time teachers and who are not knowledgeable concerning the management of school libraries. The EE (2010) found that even though there are books in a school, they might either be locked away in store rooms or unused because the educators do not know what to do with them or how to use them.

The lack of a qualified manager of information resources therefore results in underutilization of library materials by both learners and teachers (Mahwasana 2008).

SCHOOL SANITATION FACILITIES (WASH)

Sanitation facilities entail clean drinking water, provision of hand washing facilities and materials such as soap and disposable towels, as well as toilets and urinals (Meydanlioglu et al., 2022). Water, sanitation, and hygiene (WASH) services are critical to health, and schools must focus on improving WASH to ensure that their students stay healthy (WHO 2022). Students have a better environment for learning and fulfilling their full potential when they have facilities such as clean water, toilets, and soap for washing hands at school (UNICEF 2018). However, UNICEF and WHO reported that inequalities persist between and within countries, despite the continued decline in the proportion of schools without basic WASH services (WHO 2022).

Schools with adequate WASH facilities should have a safe and adequate water system for handwashing and drinking, sufficient private, safe, clean, culturally and gender-appropriate toilets for students and teachers, and adequate and clean handwashing facilities (McMichael 2019). Unfortunately, it has been reported that there are no suitable WASH conditions in schools on all continents in the world, and that even when the infrastructure is available, the amount is not sufficient, and it is not suitable for maintaining and improving the health of the school community (Poague *et al.* 2022; WHO 2022). Globally, 600 million children lack basic drinking water and sanitation, and 900 million children are deprived of basic hygiene services in their schools (UNICEF 2018). However, it is known that improving water, hygiene, and sanitation conditions in schools improves children's health and reduces absenteeism (Sharma & Adhikari 2022).

In 2010, access to safe drinking water and sanitation was formally recognized by the United Nations General Assembly as a human right, essential to the full enjoyment of life and the realization of all other human rights (United Nations, 2015a). The Human Right to Water and Sanitation (HRTWS) is directly addressed in the 2030 Agenda for Sustainable Development by the Sustainable Development Goal (SDG) 6, which aims to *ensure availability and sustainable management of water and sanitation for all* (United Nations, 2015b). Notwithstanding that the agenda has a specific goal for WASH and that the HRTWS is

explicitly reaffirmed in paragraph 7 of the agenda's declaration, WASH in schools is included in SDG 4, aiming *to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all* (United Nations, 2015b). Target 4.a seeks to *"build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all."* (United Nations, 2015b).

WASH facilities and student academic performance

The benefits of sanitation include among other things, reduced morbidity and decreased mortality rates, better nutrition among children, a cleaner environment, safe food, and increased impact of improved water suppliers. In addition, sanitation contributes to better learning and retention among school children, more dignity and privacy for everybody especially women and girls, and increased awareness of sanitation and hygiene (Azam et al., 2022).

Apart from the prevention of COVID-19 and water-borne and water washed diseases, the several benefits of the access to WASH in school include:

- Decrease in school absenteeism among females (Alam et al., 2017) and among both girls and boys (Vally et al., 2019).
- Reduction in diarrheal diseases (Jasper et al., 2012; McMichael, 2019; Sangalang et al., 2020; Vally et al., 2019), gastrointestinal symptoms (Lopez-Quintero et al., 2009), soil-transmitted helminthiases (McMichael, 2019; Sangalang et al., 2020) and respiratory illness (McMichael, 2019).
- Increase in girl's academic achievement (Bergenfeld et al., 2021), and adequate menstrual hygiene management (MHM) practices in the school environment (Bulto, 2021; Korir et al., 2018).

The importance of sanitation, therefore is maintaining safe schools cannot be underestimated, however, schools in many countries have been considered unsafe due to neglected sanitation operations (Sahiledengle et al., 2022). According to the world health organization (WHO, 2022), there are 780 million people worldwide who do not have access to improved water sources (Naseem et al., 2022). In developing countries, UNICEF (2022) indicates that approximately 68 million children live in households without access to improved sanitation, posing a risk to their survival and development. Schools with good sanitation are said to

attract and retain children compared to those that do not. Generally, healthy children attend school more (Godfrey et al., 2022).

Academic studies have demonstrated that having proper WASH activities in schools can help students improve their knowledge, practice, and health by lowering the number of days missed in school due to menstrual periods or giving them more time to complete learning objectives (Bowen et al. 2007; Lopez-Quintero et al. 2009; Freeman et al. 2012; Jasper et al. 2012). The reduction of diarrheal illnesses among students is estimated to result in 1.9 billion school days achieved (Hutton & Haller 2004), while lack of sanitation is blamed for 272 million school days lost each year and for the intestinal worm infestation of an estimated 400 million children (Hutton & Haller 2004; Zomerplaag & Moojiman, 2005).

However, available studies and reports from development partners' concerted efforts suggest that long-term low access to adequate Wash services and low awareness in schools across the country actually provide opportunities for affordable interventions on students' knowledge and practice of Wash This is especially true in the face of the emergence of COVID-19, which has highlighted the importance of sanitation and hygiene, particularly in schools (Gammon & Hunt, 2020; Olukanni et al., 2014; World Bank, 2017; Mackinnon et al., 2019).

SCHOOL LOCATION AND STUDENT'S PERFORMANCE.

The Macmillan English Dictionary (2007) defines location or site as a place or position where something is. The school site/location is therefore defined as the position of school within the chosen area of study. This may be urban or rural. The urban school location/site refers to schools situated within the local government headquarters with necessary basic amenities like tarred roads, electricity and pipe borne water while the rural location/site refers to schools far away from the local government headquarters and lacking basic amenities like tarred roads, electricity and pipe borne water (lbok, 2015). The selection of the site of the school is a very major decision that affects the school throughout its existence. It should be considered very seriously and embarked upon very carefully (Mbipom, 2000). Political, communal, personal and sectional sentiments should be put under control while choosing the site of a school. According to John (2010), selection of school site requires a careful search for a suitable portion of land, involving a proper examination of its ecological properties that may be considered most suitable for building of the given type of school.

Ntukidem and Etor (2016) stated that site selection involves adequate examination of the nature of the soil, the climate conditions in relation to location and construction of appropriate types of buildings and other physical structures of the school. School location or site has a great effect on students' academic performance. It is a strong determinant of students' level of the academic achievement (Okworo, 2015). School needs a quiet environment, while considering accessibility to safe distance from the main highways, the school should not be too far because of infrastructural connections like light, water, etc. These motivate teachers to work. Thus, enhances students' academic performance.

The school should be located where there is a minimum of dangerous high way crossing. There should be access to public transportation, this will motivate both teachers and students to come in and go out of the school without uh trouble (Ibok, 2015). The school should be sited at a place with a walking distance of about five to thirty minutes, if the school is too far away from where the parent, teachers and students live, both teachers and students who trek will be very tired by the time they arrive at the school. They may also arrive home late and too tired either to help at home (Ekpo, 2014). This may lead to students' poor performance in Biology because of the distance due to the location of the school.

Abraham (2012) studied school environment and students' academic performance among secondary public schools in. A sample of 100 teachers was randomly selected in public secondary school. The research design used was ex-post facto. The statistical stool used was independent t-test. The results obtained amongst other variables showed that there is a significant influence of school site on students' academic performance. Okworo (2011) stated that there exist some interplay between the learning process and the learning environment. This means that teaching and learning process directly related to the location of the school. The school sites or location can either improve or hinder students' performance which may result from teachers' job motivation.

THEORETICAL LITERATURE

The Bronfenbrenner's model was developed by the psychologist Urie Bronfenbrenner. This theory of ecological systems explains how human development is influenced by different types of environmental systems. Urie Bronfenbrenner's Ecological System Theory

(Bronfenbrenner, 1977; Bronfenbrenner & Morris, 1998), often called the bioecological model, depicts the lifelong progressive accommodations that individuals make regarding the changing environments they encounter. Bronfenbrenner's theory is concerned on the quality and context of individuals' life as viewed through the different developmental phases that occur within the context of complex interrelated complex systems. The individuals' environments and ecological realities influence their development, including behavior. Positive, healthy, and safe social environments are important for necessary prosperous development of the child. This model described that people are directly influenced by systems, such as family, school, and workplace; and indirectly by policies, resources, and expectations of others. Dynamic environments are important influences on developing individuals, and that in turn, individuals are capable of influencing their environments.

The theory outlines the environment as complex layers of *microsystem*, *mesosystem*, *ecosystem*, *macrosystem* and *chronosystem,* which affect students' development, including their academic performance.

Figure 4: The ecological system theory
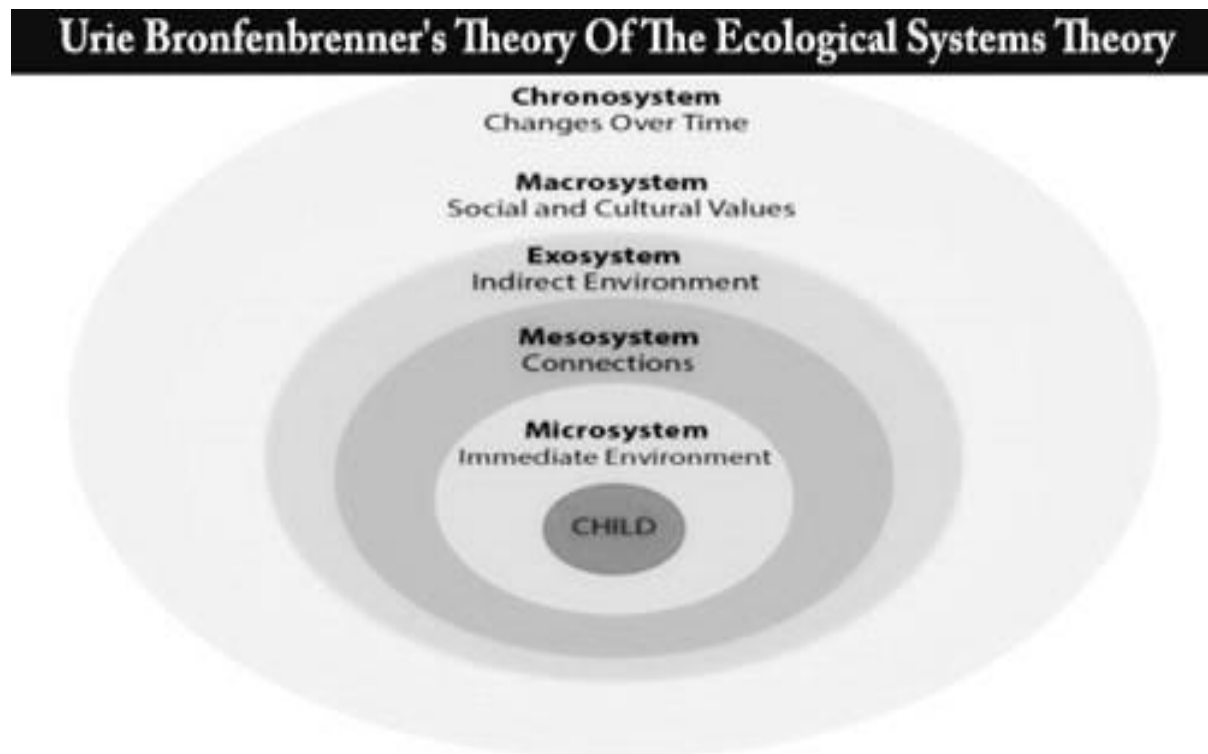
Source: NKONGHO Lydia AKO

The immediate environment encircling the student is *microsystem*. It refers to relationships and interactions which students make with their direct setting. This system's structures include home, teachers, and classroom environments (Rudasill et al., 2018). The relationships between the students and these environments directly or indirectly influence learning progress. For example, student-parent interactions can impact a child's academic performance. However, the child can also influence parents' behaviour and belief in the child's academic progress.

Mesosystem refers to the interactions that occur in more than two microsystems, such as the interactions between parents and teachers (Bouchard & Smith, 2017).

