

UNIVERSITY OF EDUCATION, WINNEBA

THE INFLUENCE OF SCHOOL INFRASTRUCTURE ON STUDENTS
ACADEMIC PERFORMANCE AT SELECTED BASIC SCHOOLS IN THE
BOSOMTWE DISTRICT

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**A Project Report in the Department of Educational Leadership, Faculty of
Education and Communication Sciences, submitted to the School of Graduate
Studies, University of Education, Winneba, in partial fulfilment of the
requirements for award of the Master of Arts (Educational Leadership) degree**

DECEMBER, 2018

DECLARATION

STUDENT'S DECLARATION

I, EMELIA BONSU, declare that this project report, with the exception of quotations and references contained in published works which have all been duly acknowledged, is entirely my own original work, and that no part of it has been presented for another degree in the university or elsewhere.

SIGNATURE:.....

DATE:.....

SUPERVISOR'S DECLARATION

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

SUPERVISOR'S NAME: DR. STEPHEN BAFFOUR ADJEI

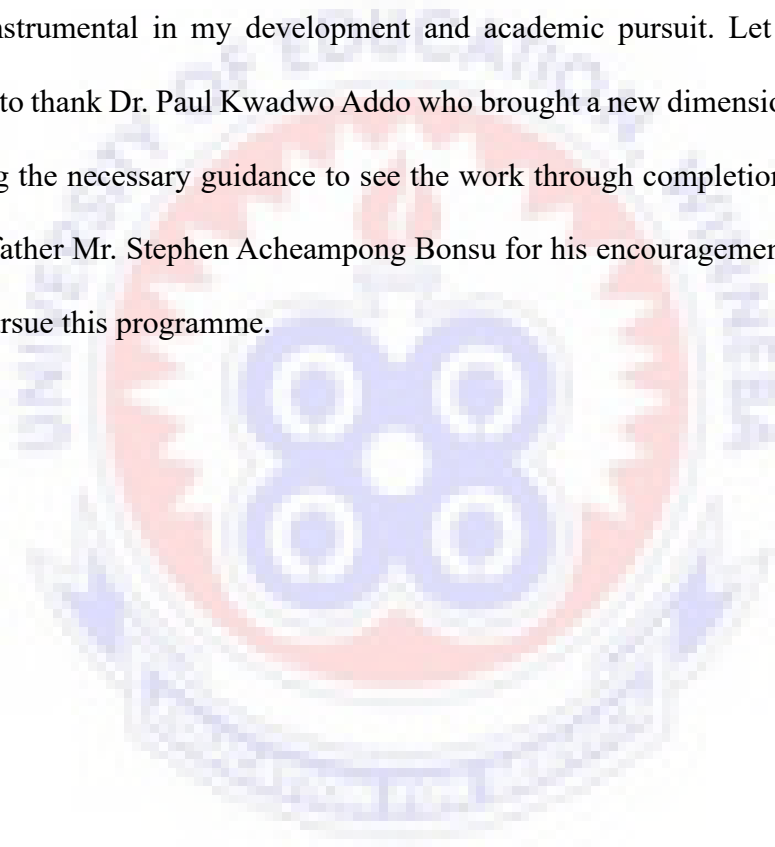
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ACKNOWLEDGEMENTS

I thank God Almighty for His protection and guidance. The successful completion of this dissertation would not have been possible without the assistance and guidance of my supervisor, Dr. Stephen Baffour Adjei. Your corrections, suggestions and remarkable virtue are well noted and appreciated. Kindly accept my profound gratitude.

I am indebted to my Husband Mr. Charles Okyere Darko. I also thank Mrs. Evelyn Attakorah for her prayers and financial support. A special gratitude to Nana Effah Asare for being instrumental in my development and academic pursuit. Let me take this opportunity to thank Dr. Paul Kwadwo Addo who brought a new dimension to the work by providing the necessary guidance to see the work through completion. And finally to my dear father Mr. Stephen Acheampong Bonsu for his encouragement and support for me to pursue this programme.