Ecosystem describes the social system in which students do not participate directly but indirectly affects their development and academic performance. The structures in this layer include in-the-school and out-of-the-school resources that affect the students' academic performance by participation in the microsystem (Iruka et al., 2020).

The *macrosystem* denotes the outermost layer in the students' environment. Structures in this layer include principles controlled by values, policies, and beliefs. These principles define the macrosystem and have cascading effects that can influence interactions of all other layers. For example, male or female students' poor learning attitudes in English language class may be attributed to societal normative influences (Seginer, 2006).

The *chronosystem* involves the time-related dimension of a student's development and achievement. It includes changes in students' biological maturation, life events, and experiences, which affect students' academic performance (Lau & Ng, 2014).

The theory further posits that the environment contributes significantly to the conditioning of the learning process and eventual outcomes of targeted students' behavior that can be observed and measured (Syomwene et al., 2013; Woollard, 2011). For instance, classroom interactions that motivate students' class participation can arouse positive learning behavior and cause a change in students' attitudes towards learning (Ali et al., 2020; Banks et al., 2014).

The theory of social ecology

The theory of social ecology, developed by Urie Bronfenbrenner, provides a framework for understanding how environmental systems, including the physical environment, influence human development. In the context of school physical environment and students' academic performance, the theory suggests several key points:

The microsystem which refers to the immediate environment in which an individual interacts, such as the classroom and school. A positive and stimulating physical environment within the school (e.g., well-equipped classrooms, libraries, labs, playgrounds) can enhance students' motivation, engagement, and overall academic performance.

The mesosystem which efers to the connections between different microsystems, such as the interaction between the school and the home environment. A supportive physical environment at school can complement the home environment, providing continuity and support for students' learning and development.

The exosystem includes external environments that indirectly influence the individual, such as the community or local government policies. For example, access to resources like safe transportation to school, libraries, or afterschool programs can enhance the overall school environment and positively impact academic performance.

The macrosystem refers to the broader cultural context that shapes the values, norms, and resources available in a society. A culture that values education and provides adequate resources for schools to maintain a conducive physical environment can have a positive impact on students' academic performance.

The chronosystem refers to changes that occur over time in a person's environment. Changes in the physical environment of a school, such as renovations, upgrades in technology, or changes in school policies, can impact students' academic performance over time.

The theory of social ecology suggests that the physical environment of schools is an important factor in shaping students' academic performance, as it interacts with other environmental systems to create a supportive and conducive learning environment. When the physical environment of a school is well-maintained, stimulating, and safe, it can positively influence students' motivation, engagement, and overall academic achievement.

The theory of social ecology suggests that the physical environment of schools is an important factor in shaping students' academic performance through several mechanisms:

Direct Impact: The physical environment of schools directly influences students' behavior, motivation, and learning. For example, well-designed classrooms with adequate lighting,

comfortable seating, and appropriate resources can enhance students' ability to focus and engage in learning activities, thereby improving their academic performance.

Indirect Impact: The physical environment of schools can also have indirect effects on students' academic performance by shaping their interactions with teachers, peers, and learning materials. For instance, a classroom layout that promotes collaboration and interaction can enhance students' social and cognitive development, which in turn can positively impact their academic performance.

Psychological Impact: The physical environment of schools can also have a psychological impact on students, influencing their mood, motivation, and overall well-being. A school environment that is perceived as safe, welcoming, and supportive can help reduce stress and anxiety among students, enabling them to better focus on their studies and perform academically.

Cultural Impact: The physical environment of schools can also reflect and reinforce cultural values and norms that are conducive to academic success. For example, schools that prioritize academic achievement by displaying student work, celebrating academic accomplishments, and providing resources (libraries) for academic enrichment can create a culture that values learning and academic excellence.

Overall, the theory of social ecology suggests that the physical environment of schools is an important factor in shaping students' academic performance because it directly and indirectly influences their behavior, motivation, and well-being, and reflects and reinforces cultural values and norms related to academic success.

School Climate Theory

The school climate theory was developed by Gregory, Cornell and Fan (2011) to explain the various elements of how students experience their school environment. The theory assumes that the interaction of varied factors creates a school learning environment in a school including the academic activities, safety, community and institutional environment that impact on the cognitive, behavioral and psychological development of students. Thus, school climate, how- ever it is formed, has both direct and indirect effect on students' outcomes in the school, including their academic performance (Gregory, Cornell, & Fan, 2011). In building the theory further, later researchers theorized elements of school climate that promote positive student development. For instance, Wang and Degol (2015), borrowing from research on parenting styles and child development argued that authoritative school climate promotes positive student development. They defined a positive school climate as

one that offers a democratic atmosphere for students to express themselves. They used two leading indicators for authoritative school climate, which are democratic disciplinary structures and warmth student support (Wang & Degol, 2015). In applying this theory to the current study, the school climate is used interchangeably with a school learning environment to signify various elements of the school environment that affect student learning in both direct and indirect ways. Thus, when the student learning environment is conducive, it will improve the academic performance of the students and vice versa.

School Climate Theory, also known as School Climate and Social Ecology Theory, focuses on the impact of the school's physical and social environment on students' academic performance and overall well-being.

Classroom Environment: The physical layout of the classroom can impact students' engagement and interaction. An organized and well-designed classroom can promote better focus and participation. Access to educational resources such as books, technology, and learning materials can enhance students' learning experiences and academic performance. The classroom environment influences the quality of teacher-student relationships, which are crucial for student motivation and academic success.

Library Facilities: Libraries provide students with access to a wide range of resources, which can support their learning and research skills. A well-equipped library can promote a culture of reading, which is linked to improved literacy skills and academic performance. Libraries often offer quiet study spaces, which can enhance students' ability to concentrate and learn effectively.

WASH Facilities: Adequate and clean sanitary facilities are essential for students' health and well-being. Poor sanitation can lead to health issues that can affect attendance and academic performance. Access to clean and functional sanitary facilities ensures that students feel comfortable and respected, which can positively impact their overall school experience and academic performance.

School Location: The location of the school can impact students' access to educational resources, extracurricular activities, and community support, which can influence their academic performance. Schools located in safe and secure areas can create a conducive environment for learning, while schools in unsafe areas may have negative effects on students' well-being and academic performance.

In summary, School Climate Theory suggests that the classroom environment, library facilities, sanitary facilities, and school location are important components of the overall

school climate that can significantly influence students' academic performance and well-being.

EMPIRICAL STUDIES

Ezike,(2018) investigated classroom environment and students' academic interest as correlates of achievement in Senior Secondary Chemistry students in selected Public Secondary Schools in Ibadan, Oyo State, Nigeria. The result showed significant relationships between classroom environment and academic achievement, while combined contribution of classroom environment and academic interest was equally significant. Gilavand (2016) in a study whose aim is to investigate the impact of environmental factors (schools' open space, noise, lighting and paintings in educational institutions) on learning and academic achievement of elementary students, found that environmental factors (appropriate colouring, lighting of educational environment and schools' open space) has impact on learning and academic achievement of elementary school students.

Lodhi et al. (2019) studied school environment and students' academic performance in Pakistan. The research was conducted in Punjab province and involved students, teachers, and principals in public high schools. The research aimed at establishing associations between school learning environment and students' academic performance in English language. The study found that factors of school learning environment such as infrastructure, facilities, teacher quality, teaching approaches, academic support, teacher-student, and school-parent relationships were predictors of students' academic performance. The investigation established that a favorable school learning environment enhances students' academic performance in high school. This finding corroborates United Nations Children's Fund (UNICEF) objectives of Child-Friendly Schools (CFS) (Osher et al., 2009). The CFS approach posits that whenever a conducive school learning environment is created, it enhances students' well-being, enabling them to achieve full potentials, including academic performance (Osher et al., 2009b).

According to O"Neill (2014), the recent competition for smaller classrooms with insufficient seats within the school buildings makes such environment unconducive for learning. This makes students congested in a heated room and subsequently become violent, rendering such buildings unsafe. It is critical to address facility designs in relation to student health and safety first. It was not certain as to whether secondary schools in Hoima District had modern

building with sizeable classrooms to suit students" populations, overcome classroom congestion to enable them learn freely and to score significantly higher grades in reading, listening, language, and arithmetic than those in the older missionary buildings.

Earthman (2017) found out that specific physical features such as space, equipment, Maintenance, appearance, comfort and general physical arrangement positively or negatively affected the school learning environments. School facilities problems however worsen as school facilities age to over forty years which is the time when rapid deterioration in the physical conditions typically begins thus becoming unconducive for inhabitation during lessons. To Hui & Cheng (2008), for learning to effectively take place, buildings must be of good standard and supportive for both the learners and teachers. They further argue that the physical environment plays a significant role in effective teaching. This means that teachers, as drivers in the teaching and learning environment need to conduct their business in a conducive environment as the facilities in which they teach can deter or 13 enhance the quality of their teaching. Thus, substandard facilities can have far reaching consequences on the teaching process and the consequent result is low student academic achievement. For this reason, the current student sought the opinions of the teachers and students on whether their schools" heads conduct school facilities" Maintenance to promote students" academic performance

Ramli, Zain, Zain, and Rahman (2021) analyzed school environmental factors and how it influences academic performance. They used questionnaire as the instrument for data collection and employed regression and correlation methods in carrying out analysis. Their results indicated that environmental factors have significant impact on academic performance of students. They further noted that environmental factors affect students' quality of life. In order for academic performance of students to be improved. They suggested that school environmental factors be addressed and upgraded.

Akpan (2020) examined the influence of school environment on the academic performance of Biology students in secondary schools in Ukanafun Local Government Area of Akwa Ibom State. He used variables such as class size, instructional facilities, peer relationship and school location as well as students' academic performance in Biology. His findings revealed that there was significant influence of the variables related to school academic environment on the academic performance of students in Biology. Based on their findings, they recommended that schools should endeavour to create a conducive environment so as to

promote students' academic performance and both government and private school administrators need to monitor the school environment in order to ensure improved academic performance. Similar Harinarayanan and Pazhanivelu, (2018). From the submission of the scholars, it is clear that the school environment influences academic performance of the students. However, the studies presented above have not given concern to the study area which implies that there is a gap in knowledge. Based on this observation, this study is necessary.

Lodhi et al. (2019) studied school environment and students' academic performance in Pakistan. The research was conducted in Punjab province and involved students, teachers, and principals in public high schools. The research aimed at establishing associations between school learning environment and students' academic performance in English language. The study found that factors of school learning environment such as infrastructure, facilities, teacher quality, teaching approaches, academic support, teacher-student, and school-parent relationships were predictors of students' academic performance. The investigation established that a favorable school learning environment enhances students' academic performance in high school. This finding corroborates United Nations Children's Fund (UNICEF) objectives of Child-Friendly Schools (CFS) (Osher et al., 2009). The CFS approach posits that whenever a conducive school learning environment is created, it enhances students' well-being, enabling them to achieve full potentials, including academic performance (Osher et al., 2009b).

Kibriya and Jones (2020) explored the impact of safe school environment on students' academic performance in Tanzania. The investigation involved students, teachers, and administrators in determining how a safe school environment influences students' academic performance in primary schools. The study instruments included Early Grade Reading Assessment (EGRA), Early Grade Mathematics Assessment (EGMA) and Snapshot of School Management Effectiveness (SSME). The EGRA was used to assess students' literacy abilities by emphasizing orthography, fluency, reading and comprehension. Numeracy skills were also tested using EGMA to evaluate students' basic mathematical and problem-solving abilities. The SSME tool measured the school learning environment focusing on students' demographics, management, infrastructure, teaching resources, safety, and management relationships with school community. Students' academic performance measurement entailed students' standardized test scores in English language and mathematics. The study

established that school safety was an important indicator of school learning environment that contributed significantly to students' academic performance. It also found that students' demographic characteristics and home factors influenced students' learning. The inquiry, thus, concluded that a congenial school learning environment could improve students' academic performance.

Pobbi et al. (2018) studied school climate and students' academic performance in 10 administrative regions in Ghana. The research involved students in senior high school and assessed key school climate factors that promoted academic performance using standardized test scores. School climate was defined as classroom environment, interpersonal relationships, and academic support. Academic performance measurement consisted of average scores in Mathematics, English, Integrated Science and Social Studies using WASSCE grading scale. Inventory of School Climate (ISC) and the National School Climate Centre (NSCC) tool was used to measure school climate. The research found that teaching and learning, interpersonal relationships, institutional environment, and school safety were vital school climate dimensions that significantly influenced students' academic performance. The study concluded that school climate plays a crucial role in enhancing students' academic performance.

Asamoah et al. (2020) investigated school environment and students' academic performance in public senior high schools in Ghana. The study was conducted in Kumasi metropolis and explored school environment, teacher and student factors that caused students' poor academic performance in core mathematics in WASSCE. The survey involved students in senior high school and mathematics teachers and used questionnaire for data collection. Academic performance was assessed using standardized test scores in WASSCE. The research found that students' poor academic performance in public senior high schools was caused by teachers and teaching environment factors. The factors included insufficient teaching and learning materials, textbooks for teachers and students, and inadequate continuous teacher professional development programs. The study also established that teaching methods, teacher subject content mastery, teacher-student relationships, academic support for students' learning and teacher punctuality were predictors of poor academic performance in mathematics. The factors impeded students' academic performance and were related to the school teaching environment. By inference, a school teaching environment is vital for achieving effective learning outcomes. The finding implies that a school with a well-

resourced teaching environment can enhance teaching and learning and improve students' academic performance.

CHAPTER THREE

METHODOLOGY

This section discusses the research methodology used for collecting and analyzing data. It reveals the processes used to collect data from the field. The section opens with a description of the research design and how the study was carried out. Next, I discussed the study area, the population of the study, the target population, and the accessible population from which my sample size was derived. I then received the sample and the sampling techniques that were employed. The data-gathering tools and methods for validating them were discussed. The processes for administering the instruments were also discussed, data analysis techniques elucidated, ethical considerations, and reiteration of the hypothesis.

RESEARCH DESIGN

A descriptive survey design was employed for this study, and a regression prediction design was used to gather data. Using descriptive designs and regression analysis, one can predict results and elucidate the effect of independent variables on the dependent variable. Researchers use the regression test to predict the effect of two or more variables or sets of scores (Creswell, 2012). According to Mbua (2003), a research design is a strategy that details information on a certain issue and should be gathered and processed. It is a broad framework that describes the steps that will be taken to collect the data needed to respond to the research question or hypothesis. Amin (2005) claims that a research design outlines the steps the researcher will take, from writing or creating the hypothesis to the final data analysis. Data is gathered using a quantitative approach to ascertain whether and how strongly the two variables affect each other (school physical environment and students' academic performance). At the end of this research, quantitative data was collected and analyzed, and the findings were generalized to the entire study population. With prediction design, researchers aim to predict outcomes by employing specific factors as predictors rather than merely associating variables. Therefore, prediction studies are valuable because they aid in predicting or anticipating future behavior.

AREA OF STUDY

The purpose of this section is to describe the study area in terms of locality, topography, and history. A research area is a physical site where a study or a current research project is being

conducted. This study was conducted in the Mfoundi Municipality of the Centre Region of Cameroon. The Mfoundi Municipality was purposively sampled because this is where the Curriculum Development Centre in Cameroon is and where teaching and learning resources are developed. Therefore, the researcher wanted to find out the challenges and opportunities of inclusive education practices and curriculum implementation in public secondary schools.

Mfoundi is a division of the Centre region in Cameroon. The Mfoundi division was created following Decree No. 74/193 of March 11, 1974 separating it from the division of Méfou (today itself divided into Méfou-et-Afamba and Méfou-et-Akono). The division covers an area of 297 km² and, as of 2022, had a total population of 2,881,876. The division forms the Yaoundé capital and greater area.

The Mfoundi division has only one urban community: However, each of the seven current subdivisions has an urban council elected and headed by an urban mayor. The urban community covering the entire Mfoundi division makes it a community with a special status.

The Mfoundi division has 7 sub-divisions:
1. Yaoundé I (Nlongkak)
2. Yaoundé II (Tsinga)
3. Yaoundé III (Efoulan)
4. Yaoundé IV (Kondengui)
5. Yaounde V (Essos)
6. Yaoundé VI (Biyem-Assi)
7. Yaoundé VII (Nkolbisson)

Figure 5: Area of study
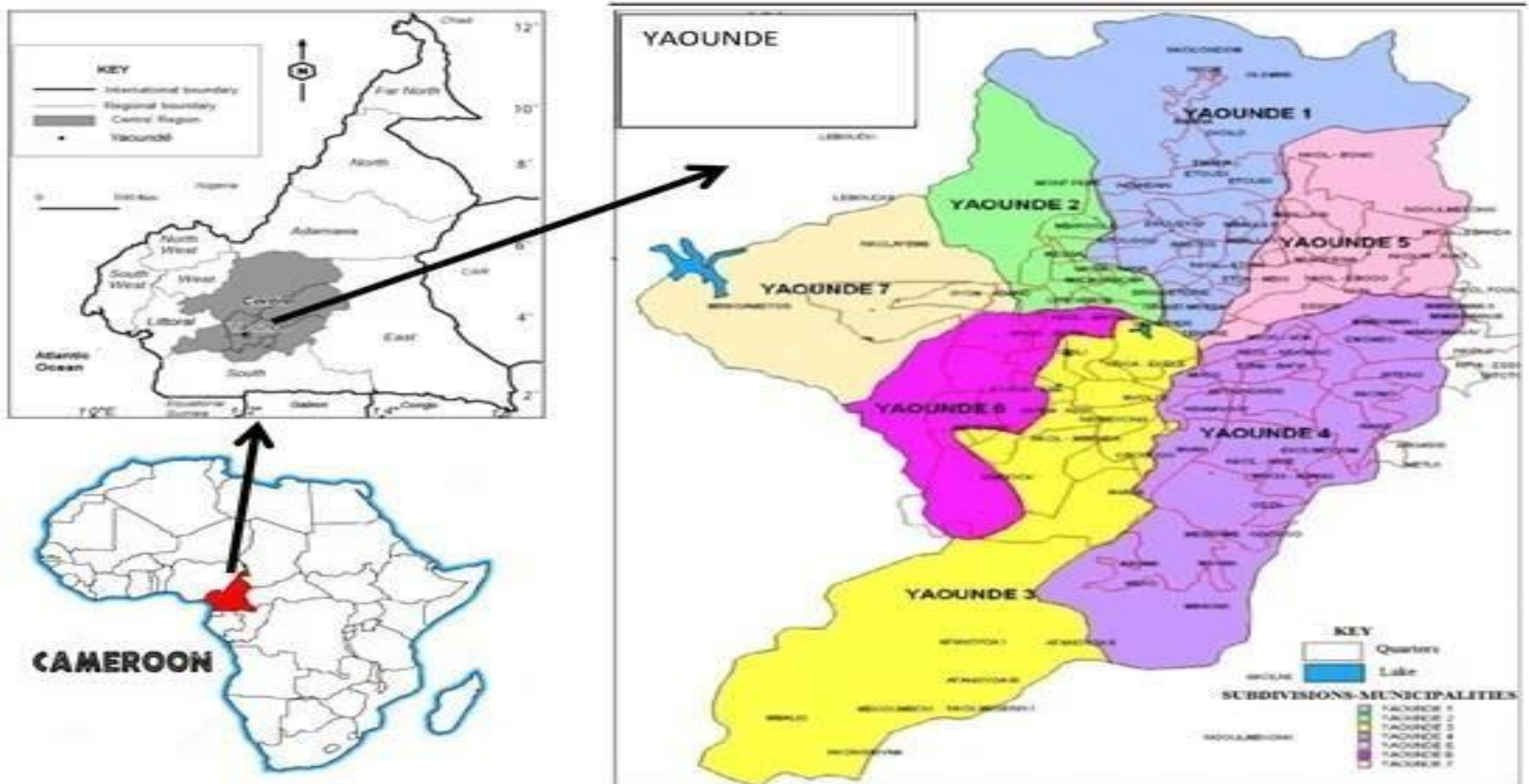
Source: Research gate

Population of Study

According to Amin (2005), a population is the totality of all the components relevant to certain research. When concluding a sampling study, the researcher is interested in the entirety or aggregate of things or people with one or more traits in common (Amin, 2005). Asiamah et al. (2017) believe that population members must share at least one common attribute. This characteristic qualifies participants as population members. Six thousand five hundred and ninety (6590) students from public and private secondary schools in Mfoundi make up the study population (MINESEC. Statistical Yearbook, 2022)

Target Population

The researcher intends to generalize the findings to this population. The target population, often known as the parent population, may not always be reachable to the researcher (Amin, 2005). For Asiamah et al. (2017), the set of people or participants with particular traits of interest and relevance is referred to as the target population, and it is the portion of the general population that remains after it has been refined. The researcher must therefore identify and exclude members of the general population who might not be able to share experiences and ideas in sufficient clarity and depth from the target population. Thus, the target population of this study comprises ten (10) schools drawn from the seven subdivisions of Mfoundi.

Table 1: Distribution of target population

No	Name of School	Sub-division	Target Population
1.	Government bilingual high school Emana	Yaoundé 1	156
2.	Government bilingual high school Nyom	Yaoundé 1	93
3.	Government bilingual high school Nkol-Eton	Yaoundé 2	164
4.	Government bilingual practicing high school Yaounde	Yaoundé 3	144
5.	Government bilingual high school Ekounou	Yaoundé 4	194
6.	Government bilingual high school Mimboman	Yaoundé 4	169
7.	Government bilingual high school Yaounde	Yaounde 5	198
8.	Government bilingual high school Etoug-Egbe	Yaounde 6	284
9.	Government bilingual high school Mendong	Yaounde 6	276
10.	Government bilingual high school Ekorezock	Yaounde 7	163
	Total		**1841**

Table above shows the total number of second cycle art students in all GBHS in Mfoundi. Therefore, ten (10) government bilingual high schools in Mfoundi have a total population of 1841 student in art second cycle.

Accessible population

This is the population from which the sample is actually drawn (Amin, 2005). Asiamah et al. (2017) corroborates this by postulating that after eliminating every member of the target population who might or might not engage in the study or who cannot be reached during that time, the accessible population is then reached. The last group of participants is the one from whom data is gathered by polling either the entire group or a sample taken from it. If a sample is to be taken from it, it serves as the sampling frame. People eligible to engage in the study but unable to participate or would not be available at the time of data collection are referred to as the accessible population. The accessible population of this study is drawn from seven (07) government bilingual high schools where students of the English sub-system of education were targeted. The researcher, therefore, had access to 1387 students drawn from the seven (07) schools, as seen below.

Table 2: Distribution of accessible population per school

No	Name of school	Sub-division	Accessible population
1	Government bilingual high school Emana	Yaoundé 1	156
2	Government bilingual high school Nkol-Eton	Yaoundé 2	164
3	Government bilingual practicing high school Yaounde	Yaoundé 3	144
4	Government bilingual high school Ekounou	Yaoundé 4	194
5	Government bilingual high school Mimboman	Yaoundé 5	169
6	Government bilingual high school Mendong	Yaoundé 6	284
7	Government bilingual high school Etou-Egbe	Yaoundé 7	276
	Total		**1387**

Table above shows the accessible population, which is 1387 in the targeted seven schools.

Sample of the study

The sample of this research work was drawn from the accessible population of 1387 from the seven schools the researcher had access. A good sample is one that statistically represents the target population and is sizable enough to provide an answer to the research issue. Amin (2005) views a sample as a portion of the population whose results can be generalized to the entire population. The author adds that a sample can also be considered representative of a population. Majid (2018) corroborates this by asserting that because the community of interest typically consists of too many people for any research endeavor to involve as participants, sampling is a crucial tool for research investigations.

The sample size was determined using Krejcie and Morgan which constituted 230 second cycle art students drawn from seven schools representing the seven sub-divisions in Mfoundi. They were drawn in such a way that all students of GBHS were represented.