DEDICATION

To my daughters Fitnat Okyere Darko and Afia Ampong Kyei



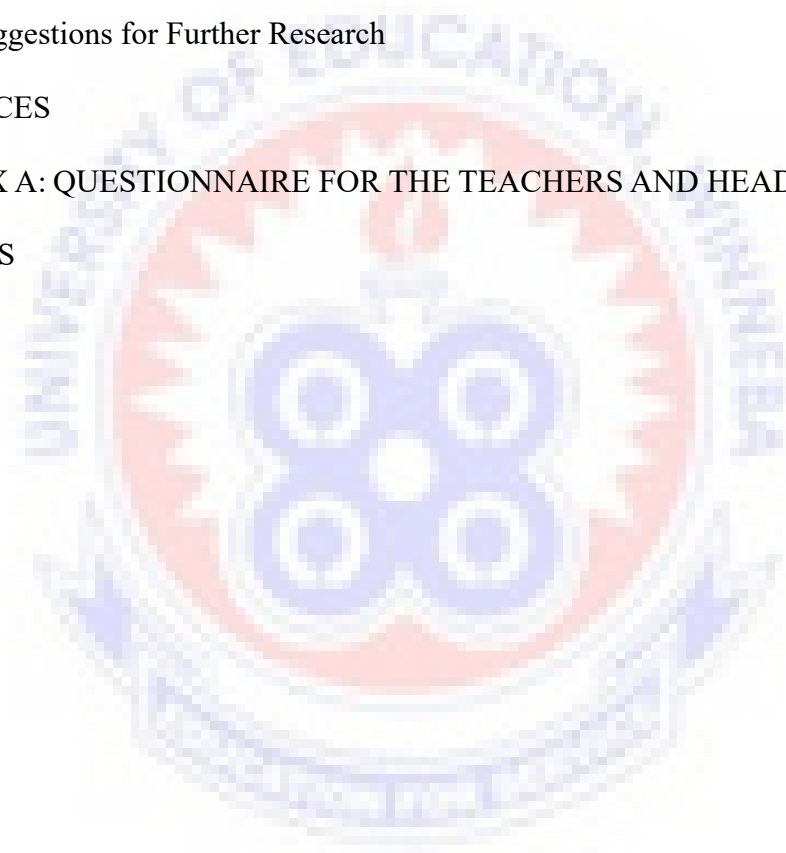
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ABSTRACT

The study assessed the influence of school infrastructure on students' academic performance in selected basic schools in the Bosomtwi District. The researcher used descriptive survey design for the study. This research employed quantitative research methods. The population for the study included head teachers, and teachers of three selected basic schools in the Bosomtwi District. The sample size was 39 respondents. The purposive sampling technique was used to select all the thirty nine (39) participants for the study. Questionnaire was the main instrument used to gather primary data. The data was analyzed with the use of descriptive statistics indicating the frequencies and percentages. The study results indicated that relevant books for the subjects students learnt at school were not enough. Also, laboratory equipment for experiment were not available. Moreover, the school buildings were not well maintained. They indicated that classrooms with electricity, computer rooms, and scientific equipment for teaching science were not available at the Pramso D/A Basic School, Aputugya R/C Basic school, and Feyiase D/A Basic schools. Moreover, lack of educational resources in the schools has been a major problem in the instructional process. Also, the school environment were handicapped by the non-availability of these teaching and learning facilities and this strongly affected the level of students' academic performance. In conclusion the, poor teaching and learning environment resulted in poor academic performance of students at the selected schools. The study recommended that the Ghana Education Service through the District Education Directorate should provide adequate educational infrastructure and teaching and learning materials to improve teaching and learning at the selected schools.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

“Learning is a complex activity that puts students’ motivation and physical condition to the test” (Lyons, 2002, p. 10). It has been a long-held assumption that curriculum and teaching have an impact on learning. However, it is becoming more apparent that the physical condition of our schools can influence student achievement. The school physical facilities are known as school plant and it includes the school buildings, classrooms furniture, equipment, instructional materials, laboratories, libraries, play grounds. In a study conducted by Grubb, (2008), teaching and Learning Materials or Resources (TLMs) are sources of supply, support or aid that can be readily drawn upon to assist teachers to give clear and understandable lessons to students. In the context of classrooms management, TLMs/resources are used as physical demonstration aids, students’ contextual understandings, teacher subject expertise, and structured organization of materials, ideas, and activities (Grubb, 2008).

Inyang-Abia (2008) identified the following categories of instructional materials, visual, prints, graphics, electronic, projectiles and audiovisuals, instructional materials. According to him, when these materials are adequately made available for studies they will facilitate the teaching and learning process, thereby increasing performance for both the students and teachers. Educational facilities refer to school space, classrooms, furniture, libraries, toilets water, the standard of construction and conditions of facilities and others (Ankomah et al., 2015).

The points of contact at which students interact with these resources (noting that students themselves can be a resource) are where knowledge construction can occur. In

the past, educators and policy makers believed that by providing more resources, in the forms of money and materials, they could directly improve student-learning outcomes (Cohen, Raudenbush, & Ball, 2012). This turns out not to be entirely true. Resources themselves are not self-enacting, that is, they do not make change inevitable. Differences in their effects depend on differences in their use to aid teaching in the classroom (Cohen, Raudenbush, & Ball, 2012; Grubb, 2008).

Lezotte and Passiroque (2008) carried out a study to find out the effect of school buildings on students' academic achievement. They formulated hypotheses based on prior students' achievement with study background, school building and students' achievement. A total of 2,500 randomly selected students from 20 modern schools were used as sample. The Pearson's product moment correlation coefficient statistical tool was employed at 0.05 alpha level of significance. The result showed that the school building accounts for significant variance in academic achievement. They recommended that classrooms should be spacious to promote flexibility of usage in groups and individual activities. Similarly, classroom plays a vital role in the education of the child.

According to Nwachukwu (2014), the physical setting for learning affects the learner. The setting must be attractive enough to make students wish to spend long hours there. What we have presently in most of our secondary schools does not meet these requirements. The roof may still be in place or may have been blown off by wind. If the later is the case, students are forced to study without being protected from the effects of the weather.