Table 3: Distribution of sample per school

No	Name of school	Sub-division	Accessible population	Sample size
1	Government bilingual high school Emana	Yaounde 1	156	29
2	Government bilingual high school Nkol-Eton	Yaounde 2	164	25
3	Government bilingual practicing high school Yaounde	Yaounde 3	144	30
4	Government bilingual high school Ekounou	Yaounde 4	194	35
5	Government bilingual high school Mimboman	Yaounde 5	169	31
6	Government bilingual high school Mendong	Yaounde 6	284	40
7	Government bilingual high school Etou-Egbe	Yaounde 7	276	40
	Total		**1387**	**230**

Source: researcher (2023)

Table above shows the sample of the study drawn from the research advisor sample size table (2006).

Sampling technique

Every research involves, to some degree or another, a sampling process. Sampling is one of the most important steps in research; it will lead to valid results when carefully done. Sampling is a process of selecting representative portions of a population that permits the

researcher to make utterances or generalizations concerning the said population. It can also be the process of selecting elements from a population so that the sampled elements selected represent the population. Sampling is involved when any choice is made about studying some people, objects, situations, or events rather than others. A good sample should be representative of the population from which it was extracted. Regardless of the sampling approach, the researcher should be able to describe the characteristics and relate them to the population (Amin,2005).

Sampling techniques refer to the various strategies a researcher uses to draw out a sample from the present population of the study (Amin, 2005). There are two main sampling techniques; probability and non-probability techniques. The sampling technique suitable for this study is probability sampling, in which all the elements of the population have some probability of being selected. Probability sampling will provide a base for the researcher to make generalizations about the population.

The type of probability sampling technique employed in this research is simple random sampling (SRS). Amin (2005) opined that a simple random sample is a sample obtained from the population in such a way that samples of the same size have equal chances of being selected. The researcher proceeded through this method by selecting the accessible population comprising seven government bilingual high schools in Mfoundi. This was done through the random number method, in which Amin (2005) says if there are numbers that identify the elements of the population, then the random number method will be appropriate. Through this technique, no school or students were left out, ensuring the representativeness of all government bilingual high schools in the Mfoundi division.

Instrument for Data collection

An instrument is a tool that has been methodically built to collect data and should be gathered accurately. The questionnaire is the tool utilized to gather data for this investigation. According to Amin's definition from 2005, a questionnaire is a professionally crafted tool used to gather data in line with the research questions and hypothesis requirements. He continues by saying that a questionnaire can be considered a self-report tool used to collect data on factors of interest in research. A questionnaire is a useful tool for gathering survey data, providing structured, frequently numerical data, being able to be administered without

the researcher's presence, and frequently being comparatively simple to analyze, as Cohen et al. (2007) reiterated.

Questionnaire is a tool for gathering data with specific questions that the respondent must answer and then return to the researcher. There are two different kinds of questionnaires: closed and open-ended. The type of study is the only factor influencing the questionnaire selection. This study will use closed-ended questions, including Likert-style rating scales and dichotomous questions. These closed questions are simple to code and take little time to complete. According to Creswell (2009), a questionnaire takes a quantitative approach to measure perceptions and provides data upon which generalizations can be made on the views of a given population on a particular phenomenon. This study's self-administered questionnaire was preferred, given that the targeted respondents could read and express themselves effectively. The researcher used a self-administered questionnaire to capture the students' views on school physical environment in some public secondary schools in Mfoundi Division.

The collection of the research-developed questionnaire titled: school physical environment and it impact on students' academic performance has two parts; A and B. Part A contains information on the personal data of the respondents, while part B contains twenty-eight (28) statements built in four clusters A, B, C and D. Cluster A of the questionnaire focused on classroom physical environment on students' academic performance in the selected schools. Cluster B of the questionnaire hinged availability and usability of library on student academic performance. Cluster C of the questionnaire concentrated on the present hygiene and sanitation facilities on students' academic performance and finally Cluster D of the questionnaire addressed school location on students' academic performance. This enables us to obtain information on the dependent variable, which is the actual problem.

Table 4: Variables and statements

Variables	Statements
The classroom physical environment	1, 2,3, 4, 5, 6, 7
The availability and usability of library	8, 9, 10, 11, 12, 13, 14, 15
The availability of WASH facilities	16, 17, 18, 19, 20, 21, 22
The school premises	23, 24, 25, 26, 27, 28

Source: Researcher

All the four-cluster had eight and seven statements respectively, all relating to the research questions that guided the study. The response format for clusters A to B is based on a four-point scale of strongly agree (SA), Agree (A), Disagree (D) and strongly disagree (SD). In other words, the higher the aggregate scores on the rating scale, the more positive the response of the subjects and the lower the score, respondents indicated their level of agreement by ticking (√) on the rating scale.

Table 5: Questionnaire options and corresponding weights on the Likert scale

Option	Weight
Strongly Agree (SA)	4 Points
Agree (A)	3 Points
Disagree(D)	2 Points
Strongly Disagree (SD)	1 Point

Source: NHONGHO Lydia AKO

Table 5 shows how the questionnaire was weighted with the various options, from 4 points for SA to 1 point for SD.

Validation of the Instrument of data Collection

According to Amin ME (2005), Validation refers to the accuracy of the instrument in measuring what the researcher intends to measure. Validity refers to the measurement instrument and the level to which it saves the purpose of it design. The validity of the instrument can be affirmed with the reason that the questions were simple, understandable and easy for the respondents to answer. Face validity was adopted this was done by giving the initial draft of the questions to expert raters and were kindly requested to examine the adequacy of the statement relevance and suitability of language, structuring and sequencing of ideas and appropriateness of the instrument.

The comments and observations of these experts were used for modifications of the instrument. They modified some of the research questions and improved on the clarity of the questionnaire statements and the clarity of the response scale format of strongly Agree (SA), Agree (A), Disagree (D) and strongly Disagree (SD). Their comments were incorporated in the revised version of the questionnaire statements. Our method of distributing questionnaires to the respondent was face-to-face distribution. We later collected the questionnaire in one week. This was to give room for the respondents to take their time in filling the questionnaires without any inconvenience.

Face Validity

The questionnaire was carefully studied by specialist in physical environment and the supervisor in charge of the applied physical and analytical chemistry laboratory. Some were adjusted, and maintained and others were disqualified.

Content Validity

The supervisor examined the statements on the questionnaire in relation to the objective of the research work. After proper examination and acceptance of the statements, the content of the instruments was made valid. It was distributed to students of the selected schools and collected a week later. The researcher permitted the respondents to pose questions where necessary during the exercise. In the end, most of the copies were collected, and the return rate was recorded.

Pilot Study

The researcher then conducted a pilot test in the Government Bilingual High School Ekounou, which did not constitute part of the sample. I did a pilot study because we wanted to develop and test the adequacy of the research instrument. The student's responded and the internal consistency of the clusters were determined using Cronbach alpha which gave us a reliability of 0.892. The coefficient for the clusters was high enough for the study to realize the instrument because it reveals a complete understanding of the content of the questionnaire. This procedure ensures the content validity of the instrument. It might also give advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments are inappropriate or too complicated.

Reliability of the study

The questionnaire was pre-tested with comparable respondents drawn from outside the area of the study. The results of the pilot testing were used in computing relevant reliability. The instruments were trial tested using ten students in Government Bilingual High School Ekounou. The students responded, and the internal consistency of the five clusters was determined using Cronbach alpha which gave us a reliability of the coefficient of the clusters was high enough for the study to utilize the instrument. After using the questionnaire for the study, we had a Cronbach alpha of 0.892, implying the instrument was reliable.

Table 6: Reliability of the study

Items	Cronbach's alpha (N=20)	Number of items
Classroom Physical Environment	0.902	7
School Libraries	0.927	8
School Toilets	0.926	7
School location	0.805	6
Students' academic performance	0.899	3
Total	**0.892**	**31**

Source: Nkongho,2023

Method of data collection

The researcher took authorization of research from the Dean of the Faculty of Science of Education from the University of Yaounde 1. She first of all went to the Centre Regional Delegation for Secondary Education of Mfoundi Division, where she carried out documentary research on statistics of students in the Mfoundi division. She went to the schools and obtain permission from the principals. The permission was granted. As far as the questionnaire administered were concern, they were distributed to all the students of the schools' concern and was collected after with a research confirmation signed by the principals of the respective schools. During the exercise, the researcher permitted the students to ask questions were necessary. At the end, most of the copies were collected. This gave a return rate of 98.37%.

The return rate of the instrument

The return rate indicates the number of questionnaires that were received at the end of the research after the questionnaires were administered to respondents. The return rate for this study was calculated using a simple percentage based on the formula below

$$\text{Return rate} = \frac{\sum RQ}{\sum AQ} \times \frac{100}{1}$$

Where;

R= Return rate

$\sum$RQ= Sum of questionnaires returned

$\sum$AQ=Sum of questionnaires administered

% = Percentage expressed as a hundred

The rate of return of questionnaires for this study was calculated as follows;

Total number of questionnaire administered = 230

Total number of questionnaire returned= 221

Therefore, return rate is = 221⁄230 * 100 = **96.08%**

Methods of data analysis

This study made use of a method of data analysis by which each hypothesis is taken and material to answer or provide a test is provided. Consequently, A regression method was used. Data were presented using tables and descriptive statistics like percentages, frequencies, and means were used. Correlation as well as the statistically more advanced method of multiple regression analyses was used in data analyses.

A regression method is the main method used in this study. Regression methods form the backbone of much of the analyses in research. In general, these methods are used to estimate associations between variables, especially when one or more of these variables are continuous. To answer the research question on how the independent variables, affect the dependent variables, a standard multiple regression analysis was conducted on the data in SPSS. The multiple regression analyses attempt to find out whether independent variables are able to predict the dependent variable and which of those independent variables is the strongest predictor of the dependent variable, in this case, students' academic performance, and is, therefore, the most suitable analysis tool for the current research (Pallant, 2005).

The Extraneous Variable

The extraneous variable is any variable that if not controlled, can affect the experimental research outcome or result.

Expected Results

After having tested our variables, we expect to see whether physical classroom, availability and usability of library, WASH facilities and school facilities influence students' academic performance.

Reiteration of the hypothesis

H_{a1}: Physical classroom environment has a significant effect on student academic performance

H_{O1}: Classroom physical environment has no significant effect on student academic performance

H_{a2}: Availability and usability of library has a significant effect on student academic performance

H_{O2}: Availability and usability of library has no significant effect on student academic performance

H_{a3}: WASH facilities have a significant effect on student academic performance

H_{O3}: WASH facilities have no significant effect on student academic performance

H_{a4}: School location has a significant effect on student academic performance

H_{O4}: School location has no significant effect on student academic performance

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

This study aimed to find out School physical environment influences students' academic performance in some public secondary schools in Mfoundi division. This chapter seeks to answer the questions raised in the study and test the research hypotheses.

Data Screening

The data was screened for univariate outliers. Of the returned questionnaire, there were neither outliers nor missing values. Hence the analysis of the study will be based on a total of 221 questionnaire.

DEMOGRAPHIC CHARACTERISTICS

Table 7: Gender Distribution of Respondents

	Frequency	Percent
Male	101	45.7
Female	120	54.3
Total	221	100.0

Source: Nkongho,2023

The table represents the sex distribution of respondents. In the context of this study, we use a population of 221 respondents. According to the table, 101 of the respondents are male while 120 of the respondents are female, making a percentage of 45.7 and 54.3 respectively. This variation is due to the fact that there are more females than males in the sample schools. This indicates that most of the students in secondary schools in Mfoundi-Division are females.

Figure 5: Gender Distribution
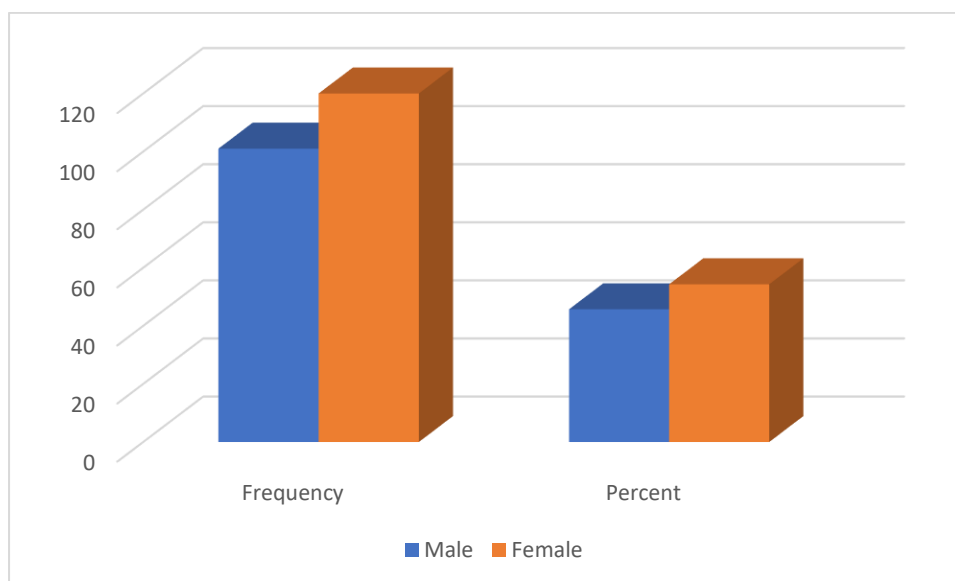
Table 8: Distribution of respondent according to schools

Schools	Frequency	Percent
GBHS Nkol-Eton	25	11.31
GBPHS Yaounde	30	13.57
GBHS Ekounou	35	15.83
GBHS Mimboman	31	14.02
GBHS Mendong	40	18.09
GBHS Etoug-Ebe	40	18.09
GBHS Emana	20	9.04
Total	221	100.0

Source: Nkongho,2023

The table above represent the school distribution of respondents. In the context of this study, we used a total of 221 respondents. According to the table, GBHS Mendong and GBHS Etoug-Ebe have the highest with 40 respondents giving a percentage of 18.09. GBHS Mimboman 31 respondent 14.02%, GBPHS Yaounde 30 respondent 13.57%, GBHS Nkol-Eton 25 respondent 11.31% and GBHS Emana has the lowest number of respondent 20 and a percentage of 9.04. This is due to the fact that some schools have more population than others.

Figure 6: Distribution of Schools
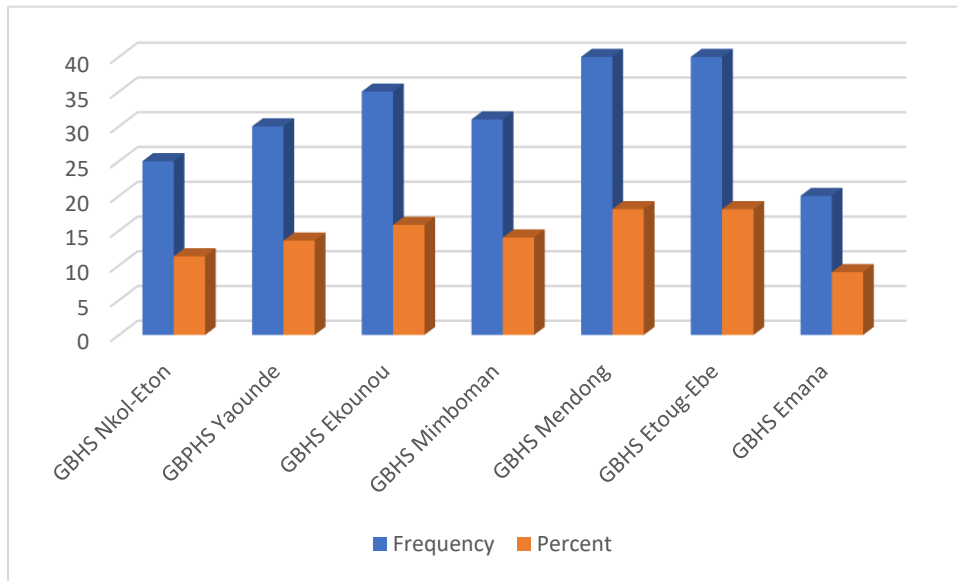
Table 9: Distribution of Respondents based on Age Group

	Frequency	Percent
16-18 Years	123	55.65
19-21 years	40	18.09
22-24 Years	40	18.09
25 and above	18	8.14
Total	221	100.0

Source: Nkongho,2023

The table shows the distribution of respondent according to the age groups. The result shows that 18.09 percentage of students are of 19 to 21 years and 22 to 24 years 18.09%, 55.65 percentage of students are between 16 to 18 years old and 8.14 percentage are above 25 years.

Figure 7: Distribution of Respondents based on Age Group
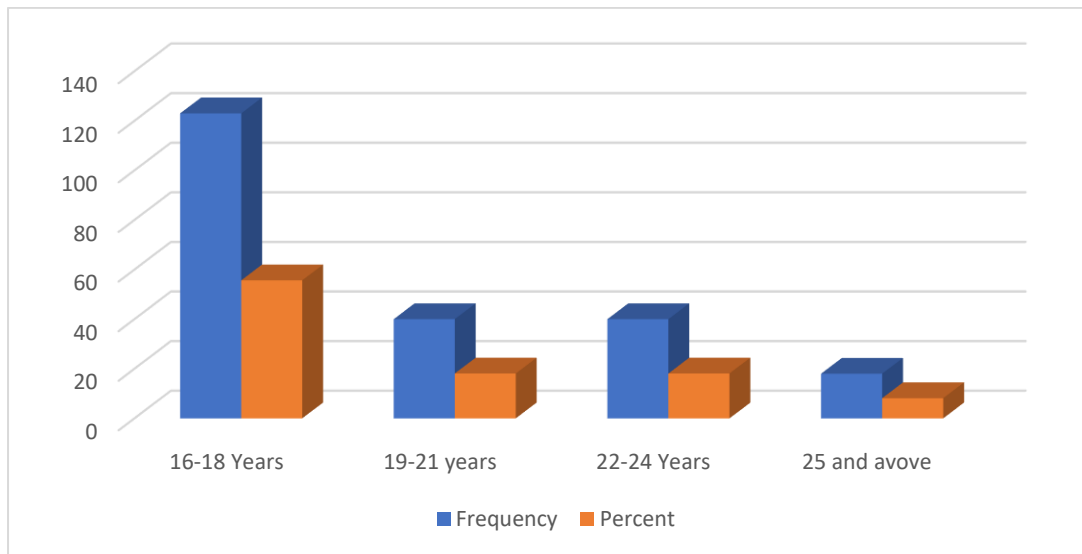
Descriptive statistics

Table 10: Classroom Physical Environment

No.	Item N=221	SA f	%	A f	%	DA f	%	SD f	%	M	SD
1.	The classroom is large enough for learning	171	77.4	0	0	1	0.5	49	22.2	3.33	1.251
2.	The seats in the classroom are comfortable for learning	22	10.0	22	10.0	122	55.2	55	24.9	2.05	0.865
3.	The lighting in the classroom is appropriate during study period	20	9.0	151	68.3	37	16.7	13	5.9	2.81	0.676
4.	The classroom learning environment is conducive	165	74.7	24	10.9	32	14.5	0	0	3.60	0.729
5.	Classrooms are well ventilated	122	55.2	57	25.8	16	7.2	26	11.8	3.24	1.020
6.	My school classroom has sufficient benches.	67	30.3	138	62.4	7	3.2	9	4.1	3.19	0.681
7.	My classroom has sufficient space.	165	74.7	32	14.5	18	8.1	6	2.7	3.61	0.752
	Grande Mean	**3.11**									
	SD	**0.213**									

Source: Source: Nkongho, 2023

Seven items were designed in the questionnaire to respond to this section. All the seven items designed to measure the respondent's view on the classroom physical environment have a mean greater than 2.5 which is the cut-off mean. It shows that 77.4% of the students

generally strongly agree that classrooms are large enough for learning which was supported by a mean of 3.33. 20% equally agree to the notion that seats in the classroom are comfortable for learning. The seats in the classroom are comfortable for learning 55.2% respondents disagree, 68.3% of respondent agreed that lighting in the classroom is appropriate during study period. 74.7% of respondent strongly agree that the classroom learning environment is conducive. 55.2% strongly agree that classrooms are well ventilated. School classroom has sufficient benches as supported by 62.4% of students agree. And finally, 74.7% agree that the classroom has sufficient space.

Some respondent also disagrees, 16.7% of disagree that lighting in the classroom is appropriate during study period, The classroom learning environment is conducive 14.5% of respondent disagree, 11.8% of respondents strongly agree,4.1% respondent of strongly disagree school classroom has sufficient benches and finally 8.1% of respondent disagree on my classroom has sufficient space

Table 11: School Libraries

No.	Item N=221	SA f	%	A f	%	DA f	%	SD f	%	M	SD
1	Using the library helps me to read more	187	84.6	34	15.4	0	0	0	0	3.84	0.361
2	Using the library helps me do better in my academics.	150	67.9	71	32.1	0	0	0	0	3.67	0.468
3	There is a well-equipped library in the school	157	71.0	44	19.9	9	4.1	11	5.0	3.57	0.792
4	There is a lot of relevant information to my study in the library	114	51.6	105	47.5	2	0.9	0	0	3.50	0.518
5	Using library helps me improve in my academic performance	188	85.1	33	14.9	0	0	0	0	3.85	0.350
6	The school library has enough space for everyone to study	27	12.2	30	13.6	143	64.7	21	9.5	2.28	0.800
7	The school library is equipped with computer.	2	0.9	2	0.9	206	93.2	11	5.0	1.97	0.308
8.	The school library is equipped with books of all subjects for students to study.	165	74.7	17	7.7	21	9.5	18	8.1	3.48	0.965
	Grande Mean	**3.27**									
	SD	**0.248**									

Source: Nkongho,2023

Eight items were designed in the questionnaire to respond to this section. From the table above, all the eight items designed to answer this question has a mean above the 2.5 cut-offs. 84.6% of students agree strongly that the library helps them to read more. 67.9% strongly agree that using the library helps them do better in their academic. 71.0% strongly agree with the view that there is a well- equipped library in school supports learning. 51.6 % of respondent strongly agree equally that there is a lot of relevant information in the library. 85.1% of students strongly agree that using the library helps them improve in their academic performance. 64.7% of students disagree that the school library has enough space for everyone to study. 93.2% of students disagree that the school library is equipped with computer. And finally, 74.7% equally strongly agree that the school library is equipped with books of all subjects for students to study.

Table 12: School Toilets

No.	Item N=221	SA f	%	A f	%	DA f	%	SD f	%	M	SD
1	The school environment is clean	99	44.8	102	46.2	16	7.2	4	1.8	3.33	0.692
2	There is clean water for students	29	13.1	23	10.4	129	58.4	40	18.1	2.18	0.882
3	My school provide sanitary material.	26	11.8	20	9.0	163	73.8	12	5.4	2.27	0.737
4	School toilets have hand wash utensils	16	7.2	17	7.7	168	76.0	20	9.0	2.13	0.664
5	My school has well distributed toilets for girls, boys and teachers	65	29.4	125	56.6	18	8.1	13	5.9	3.09	0.777
6	My school maintains clean and orderly compound	95	43.0	95	43.0	22	10.0	9	4.1	3.24	0.795
7	The school maintain regular cleaning of the toilets	25	11.3	155	70.1	15	6.8	26	11.8	2.81	0.786
	Grande Mean	**2.72**									
	SD	**0.072**									

Source: Nkongho,2023

Seven items were designed in the questionnaire to respond to this section. All the seven items designed to measure respondent's view on the school toilet have a mean greater than 2.5 cut-off. 46.2% of students agree that the school environment is clean. 58.4% disagree that there is clean water for students. 73.8% of students disagree on the view that school provides the students with sanitary materials. School toilets have hand wash utensils disagreed by 76.0% of students. 56.6% agree that the school has well distributed toilets for girls, boys and teachers. 43.0% also strongly agree that the school maintains clean and orderly compound. And lastly, the school maintains regular cleaning of the toilets 70.1% of respondents agreed.