This kind of situation as stated by Nwachukwu (2014) in which the physical comfort of the students cannot be guaranteed is not ideal for learning and does not enhance academic achievement. On the issue of instructional materials, Mbipom (2000)

described instructional materials as that which the teacher uses to achieve his set objectives. She further observed that lack of educational resources in our schools has been a major problem in the instructional process. She further concluded that ideally, no effective education can take place without equipment, facilities, materials etc. In her observation, a school environment that is handicapped by the non-availability of these teaching and learning facilities may strongly affect the level of students' academic performance. This then implied that learning equipment and materials have their own effects on the academic performance of the students. Therefore, this study would assess the impact of school infrastructure on student's academic performance in selected Basic schools in the Bosomtwi District.

1.2 Statement of the Problem

Education is a human right and schools are the platforms for which this right is enhanced. A school is capable of facilitating this right when adequate infrastructure such as libraries, classrooms, dining halls, laboratories and workshops, furniture and other teaching and learning materials are available. On the contrary, across the length and breadth of this country schools right from the kindergarten to the senior high school level seem to be bedeviled with infrastructural challenges – a challenge that keeps making it difficult for the academic success of those who happen to attend these schools.

The problem of poor infrastructure runs through our educational sector right from early childhood to the senior high school level. News reportage on the educational sector especially in the Bosomtwe District reports the following: pupils sitting on the bare floor, pupils learning under a tree or in dilapidated classrooms, pupils learning without the requisite teaching and learning materials – a situation that makes access, equity and quality nothing but mere words.

The research gap is that no research work has been conducted in selected primary schools in the Bosomtwi District to ascertain the influence of school infrastructure on students' academic performance in selected primary schools in the Bosomtwi District. Therefore, the aim of the study is to address the issues.

1.3 Purpose of the Study

The main purpose of the study was to assess the influence of school infrastructure on students' academic performance in selected basic schools in the Bosomtwi District.

1.4 Specific objectives of the Study

The study was guided by the following specific objectives,

1. To identify the kinds of school infrastructures available at the selected basic schools in the Bosomtwi District.
2. To investigate the influence of school equipment and instructional materials on students' academic performance.
3. To investigate the extent to which school facilities influence student enrolment and attendance in selected basic schools in the Bosomtwi District.

1.5 Research Questions

The following research questions was used to answer the objectives of the study,

1. What kinds of school infrastructures are available at the selected basic schools in the Bosomtwi District?

2. What is the influence of school equipment and instructional materials on students' academic performance?
3. How do school facilities influence student enrolment and attendance in the selected basic schools in the Bosomtwi District?

1.6 Significance of the Study

The research provided useful information for the Ministry of Education, Headteachers, and teachers of the selected primary schools to enhance the use of teaching and learning materials to improve students' learning. The study enhanced the used of teaching and learning materials and other educational resources to improve students' learning and academic performance. The study findings generated would be used by the Ministry of Education to improve the status of school physical infrastructure in public schools. The findings of this study also helped to sensitize parents and community on the importance of providing infrastructural equipment and materials for used by students. The findings would enabled the government to enrich the current policies and device ways of improving children's academic outcomes through the use of infrastructural resources. The generated information will be added to the body of knowledge for future scholars to benefit from.

1.7 Scope of the Study

The main purpose of the study was to assess the impact of school infrastructure on students' academic performance in selected basic schools in the Bosomtwi District. Therefore, this study was geographically limited in scope to the Ashanti Region of Ghana. The study was conceptually, theoretically and empirically limited in scope to the used of school infrastructure to improve students' academic performance.

1.8 Definition of Terms /Concepts

Teaching materials: the resources a teacher uses to deliver instruction. Each teacher requires a range of tools to draw upon in order to assist and support student learning.

School infrastructure - School buildings, classrooms, playgrounds and libraries are the most important aspect of school infrastructure. Spacious and refurbished buildings and well- ventilated classrooms are a must in schools. Properly planned school infrastructure is an out-and-out key factor in effective teaching and learning.

1.9 Organization of the Study

The study was divided into six chapters. Chapter one was mainly concerned with the introduction to the study, it included background to the study, statement of the problem, purpose of the study, significance of the study and over view and a plan for the work. Chapter Two concentrated on review of related literature on the subject matter. This was a critical appraisal of both the conceptual, empirical and theoretical review of other people works in relation to the use of school infrastructure to improve students' academic performance. Chapter Three was the methodology adopted in data collection and analysis. It explains in detailed the various methodological approaches used in the study. It included the research design, research approach, the population, sample and

sampling method, data collection and analysis and summary of statistical methods used in the study. Chapter Four was the analysis of research findings. Chapter five discussed the results of the study to answer the research questions. Chapter Six gave a summary of the findings, conclusion of the study and recommendations.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter contains the literature review related to teaching and learning materials/resources and its usage in the classroom management to improve academic performance.

2.1 Theoretical Framework of the Study

2.1.1 Ecosystem Theory of Educational Resources and its impact on resource adoption

Another way to conceptualize the complex relationships between teachers, students, and TLMs or educational resources is as an ecosystem. Zhao & Frank (2013) presented an ecosystem model to explain factors influencing technology adoption and use in classrooms. All actors in the ecosystem interact with one another and those interactions are vital to any actor's "survival" in the environment. However, in order for students to interact with meaningful content, they rely on their teacher to make the content accessible. Also, in order for any resource (technological or otherwise) to "survive" in the classroom climate, the teacher has to recognize its value and make it available for student use. With this metaphor, the teacher is the keystone species, computer uses are a "living" species, and the introduction of new resources, such as external educational innovations, can be seen as the "invasions of exotic species" (p. 811).

Zhao and Frank argue that classroom ecosystems, like biological ecosystems, exist in a state of homeostasis – where the environment is in balance and each species has their role, or niche, in the hierarchy. Therefore, invading species, such as new educational technologies or educational interventions, are unlikely to survive or last

unless they are compatible with the established teaching and learning environment (p. 813). Zhao and Frank (2013) tested the usefulness of an ecosystem model of classrooms for the purpose of understanding educational technology adoption by conducting a study of technology use in 19 different elementary schools in four school districts in mid-western United States.

They gathered survey data from all school staff, interviews with administrators and technology staff, and interviews and observations from four of the participating schools - one from each participating district. Once the data was collected, the researchers categorized possible influences of technology use into six categories: the ecosystem, the teacher's niche in the ecosystem, teacher ecosystem interaction, teacher-computer predisposition for compatibility, and opportunities for mutual adaptation. They found that technologies found within classrooms, as opposed to computer labs or other locations in the school, were used more often. Zhao and Frank suggest this is because it costs the teacher considerably more energy to reserve and make use of technology outside their own classrooms than technologies within their classrooms. Also, teachers were the most frequent users of technology, while students were the least frequent users. Teachers often used technology for communicating with colleagues, parents, and administrators. Zhao and Frank argue that the communicative technologies were compatible with the current teaching environment, since they did not require teachers to change or alter their existing teaching practice. Furthermore, the communicative technologies were filling a "niche" in the environment, supporting teacher communication, which allowed those technologies to survive and prosper in the classroom ecosystem. In comparison, student use of technologies both required a reconfiguration of teacher practices and cost considerable energy on the part of the teacher. As such, those technologies were less likely to be used.

Zhao and Frank (2013) also found that teacher-niche in the school ecosystem, as well as their relationship to other “species” in the ecosystem influenced their use of technology. Teachers who perceived pressure from colleagues were more likely to use computers only for their own purposes and were especially resistant to using technology that would require a reconfiguration of their teaching practices. While teachers who received help from colleagues, and had opportunities to experiment with software, were more likely to use computers with their students than for their own purposes. Remarkably, the perceived relative advantage of student use of technology had no statistically significant effects on what technologies were used in classrooms.

This illustrates that teacher rationale for using technology depends most directly on their own uses and needs, supporting their classification as keystone species in the environment. Zhao and Frank conclude that innovations cannot be implemented without a regard to the internal social structures of schools, especially teacher-level factors, and expect to survive in the classroom context. An “evolutionary rather than revolutionary” approach to change in school computer use is called for (p. 833).

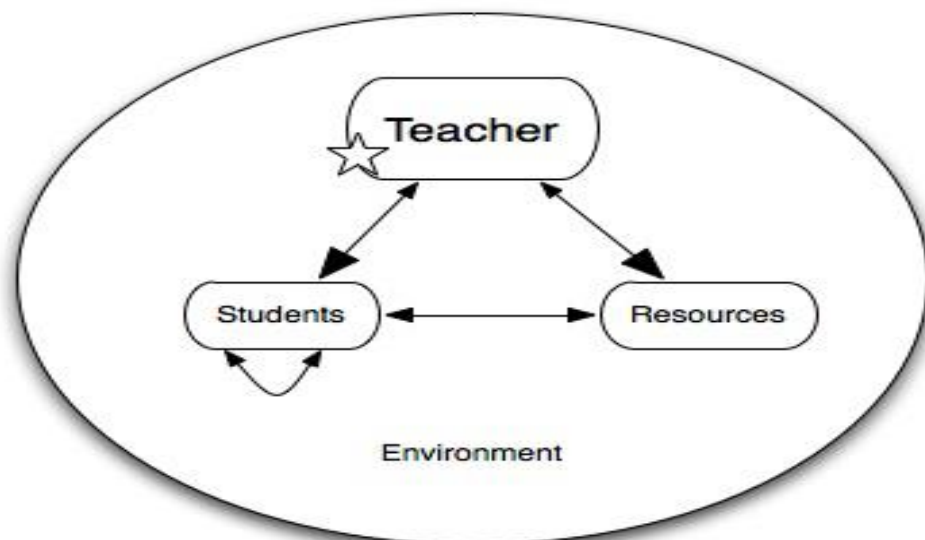


Figure 2.1: Instruction

Source: Cohen, Raudenbush, & Ball, (2012)

2.1.2 Taxonomy model of the Use of Educational Resources and impact on student outcomes

In one such study by Grubb (2008), he defined four categories of classroom resources and evaluated how the presence of these resources impacted factors such as student achievement and continuation of education after high school. Table 2.1 lists and summarizes the four categories of resources in Grubb's taxonomy: simple, compound, complex, and abstract. Traditionally funding structures for education have focused on the increase of simple resources, resources that can be directly bought, in hopes that the increase of these resources would increase student gains. Grubb's study sought to better understand and define the effects of simple resources on a variety of student outcomes, as well as the relationships between varying resources, school level factors, and their impact on students.