No.	Item N=221	SA f	% 	A f	% 	DA f	% 	SD f	% 	M	SD
1	Noise coming from outside of the classroom is often a problem for students to concentrate	157	71.0	34	15.4	17	7.7	13	5.9	3.51	0.871
2	My school is far away from home	65	29.4	13	5.9	116	52.5	27	12.2	2.52	1.042
3	The school is located in a quite environment.	148	67.0	50	22.5	13	5.9	10	4.5	3.52	0.801
4	The school is located in a safe environment.	102	46.2	93	42.1	12	5.4	14	6.3	3.28	0.832
5	My school is located away from the main road.	153	69.2	49	22.2	8	3.6	11	5.0	3.55	0.787
6	I feel safe on my way to and from school.	131	59.3	54	24.4	16	7.2	20	9.0	3.33	0.957
	Grande Mean **SD**	**3.28** **0.099**									

Source: Nkongho, 2023

Six items were designed in the questionnaire to respond to this section. All the six items designed to measure respondent's view on the school location have a mean greater than 2.5 which is the cut-off mean. 71.0% strongly agree that noise coming from outside of the classroom is often a problem for students to concentrate. 52.5% of students disagree the view that school is far from home. The school is located in a quite environment agreed by 67% of students. 46.2% strongly agree support the notion that school is located in a safe environment. 69.2% strongly agree that the school is located away from the main road. And lastly, 59.3% students strongly agree that they feel safe on their way to and from school.

Table 14: Performance

No.	Item N=221	SA f	% 	A f	% 	DA f	% 	SD f	% 	M	SD
1	I score better grade points in a clean and healthy school environment	131	59.3	54	24.4	16	7.2	20	9.0	3.33	0.957
2	Lighting and ventilation influence my test score during sequence evaluation	201	91.0	13	5.9	7	3.3	0	0	3.87	0.413
3	My term average is excellent because of the library facilities I use	197	89.1	21	9.5	3	1.4	0	0	3.87	0.367
	Grande Mean **SD**	**3.69** **0.328**									

Source: Nkongho,2023

Three items were designed in the questionnaire to respond to this section. From the table below, all three items designed to answer this question has a mean above 2.5 cut-off. 59.3%

equally strongly agree that they score better grade points in a clean and healthy school environment. 91% strongly agree that lighting and ventilation influences test score during sequence evaluation. And finally, the term average is excellent because of the library facilities strongly agreed by 89.1% of students.

CORRELATION ANALYSIS

To test the previously established hypotheses with the help of simple linear regression analyses, Saunders et al. (2016) state that the collected data has to meet the precondition that is concerned with the linearity of the relationship between the separate IVs and the DV. Therefore, in the first instance, the researchers have produced scatterplots of the relationships between the different IVs, namely Classroom physical environment, School libraries, School toilets, School location towards Students academic performance as DV. Looking at the various scatterplots, it can be detected that the relationship between the different IVs and the DV in all cases is linear.

Table 15: Correlations among variables

	Classroom physical environment	School libraries	School toilets,	School location	Students' academic performance
Classroom physical environment					
School libraries	0.812**				
School toilets	0.675**	0.864**			
School location	0.679**	0.902**	0.943**		
Students' academic performance	0.566**	0.747**	0.946**	0.859**	
Mean	3.11	3.27	2.72	3.28	3.69
Standard Deviation	0.213	0.248	0.072	0.099	0.328
N	221	221	221	221	221

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

To be more precise and fully test the assumption of the linearity and strengths of relationships between the separate IVs and the DV, the researcher has conducted a correlation analysis whose main results are displayed in the table above. Outcomes show that the classroom physical environment, School libraries, School toilets, School location are significantly correlated with Students' academic performance.

Concerning the strength of relationship, the IVs of the nature of the Classroom physical environment, and School libraries,, (Pearson's r (221) = 0.812, p < 0.01), Classroom physical

environment and School toilets, (Pearson's r (221) = 0.675, p < 0.01), Classroom physical environment, and School location (Pearson's r (221) = 0.679, p < 0.01), Classroom physical environment, and Students' academic performance (Pearson's r (221) = 0.566, p < 0.01), School libraries, and School toilets (Pearson's r (221) = 0.864, p < .01), School libraries and School location (Pearson's r (221) =0.902, p < 0.01), School toilets and School location (Pearson's r (221) =0.943, p < 0.01) , School toilets and Students' academic performance (Pearson's r (221) =0.946, p < 0.01). Hence, from the correlation analysis, it can be concluded that all four measured IVs are significantly correlated. Moreover, due to the confirmed linearity of relationships between the separate IVs and the DV, the precondition to run regression analyses to actually test the previously developed hypotheses is met (Saunders et al., 2016).

Test of Hypothesis

Hypothesis one

H0: classroom physical environment has no significant effect on students' academic performance in secondary schools.

Table 16: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.566[a]	0.320	0.317	0.43517

a. Predictors: (Constant), Classroom physical environment
b. Dependent Variable: Students' academic performance

Figure 8: Students' academic performance
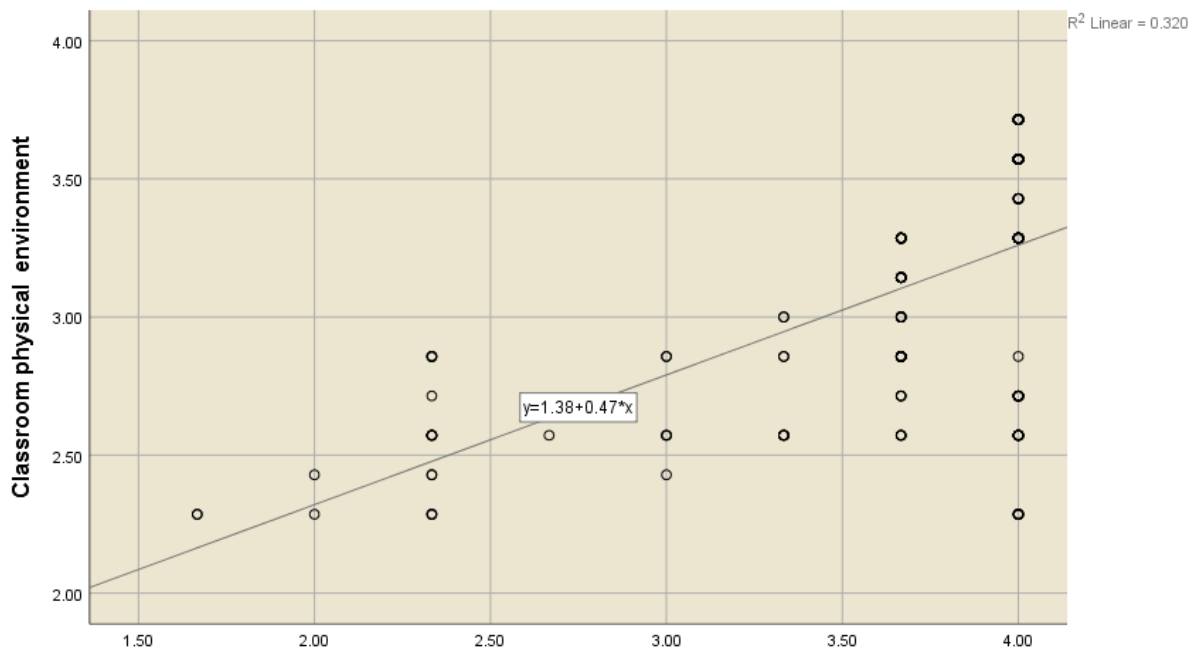
In the table of model summary above, here the Adjusted R square is 0.320, and this shows that in the regression model that we have constructed, the independent variable (classroom physical environment) accounts for 31.7 per cent of the variance in the dependent variable (Students' academic performance), which is high, i.e., our regression model is robust. Muijs (2004, p. 165) suggests that, for a goodness of fit from an Adjusted R square. This means that the effect of classroom physical environment has a positive Students' academic performance.

Table 17: Analysis of variance

ANOVA^a

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	19.527	1	19.527	103.111	0.000^b
1	Residual	41.474	219	0.189		
	Total	61.001	220			

a. Dependent Variable: Students' academic performance

b. Predictors: (Constant), Classroom physical environment

ANOVA results show that the linear regression F test has the null hypothesis that Classroom Physical environment does not have a statistically significant effects on students' academic performance. In other words, $R^2 = 0$, with $F(1, 219) = 103.111$, $p = 0.000$, the test is highly significant. Thus, we can assume that Classroom Physical environment have a significant

influence on students' academic performance at p=0.000 in our model. The results above thus demonstrate that Classroom Physical environment is a positive and strong predictor of on academic performance.

Table 18: coefficients value

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.573	.211		7.442	.000
	Classroom physical environment	.682	.067	.566	10.154	.000

a. Dependent Variable: Students' academic performance

The regression equation showed a significant relationship between Classroom physical environment as a predictor scores (t = 10.154, p < 0.000) on students' academic performance. The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in working condition, classroom physical environment will rise by 0.566(56.6 per cent) of one standard deviation unit. This therefore means that classroom physical environment have a significant effect on academic performance in secondary school. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that classroom physical environment has a significant effect on students 'academic performance.

Hypotheses Two

H0: classroom physical school libraries have no significant effect on students' academic performance in secondary schools

Table 19: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.859[a]	0.737	0.736	0.27062

a. Predictors: (Constant), School libraries

b. Dependent Variable: Students' academic performance

Figure 10: Students' academic performance
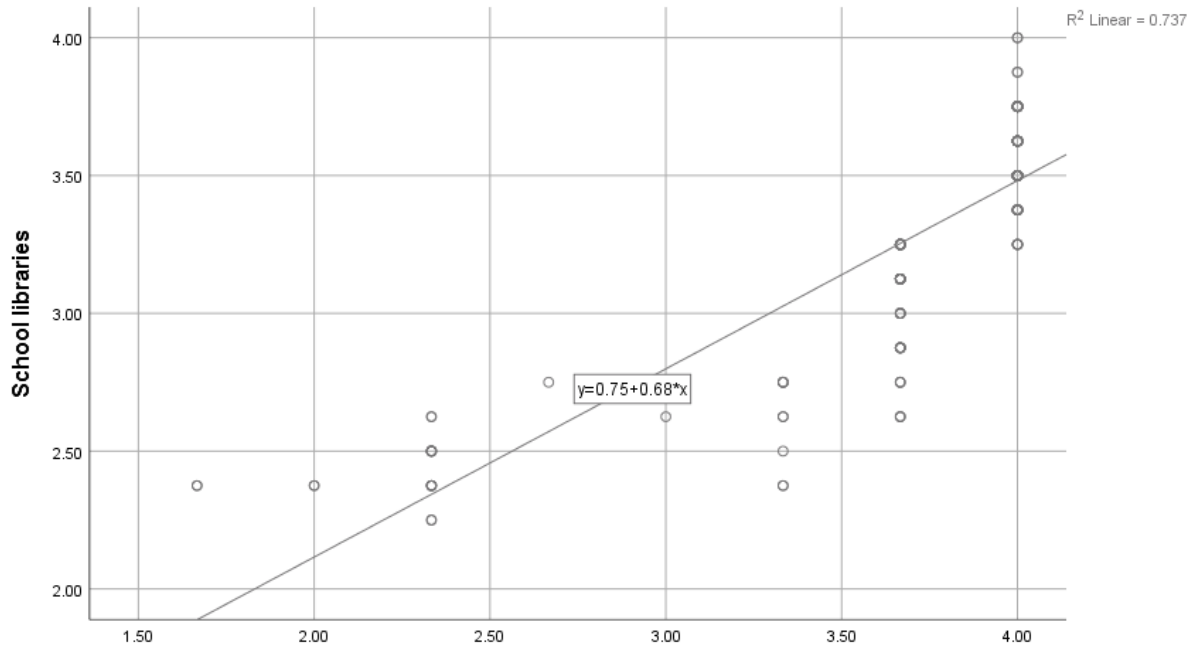
In the table of model summary above, here the Adjusted R square is 0.736, and this shows that in the regression model that we have constructed, the independent variable (school libraries) accounts for 73.6 per cent of the variance in the dependent variable (Students' academic performance), which is high, i.e. our regression model is robust. Muijs (2004, p. 165) suggests that, for a goodness of fit from an Adjusted R square. This means that the effect of school libraries has a positive Students' academic performance

Table 20: Analysis of variance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	44.962	1	44.962	613.960	0.000[b]
	Residual	16.038	219	0.073		
	Total	61.001	220			

a. Dependent Variable: Students' academic performance

b. Predictors: (Constant), School libraries

ANOVA results show that the linear regression F test has the null hypothesis that school libraries does not have a statistically significant effects on students' academic performance. In other words, $R^2 = 0$, with $F (1, 219) = 613.960$, p=0 .000, the test is highly significant. Thus, we can assume that school libraries have a significant influence on students' academic performance at p=.000 in our model. The results above thus demonstrate that school libraries are a positive and strong predictor on academic performance.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.163	0.144		1.132	0.259
	School libraries	1.079	0.044	0.859	24.778	0.000

a. Dependent Variable: Students' academic performance

The regression equation showed a significant relationship between school libraries as a predictor scores (t = 24.778 p < 0.000) and academic performance. The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in working condition, school libraries will rise by 0.859(85.69 per cent) of one standard deviation unit. This therefore means that school libraries have a significant effect on academic performance in secondary school. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that school libraries have a significant positive effect on students 'academic performance.

Hypothesis Three

H0: School toilet does not significantly influence on students' academic performance in secondary schools

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.747[a]	0.559	0.557	0.35059

a. Predictors: (Constant), School Toilet

b. Dependent Variable: Students' academic performance

In the table of model summary above, here the Adjusted R square is 0.557, and this shows that in the regression model that we have constructed, the independent variable (school toilet) accounts for 55.7 per cent of the variance in the dependent variable (students' academic performance), which is high, this means that the effect of school toilet has a positive on students' academic performance.

Figure 11: Students' academic performance
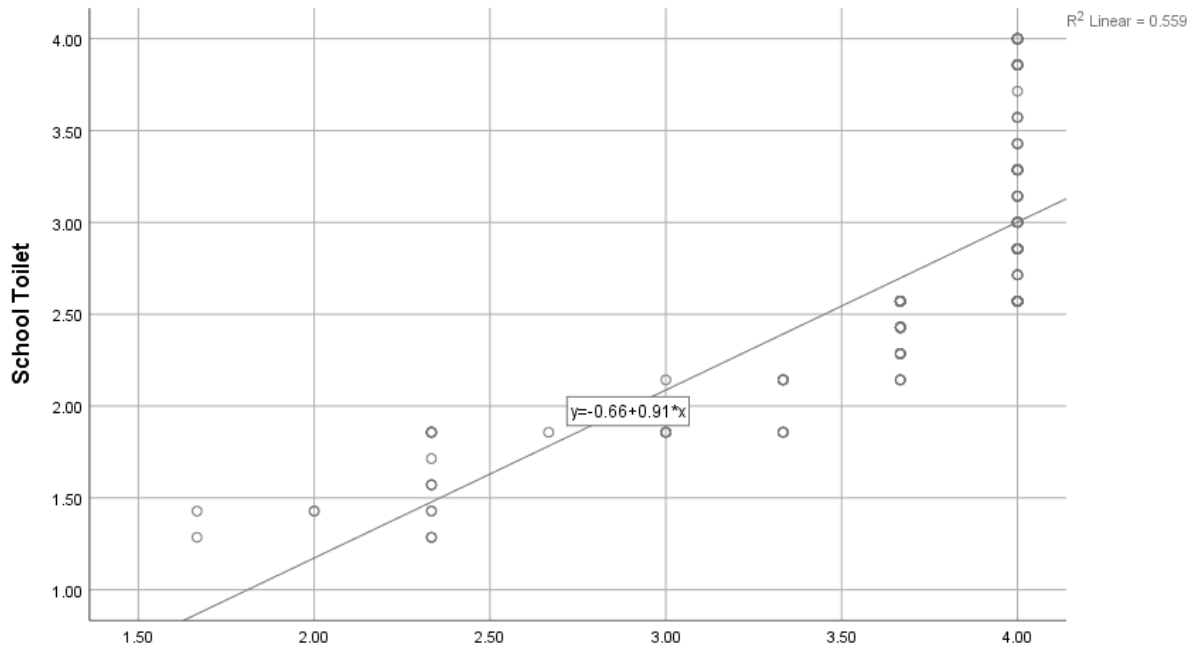
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.083	1	34.083	277.290	0.000[b]
	Residual	26.918	219	0.123		
	Total	61.001	220			

a. Dependent Variable: Students' academic performance

b. Predictors: (Constant), School Toilet

ANOVA results show that the linear regression F test has the null hypothesis that school toilet does not have a statistically significant effects on students' academic performance. In

other words, $R^2 = 0$, with $F(1, 219) = 277.290$, $p = 0.000$, the test is highly significant. Thus, we can assume that school toilet has a significant influence on students' academic performance at $p = .000$ in our model. The results above thus demonstrate school toilet has a positive effect on students' academic performance

Coefficients^a

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.033	0.103		19.778	0.000
	School Toilet	0.611	0.037	0.747	16.652	0.000

a. Dependent Variable: Students' academic performance

The regression equation showed a significant relationship between school toilet as a predictor students' academic performance score ($t = 16.652$, $p < 0.000$). The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in school toilet, students' academic performance will rise by 0.747(74.7 per cent) of one standard deviation unit. This therefore means that school toilet has a significant effect on students' academic performance. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that school toilet has a significant effect on students' academic performance.

Hypothesis Four
H0: School location does not significantly influence on students' academic performance in secondary schools
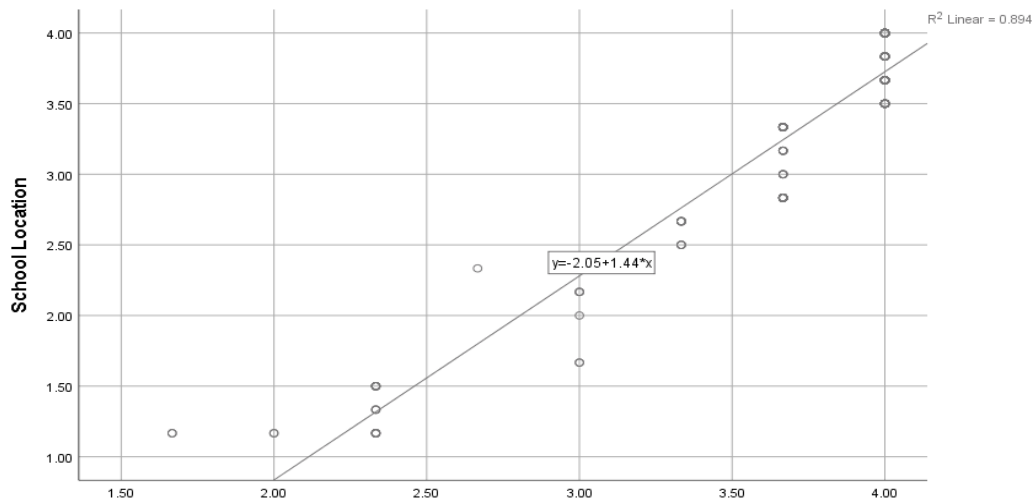
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.946^a	0.894	0.894	0.17162

a. Predictors: (Constant), School Location
b. Dependent Variable: Students' academic performance

Figure 12: Students' academic performance

In the table of model summary above, here the Adjusted R square is 0.894, and this shows that in the regression model that we have constructed, the independent variable (school location) accounts for 89.4 per cent of the variance in the dependent variable (students' academic performance), which is high, i.e., our regression model is robust. Muijs (2004, p. 165) suggests that, for a goodness of fit from an Adjusted R square. This means that the effect of school location has a positive on students' academic performance

ANOVA^a

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.551	1	54.551	1852.202	0.000^b
	Residual	6.450	219	0.029		
	Total	61.001	220			

a. Dependent Variable: Students' academic performance

b. Predictors: (Constant), School Location

ANOVA results show that the linear regression F test has the null hypothesis that school location does not have a statistically significant effects on students' academic performance. In other words, $R^2 = 0$, with $F (1, 219) = 1852.202$, p= 0.000, the test is highly significant. Thus, we can assume that school location has a significant influence on students' academic performance at p=.000 in our model. The results above thus demonstrate school location is a positive effect on students' academic performance.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.662	0.049		34.138	0.000
	School Location	0.619	0.014	0.946	43.037	0.000

a. Dependent Variable: Students' academic performance

The regression equation showed a significant relationship between school location as a predictor students' academic performance score (t = 43.037, p < 0.000). The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in school location, students' academic performance will rise by .946(94.6 per cent) of one standard deviation unit. This therefore means that school locations have a significant effect on students' academic performance. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that school location has a significant effect on students' academic performance.

CHAPTER FIVE

DISCUSSION OF FINDINGS AND RECOMMENDATIONS

The objective of this work has been to find out how school physical environment influences students' academic performance in some public secondary schools in Mfoundi division. The research instrument used for study is the questionnaire. This study posed a set of questions while placing the hypothesis and their relationships within the study variables. It also arrived at several results that confirmed the problem and hypothesis posed in chapter1. Data collected was analyzed using SPSS 23 version. In this chapter, we shall analyze the findings in relation to the hypothesis, objectives and the views of others. We shall also give the limitations, some recommendations and suggestions for further study on the phenomenon. However, this study arrived at several results that might add to improving the quality education in Mfoundi division and why not in Cameroon

SUMMARY OF FINDINGS

The obtained results can be summed up as follows based on the data that was evaluated and the study hypothesis that was examined in chapter 4;

The mean of all variables ranges from 3.11 for classroom physical environment ,3.27 for school library, 3.21 for school toilet, 3.28 for school location and 3.69 students' academic performance. This indicates that the respondents all agreed that these different facets put together will improve academic performance in Mfoundi Division.

Concerning the strength of relationship, the IVs of the nature of the Classroom physical environment, and School libraries,, (Pearson's r (221) = 0.812, p < 0.01), Classroom physical environment and School toilets, (Pearson's r (221) = 0.675, p < 0.01), Classroom physical environment, and School location (Pearson's r (221) = 0.679, p < 0.01), Classroom physical environment, and Students' academic performance (Pearson's r (221) = 0.566, p < 0.01), School libraries, and School toilets (Pearson's r (221) = 0.864, p < 0.01), School libraries and School location (Pearson's r (221) =0.902, p < 0.01), School toilets and School location (Pearson's r (221) =0.943, p < 0.01) , School toilets and Students' academic performance (Pearson's r (221) =0.946, p < .01).Hence, from the correlation analysis, it can be concluded that all four measured IVs are significantly correlated. Moreover, due to the

confirmed linearity of relationships between the separate IVs and the DV, the precondition to run regression analyses to actually test the previously developed hypotheses is met.

With respect to the independent (school physical environment) and dependent variables (students' academic performance), the results obtained were as follows;

Research hypothesis 1

H_{a1}: The classroom physical environment has a statistically significant influence on students' academic performance.

Research question: what is the effect of classroom physical environment on students' academic performance?

H_{a2} was accepted and H_{02} was rejected. This indicates that specific research question 2 was answered in confirmation of the hypothesis results. The regression equation showed a significant relationship between Classroom physical environment as a predictor scores (t = 10.154, p < 0.000) on students' academic performance. The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in working condition, classroom physical environment will rise by .566(56.6 per cent) of one standard deviation unit. This therefore means that classroom physical environment have a significant effect on academic performance in secondary school. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that classroom physical environment has a significant effect on students 'academic performance.