Table 2.1: Summary of Grubb (2008) taxonomy of school resources (TLMs)

Type of classroom resource Description

Simple	Resources that are physical objects (eg. textbooks) or classroom factors (eg. teacher experience and expertise) that can be directly bought, adjusted, and measured
Compound	Two or more resources that are jointly necessary for success (eg. class size reduction <i>and</i> adequate teacher preparation)
Complex	Resources that are not easily bought, measured, or adjusted (eg. instructional approaches and teaching philosophies)
Abstract	Resources that are difficult to discern and measure, and often embedded in a web of relationships and practices within a given school (eg. collegial

	decision-making practices, internal teacher accountability, and distributed leadership roles)
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Grubb found that “simple” resources, such as textbooks, technology, increased teacher salary, teacher training, or lower pupil to teacher ratios may be necessary in some instances but not sufficient in and of themselves to influence student outcomes (Grubb, 2008; p. 107). For example, if a school decides to reduce class sizes, yet the teachers continue using the same strategies and practices that they would in a larger class then outcomes were not likely to change. They need the “compound” resource of reduced class size *and* modified instructional strategies. Indeed, many of the simple resources that are often stressed and discussed in education research and politics, such as pupil-teacher ratios, technology, and teacher education levels are not among the most powerful factors influencing student achievement.

While many of the simple resources were necessary for student achievement, they were virtually never sufficient. On the other hand, there were several “complex” and “abstract” resources that had significant impacts on student outcomes. When teachers felt in control of their classrooms in terms of subject material and instruction, identified as an abstract resource, students had higher test scores. Also, school climate, an abstract resource reported on by the students, was correlated positively with student test scores (p.125). For example, innovative math teaching was a particularly powerful complex resource, which affected both student achievement scores and their decision to pursue a 2 or 4-year college qualification (p. 124). Many of the influential complex and abstract resources, such as student perception of school climate and teacher perception that their department encourages innovative teaching, were not influenced by monetary resources available but were rather socially constructed within the schools

themselves. In past research of student achievement in the United States (Caldas & Bankston, 2007), it has been found that family Socio-Economic Status is one of the strongest predictors of student success.

Nonetheless, Grubb (2008), found that the explanatory power of family background proves to be smaller than school resources when complex and abstract resources were taken into account, and therefore, the theory that school effects are overwhelmed by family influences is incorrect (Grubb, 2008; p. 134). For educators and researchers in search of school reform, this is a hopeful finding. It suggests that efforts to improve school quality based on the increase of school constructed complex and abstract resources could be beneficial. However such efforts require a deeper understanding of school dynamics and the way resources are employed and even created in the school and classroom contexts.

2.2 Urie Bronfenbrenner's (2009) ecological systems theory and student academic performance Expectations

This study adopted Urie Bronfenbrenner's ecological systems theory. He developed the ecological systems theory in an attempt to define and understand human development within the context of the system of relationships that form the person's environment. According to Bronfenbrenner's initial theory (2009), the environment, is comprised of four layers of systems which interact in complex ways and can both affect and be affected by the person's development. These are Microsystems, Mesosystem, Ecosystems and Macrosystem. He later added a fifth dimension that comprises an element of time (Bronfenbrenner, 2009) which he called Chronosystem. This theory can be extended to model the development of an organization as well, and is particularly

appropriate for describing the complex systems of a school district or even of an individual school. Each of the four system layers is described below:

2.2.1 Microsystem

The Microsystem is defined as the pattern of activities, roles, and interpersonal relationships experienced by a developing person in a particular setting with particular physical and material features and containing other persons with distinctive characteristics of temperament, personality, and systems of belief (Bronfenbrenner, 2009). In other words, this layer forms a set of structures with which a person has direct contact, and the influences between the developing person and these structures are bidirectional. The person influences and is influenced by the Microsystem. If this theory is extended from human development to organizational development, and an individual school is the unit of interest, the Microsystem of the school would include students, parents and family members, administration, teachers, and the surrounding community (Johnson, 2008).

2.2.2 Mesosystem

The mesosystem, simply stated, comprises the linkages between Microsystems (Bronfenbrenner, 2009). Just as the direction of influence between the school and each structure within the Microsystems is bi-directional, the mesosystem involves bi-directional influences between these various structures. An example of the mesosystem of an individual school can be seen in the interactions and dynamics between two of its microsystems, students and parents.

Parental expectations regarding the academic and extra-curricular success of their children can often create a dynamic that directly and indirectly impacts the atmosphere and climate of the school. Unreasonably high expectations and low tolerance for failure can create a dynamic between parent and child that is characterized by tension and fear. This dynamic impacts the school in various direct and indirect ways, including, for example, student behaviour in the classroom resulting from such expectations, pressures to ensure their children success placed on school personnel by the parent, or an attempt by school personnel to shield students from such parental pressures by restricting the amount of information that is communicated regarding student achievement (Johnson, 2008).

2.2.3 Exosystem

The exosystem represents the larger social system, and encompasses events, contingencies, decisions, and policies over which the developing person has no influence. The exosystem thus exerts a unidirectional influence that directly or indirectly impacts the developing person. The exosystem of an individual school might be comprised of such structures as, for example, state regulations, local economics, district mandates, and local disasters (Johnson, 2008).

2.2.4 Macrosystem

The macrosystem can be thought of as the “social blueprint” of a given culture, subculture, or broad social context and consists of the overarching pattern of values, belief systems, lifestyles, opportunities, customs, and resources embedded therein (Bronfenbrenner, 2009). This system is generally considered to exert a unidirectional influence upon not only the person but the micro-, meso-, and exosystems as well. The macrosystem of an individual school is embodied not only in the cultural, political,

social, and economic climate of the local community, but that of the nation as a whole (Johnson, 2008).

2.2.5 Chronosystem

Although not one of the four system layers per se, the chronosystem represents a time based dimension that influences the operation of all levels of the ecological systems. The chronosystem can refer to both short- and long-term time dimensions of the individual over the course of a lifespan, as well as the socio-historical time dimension of the macrosystem in which the individual lives. The chronosystem of an individual school, therefore, may be represented by both the day-to-day and year-to-year developmental changes that occur in its student body, teaching staff, curricular choices, etc., as well as the overall number of years in operation (i.e., a newer school faces challenges and opportunities that differ from those of a school that has been in operation for a length of time).

In an attempt to understand and investigate the relationship between unavailability of educational resources/teaching and learning materials and poor academic performance in among students of the selected primary schools, one has to take into account the individual students as well as the context within which it occurs. The relevance of this theory to the study is that it impinges on the researcher to view the poor academic performance in the school as a phenomenon that is influenced by wider social systems. The theory opined that school children are directly present within some of these social systems, such as their household, school and immediate neighbourhood, and there are others in which they are not directly represented, but which impinge on their development including their siblings “social networks and their parents” or carers” friendship, leisure, lack of available teaching and learning

materials/educational resources and the workplace relationships (Bronfenbrenner, 2009). In addition, the theory makes us aware of the influences of wider social systems including the cultures, political systems, social institutions, and values that exist in the society and argues that they should be taken into account in children educational upbringing.

By inference, the influences and experiences that result from the interactions between different social systems play a key role in determining the extent to which children perform in school. From the constructs of the ecological theory, the poor performance of the pupils was inextricably linked with the characteristics of social systems like the unavailability of teaching and learning materials. The ecological theory was, therefore, the most appropriate theory for studying the causes of poor academic performance in the school and for locating target(s) of intervention. It was appropriate in that it directs attention to the whole and not to any one part, system, or aspect of the children situation. Consequently, it is within this framework that the present study seeks to investigate the causes of poor academic performance in relation to the availability of teaching and learning materials and its applications. Since learning outcomes depend on the way it is presented to the learner by his or her teacher, the way the learner interacts with the learning experiences presented to him and the environment within which the learning takes place, it is therefore expected that these entities would be affected by factors associated with the school environment, home and community conditions, teacher, education administration and the pupils themselves.

2.3 Empirical Framework of the study

2.3.1 School level Infrastructure

Consider next the impact of school level infrastructure, such as libraries, science laboratories, computers, and even the construction of new schools, on students' educational outcomes.

2.3.2 Overall School Infrastructure

Sixty-one estimates from 14 studies estimate the impact of overall school infrastructure on test scores; of these, 26 estimates are insignificant, 5 are significantly negative, and 30 are significantly positive. The definition of overall school infrastructure varies by study, but can include: the overall condition of the school; the average condition of the classrooms based on space, lighting, noise, and desks (Marshall, 2009); the proportion of usable rooms; an index of school quality (Anderson, 2010); physical facilities and teaching materials (Aslam & Siddiqui, 2013); the reliability of electricity; and the number of specialized instructional rooms (Engin-Demir, 2009). Overall, the evidence indicates that overall school infrastructure increases student learning outcomes.

Four high quality studies examined the impact of overall school infrastructure on test scores; six of the fourteen estimates are insignificant. Of the eight statistically significant estimates, six are positive (Fehrler et al. 2009; & Yamauchi & Liu, 2013) and two are negative (Glewwe & Jacoby, 2014; & Suryadarma et al., 2006), which suggests a positive impact of school infrastructure on student learning. Turning to Latin America, there were 31 estimates from five studies of the impact of overall school infrastructure on test scores: 27 are positive, of which 21 are significant, and 4 are negative, of which 2 are significant. Most of these results come from the Second Regional Comparative and Explanatory Study (SERCE) which covers 16 countries

across Latin America and the Caribbean (Treviño et al., 2010). Thus, the evidence indicates that general school level infrastructure in Latin America seems to increase student learning.