Lodhi et al. (2019) studied school environment and students' academic performance in Pakistan. The research was conducted in Punjab province and involved students, teachers, and principals in public high schools. The research aimed at establishing associations between school learning environment and students' academic performance in English language. The study found that factors of school learning environment such as infrastructure, facilities, teacher quality, teaching approaches, academic support, teacher-student, and school-parent relationships were predictors of students' academic performance. The investigation established that a favorable school learning environment enhances students' academic performance in high school. This finding corroborates United Nations Children's Fund (UNICEF) objectives of Child-Friendly Schools (CFS) (Osher et al., 2009).

Research Hypothesis 2

H$_{a2:}$ school library has a statistically significant influence on students' academic performance.

 Research Question 2: what is the effect of school library on students' academic performance?

H$_{a2}$ was accepted and H$_{02}$ was rejected. This indicates that specific research question 2 was answered in confirmation of the hypothesis results. The regression equation showed a significant relationship between school libraries as a predictor scores (t = 24.778 p < 0.000) and academic performance. The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in working condition, school libraries will rise by .859(85.69 per cent) of one standard deviation unit. This therefore means that school libraries have a significant effect on academic performance in secondary school. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that school libraries have a significant positive effect on students 'academic performance

The finding was support by the study of Daramola (2013) posits that the significance of a library in school environment is inestimable, most especially at the foundation stage of education. The development of reading habit in the life of people takes its root from early use of school libraries. Morris (2004) points that school libraries are established to provide a range of learning opportunities for both large and small groups as well as individuals with a focus on intellectual content and information literacy to enhance and improve the intellectual content of school libraries, they must be subjected to sound policy formulation and effective implementation.

Research Hypothesis 3

H$_{a3}$: school toilet has a statistically significant effect on students' academic performance.

Specific research question 3: To what extent does Wash facilities influence students' academic performance?

According to this result, H$_{a3}$ was confirmed while H$_{03}$ was rejected. The positive confirmation of specific hypothesis 3 in this research is indicative of the fact that H$_{a3}$ has a statistically significant influence on quality assurance. The regression equation showed a significant relationship between school toilet as a predictor students' academic performance score (t = 16.652, p < 0.000). The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in school toilet, students' academic performance will rise by .747(74.7 per cent) of one standard deviation unit. This therefore means that school toilet has a significant effect on students' academic performance. Thus, the null hypothesis was

rejected and the alternative hypothesis accepted which states that school toilet has a significant effect on students' academic performance

This finding agrees with the following studies:

Academic studies have demonstrated that having proper WASH activities in schools can help students improve their knowledge, practice, and health by lowering the number of days missed in school due to menstrual periods or giving them more time to complete learning objectives (Bowen et al. 2007; Lopez-Quintero et al. 2009; Freeman et al. 2012; Jasper et al. 2012). The reduction of diarrheal illnesses among students is estimated to result in 1.9 billion school days achieved (Hutton & Haller 2004), while lack of sanitation is blamed for 272 million school days lost each year and for the intestinal worm infestation of an estimated 400 million children (Hutton & Haller 2004; Zomerplaag & Moojiman, 2005).

Research Hypothesis 4

H_{a4}- school location has a statistically significant effect on students 'academic performance.

Specific research question 4: To what extent does school location affects students' academic performance.

H_{a4} was accepted while H_{04} was rejected confirming research hypothesis 4 and specific question no 4 respectively.

The regression equation showed a significant relationship between school location as a predictor students' academic performance score (t = 43.037, p < 0.000). The Standardize Coefficients Beta (β) tells us, that for every standard deviation unit change in school location, students' academic performance will rise by .946(94.6 per cent) of one standard deviation unit. This therefore means that school locations have a significant effect on students' academic performance. Thus, the null hypothesis was rejected and the alternative hypothesis accepted which states that school location has a significant effect on students' academic performance.

School facilities such as buildings are very essential to the academic development of the students. Apart from protecting the pupils from the sun, rain, heat and cold, school building represents learning environment which has great impact on the comfort, safety and performance of the children (Okechukwu & Oboshi, 2021). This support by this study.

LIMITATION OF THE STUDY

The sample size of this study is made up of 221 respondents which is considered to be large but the issue with this survey is that not all the questionnaires were returned. We however believe that the results would be more trustworthy if the sample size was larger that would cover the entire center region.

The research instrument that was used for data collection is the questionnaire made up of closed structures items. This limited respondents from giving answers that reflected their opinions.

Some limitations were also noticed at the level of review of literature as most of the books were reviewed online. At times there was poor connection and some books and articles were not accessible because of financial limitations.

i equally had limitations during the administration of the instrument since it was administered only in one division in the center region. The researcher would have love to reach out to respondents in other divisions in the center region.

Theoretically, this study was limited to two theories; that is to say the Ecological System Theory and School Climate Theory.

RECOMMENDATIONS

Keeping in view the above-mentioned findings, the recommendations are given as below;

i. Home environment is the most significant factor affecting student's academic achievement. There are various factors in home environment which are lacking in our homes for our children, which has a negative impact and a low correlation with students' academic achievement. Therefore, it is recommended that students should be provide a serene home environment for studies which could help to promote student's overall development. The most suitable mean is to give proper time to children, and an educative environment at home.

ii. Family member's interactions at home are great source of development for children. It provides a source for the social and intellectual development of children. It also enhances children confidence level. It is therefore recommended that students should be exposed to inner interactions of family; they should be allowed to express their view point on different family matters and might be treated as a functional member of the family.

iii.   All educational related activities could hardly be practically applied without relevant study material stationary, and other physical facilities. All these facilities and equipment's are the basic needs of education. It is to recommend, therefore, that the educators should encourage parents to provide the necessary means of academic success such as stationary, books, separate study room and homework facilities at their respective homes which will result in improvement of education related performances. Khan, Begum & Imad. Self-esteem is a significantly valuable factor in the life need of every individual. Self-esteem is important in terms of inner self satisfaction. Child's self-respect should be taken care of; therefore, it is recommended that child may be provided sufficient space and

CONCLUSION OF CHAPTER

A school, as a learning institution and as a second home for learners, has a strong relationship with students' academic performance. The teachers through their specific roles either have negative or positive influence on students' academic performance. Therefore, the Head teacher and the teachers should enhance an environment conducive learning in which the learners are free to consult them when in need, provide adequate learning facilities and arouse interest in the learners to work hard. The study established that home and school environments exert potent influence on students' academic performance. These factors directly and indirectly pointed to areas that have to be addressed in order to promote good academic performance. If the parents/guardians and government could improve the learning environment of the students and motivate them, it is most likely that students' academic performance will improve. Peer level factors also have a relationship with students' academic performance. Students whose friends engage in negative activities such as use of drugs, sneaking out of school and being absent from school chronically are likely to have lower academic performance.

The principals of public secondary schools should develop a rapport and understand the feelings and needs of their students. They should also provide an environment in which the students feel better to learn and be available to students for consultation when in need. The students should be encouraged to choose their friend wisely as some have negative influence on their academic performance, especially those who sneak out of school, use drugs and them that do not attend school regularly

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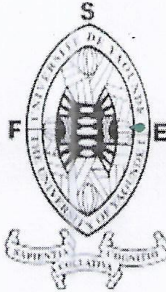
APPENDIXES

Appendix 1: Research authorization

REPUBLIQUE DU CAMEROUN
Paix – Travail – Patrie
*****
UNIVERSITE DE YAOUNDE I
*****
FACULTE DES SCIENCES DE
L'EDUCATION
*****
DEPARTEMENT DE
CURRICULA ET EVALUATION

REPUBLIC OF CAMEROON
Peace – Work – Fatherland
*****
THE UNIVERSITY OF YAOUNDE I
*****
THE FACULTY OF EDUCATION
*****
DEPARTMENT OF CURRICULUM
AND EVALUATION

The Dean

N° _688_ /23/UYI/FSE

AUTORISATION FOR RESEARCH

I the undersigned, **Professor BELA Cyrille Bienvenu,** Dean of the Faculty of Education of the University of Yaoundé I, hereby certify that **NKONGHO Lydia AKO,** Matricule **21V3470**, is a student in Masters II in the Faculty of Education, Department: *CURRICULUM AND EVALUATION*, Specialty: *CURRICULUM AND EVALUATION.*

The concerned is carrying out a research work in view of preparing a Master's Degree, under the supervision of **Pr. NDI Julius.** Her work is titled *« Impact of Environment on students learning».*

I will be very grateful if you provide her all the information that can be helpful in the realization of her research work.

This Authorization is to serve the concerned for whatever purpose it is intented for.

Done in Yaoundé, le... 190123

For the dean, by order

Dr. Mbeh Adolf Tanyi

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Appendix 2: Questionnaire for students

UNIVERSITE DE YAOUNDE I ****** **FACULTE DES SCIENCES DE L'EDUCATION** ****** **CENTRE DE RECHERCHE EN SCIENCES SOCIALES ET EDUCATIVES**		**THE UNIVERSITY OF YAOUNDE I** ****** **FACULTY OF SCIENCES OF EDUCATION** ****** **POST GRADUATE SCHOOL FOR SOCIAL AND EDUCATIONAL SCIENCES** ******

QUESTIONNAIRES

Dear Students:

I am a final year master student of the University of Yaoundé 1, Department of Curriculum and Evaluation of the faculty of Education. I am conducting research on the topic "School Physical Environment and its Impact on students' Academic Performance in selected secondary schools in the Mfoundi Division".

The purpose of the questionnaire is to get information from students on the above research topic. In order to carry out this research, your corporation in filling out the research questionnaire is needed. You are therefore required to be honest in your response as the research is purely for academic purposes, and all information supplied shall be treated confidentially, your name is not required anywhere on this questionnaire. Thanks for your anticipated co-operation.

Yours Sincerely

Nkongho Lydia Ako

SECTION A: Personal Data (Information)

Read the following statements thoroughly and indicate the answer that best corresponds to your opinion by ticking in the appropriate column provided or by filing the blanks

Sex: male ☐ female ☐

Name of school: _____

Age: 16 - 18 ☐ 19 – 21 ☐ 22 - 24 ☐ 25 and above ☐

Sub divisions of School Location: _____

(INSTRUCTIONS)

Below are some statements designed to get a response on digital learning platform as an indicator of student's engagement and satisfaction in some secondary schools in Mfoundi

Strongly agree ………………………………………………. (SA)

Agree ………………………………………………………… (A)

Disagree ……………………………………………………… (D)

Strongly Disagree ………………………………………….... (SD)

Tick the appropriate opinion.

Section B.

Cluster A: Classroom Physical Environment

SN	Statement	SA	A	D	SD
1.	The classroom is large enough for learning				
2.	The seats in the classroom are comfortable for learning				
3.	The lighting in the classroom is appropriate during study period				
4.	The classroom learning environment is conducive				
5.	Classrooms are well ventilated				
6.	My school classroom has sufficient benches.				
7.	My classroom has sufficient space.				

Cluster B. School Libraries

SN	Statement	SA	A	D	SD
1.	Using the library helps me to read more				
2.	Using the library helps me do better in my academics.				
3.	There is a well-equipped library in the school				
4.	There is a lot of relevant information to my study in the library				
5.	Using library helps me improve in my academic performance				
6.	The school library has enough space for everyone to study				
7.	The school library is equipped with computer.				
8.	The school library is equipped with books of all subjects for students to study.				

Cluster C. School Toilets

SN	Statement	SA	A	D	SD
1.	The school environment is clean				
2.	There is clean water for students				
3.	My school provide sanitary material.				
4.	School toilets have hand wash utensils				
5.	My school has well distributed toilets for girls, boys and teachers				
6.	My school maintains clean and orderly compound				
7.	The school maintain regular cleaning of the toilets				

Cluster D. School location

SN	Statement	SA	A	D	SD
1.	Noise coming from outside of the classroom is often a problem for students to concentrate				
2.	My school is far away from home				
3.	The school is located in a quite environment.				
4	The school is located in a safe environment.				
5	My school is located away from the main road.				
6.	I feel safe on my way to and from school.				

SECTION B. Students' academic performance

SN	Statement	SA	A	D	SD
1.	I score better grade points in a clean and healthy school environment				
2.	Lighting and ventilation influence my test score during sequence evaluation				
3.	My term average is excellent because of the library facilities I use				