Finally, consider the impact of overall school infrastructure on time in school. Twelve estimates from four studies examine these impacts; of these, eleven are insignificant and one is significantly positive. Thus there is at most only weak evidence that the general condition of school infrastructure increases students' time in school. For overall school infrastructure there is only two high quality studies that examined impacts on time in school (Glewwe & Jacoby, 2014; Lloyd et al., 2003). Seven of the eight estimates were statistically insignificant, and the one that was significant was positive. This offers only weak support for a general impact of school infrastructure on time in school.

2.4 Availability of School Libraries and Students Academic performance

Seven studies provide 26 estimates of the impact of a school library on test scores. Of these 26 estimates, 17 are insignificant, two are significantly negative, and seven are significantly positive, which provides some evidence that school libraries increase student learning. Five of these seven studies are of high quality, providing 20 estimates of the impact of a school library on test scores. Of these, 15 are statistically insignificant, four were significantly positive (Fehrler et al., 2009, Glewwe and Jacoby, 1994; & Sprietsma, 2012), and one was significantly negative (Suryadarma et al., 2006), providing some, but rather weak, evidence that a school library increases students' learning. Each of the four studies with statistically significant results included both urban and rural areas. One of these, Borkum, He and Linden (2013), is an RCT study that estimated the impact of school libraries on test scores in India; all four estimates are negative and statistically insignificant.

One developed country study analyzed the impact of library books per student on student learning in United States secondary schools: Konstantopoulos and Borman (2011). As seen in the study, of the six estimates, four are insignificant and two have significantly positive impacts. Thus there is some evidence that library books increase student learning in secondary schools in developed countries. Turn next to the impact of the presence of a school library on test scores in Latin America. Of six estimates from two studies, three are positive and statistically significant, two are negative but insignificant, and one is significantly negative. These findings are from two studies, an analysis of rural primary schools in Colombia by McEwan (2008) and a paper on urban and rural secondary schools in Brazil by Sprietsma (2012). These studies suggest that school libraries in Latin America can increase student learning at both the primary and secondary levels.

Finally, three studies, all of which are high quality studies, estimate the impact of a school library on time in school. The results are somewhat ambiguous. Of the 15 estimates, 10 are insignificant, one is significantly negative and four are significantly positive (all four of which are from the same study). One RCT analyzed the impact of a school library on time in school, that of Borkum, He and Linden (2013), who collected data from urban and rural schools in India; yet their results are disappointing since the estimated impact is statistically insignificant.

2.5 Availability of Computers on Students' Academic Performance

There are many proponents of the benefits of providing computers and other types of information technology hardware to schools. Six studies analyzed the impact of computers on student test scores; 56 estimates are insignificant, 3 are significantly negative, and 20 are significantly positive, which suggests that, in many cases, computers can increase student learning. Four of these studies were high quality

(Banerjee et al. 2007; Barrera-Osorio and Linden, 2009; Fehrler, 2009; and Sprietsma, 2012). Fifty-one of the 72 estimates from three different high quality studies were insignificant, three were significantly negative and 18 were significantly positive. While these results indicate that computers can increase student learning, the 18 significantly positive estimates are from only three different studies, and the three significantly negative estimates are from two different studies, so giving equal weight to each study yields only weak support for computers.

Limiting the evidence to the two RCT studies, Banerjee et al. (2007) and Barrera-Osorio and Linden (2009) yields results which are very similar to those of the four high quality studies, since most of the estimates are from these two RCT studies. Two studies in developed countries estimated the impact of computers on student learning. Kotte et al. (2005) found a significantly negative impact (of the ratio of computers per student) on reading scores in Germany. On the other hand, Carneiro (2008) found three insignificant results for the impact of computers (number of computers divided by school size) on various test scores in secondary schools in Portugal. Overall, these two studies from developed countries yield no support for a positive impact of computers on student learning.

There are 72 estimates from studies of Latin American countries that attempt to measure the impact of computers on student learning. 14 of these estimates, 38 are from a randomized control trial in Colombia that showed positive, but mostly insignificant, impacts of computers on educational outcomes (Barrera-Osorio and Linden, 2009). Most of the remaining estimates come from the SERCE study (Treviño et al. 2010). Of these 72 estimates, 31 from three different studies are significantly positive. Only two, from a single study, are significantly negative. Thus the results suggest a positive impact of the availability of computers in schools on students test scores for Latin America.

These estimates include estimates from a working paper by Treviño et al. (2010) that are not included in the “all studies”, “high quality studies” and “RCTs” results because that working paper is not one of the working paper series selected for the review. Only one study, Barrera-Osorio and Linden (2009), analyzed the impact of computers on time in school. As seen in Table 11, that study yielded one significantly negative estimate and four insignificant estimates (of which two were negative and two were positive); thus there is no evidence that computers increase students’ time in school.

2.6 Availability of School Amenities and Students Academic Performance

Twenty-four estimates from seven studies analyze the impact of school amenities on students’ test scores. School amenities range from an index of writing and reading materials, such as pens, pencils, paper, notebooks, a complete set of required textbooks and dictionaries (Glewwe et al. 2015), to computers for administrative use (Lockheed et al. 2010). As seen in the study, ten estimates are insignificant, seven are significantly negative, and seven are significantly positive, and thus the findings are ambiguous.

Limiting the evidence to four high quality studies yields 15 estimates of the impact of school amenities on test scores. Seven of these are insignificant, three (from a study of urban and rural schools in Indonesia by Suryadarma et al., 2006) are significantly negative, and five (from a study of urban and rural schools in South Africa by Van der Berg, 2008) are significantly positive. Thus the impact of school amenities on test scores is ambiguous even for high quality studies. Note that there are no estimates from RCT studies.

Four studies from Latin America have examined the impact of school amenities, which include ventilation, lighting and noise, on test scores. Of the 11 estimates, five are insignificant, four are significantly positive, and two are significantly negative,

which provides at best only weak support that amenities matter. Only one study analyzed the impact of school amenities on time in school. The findings of the study's two estimates are at best only suggestive given that there is only one study: both are positive, but one is significant while the other is not. Note that this was a high quality study, but not an RCT, and that it was from a Latin American country (Brazil).

2.7 Availability of Science Laboratories and Students Academic Performance

Only one study, which is a high quality study, analyzed the impact of science laboratories on students' test scores, and it finds inconclusive evidence. The study of urban and rural schools in Brazil by Sprietsma (2012) yielded two estimates, one of which is significantly negative and the other of which is significantly positive, and thus these results of the impact of science laboratories on test scores are ambiguous. Note that this study is on a Latin American country.

Konstantopoulos and Borman (2011) also analyzed the impact of science laboratory facilities on learning, but in a developed country setting: U.S. secondary schools. As seen in Table 14, of the six estimates, three are insignificant and three are significantly positive, which provides some evidence that the availability of science laboratory facilities increases student learning in developed countries.

A single study provided 12 estimates from rural schools in China of the impact of science laboratories on time in school (Zhao and Glewwe, 2010). These estimates suggest a positive effect. More specifically, of the twelve estimates, six are insignificant and the other six are significantly positive.

2.7.1 Creation of New Schools

Finally, four estimates from a single high quality study show that the creation of a new school has a significantly positive impact on student learning. As seen in Table 10,

all four estimates are significantly positive, indicating that the creation of a new school increases test scores, perhaps by reducing students' travel time, which frees up more time for studying (Yamauchi & Liu, 2013). Note that this study is from urban and rural areas of the Philippines, and thus there is no evidence from Latin America.

Two studies, both of which are high quality, have analyzed the impact of the creation of a new school on time in school. They provide some evidence that new schools increase time in school. Of the 16 estimates, five are insignificant, two are significantly negative, and nine are significantly positive. While this evidence seems strong, when equal weight is given to each study, the results are more ambiguous; both studies find significantly positive and significantly negative effects. Note that both of these studies are on Latin American countries, one on Guatemala and one on Argentina, and both focus on the availability of pre-primary education facilities.

2.8 Availability of Utilities and Students Academic Performance

The third and last type of school infrastructure examined in this paper is utilities, which includes electricity, drinking water, and toilet facilities.

2.8.1 Electricity

Seven studies provide 28 estimates of the impact of the availability of electricity on students' test scores at the primary and secondary school level. Overall, the evidence indicates that, in many settings, provision of electricity could increase student learning. However, when only high quality studies are examined, there is no evidence of an impact of electricity on test scores; all 14 estimates from three different studies (Fehrler et al., 2009; Glewwe & Jacoby, 2014; Suryadarma et al., 2006) are statistically insignificant, of which five are negative and nine are positive. Note that there are no RCT studies of the impact of electricity on students' educational outcomes.

Three papers from Latin America estimated the impact of electricity on test scores. The study indicates that, of the 13 estimates, eight estimates from two different studies (McEwan, 2008; Psacharopoulos, 2013, both of which focus on rural areas) are significantly positive, which suggests that provision of electricity in Latin American increases student learning. Note, however, that none of these three papers is a high quality study. Finally, one Latin American study analyzed the impact of an index of utilities, which includes water, electricity, and a telephone connection. There were 16 estimates from 16 countries, all of which were significantly positive. This suggests that utilities may have a strong impact on student learning in Latin America, but caution is in order because this is based on a single study. Only one study examined the impact of the availability of electricity on time in school. All four estimates were statistically insignificant (Glewwe & Jacoby, 2014).

2.8.2 Drinking Water Facilities

While adequate drinking water facilities would seem to be desirable for any school, there is no evidence that such facilities promote student learning. In particular, the study shows that all ten estimates from the three studies of the impact of the availability of drinking water facilities are statistically insignificant. Similarly, the eight estimates from two high quality studies of the impact of drinking water are all statistically insignificant (Fehrler et al., 2009; Glewwe & Jacoby, 2014). There are no RCT studies of the impact of drinking water facilities on students' educational outcomes.

Turning to Latin America, there is one paper, with two estimates, that analyzed the impact of drinking water facilities on test scores. So there is no evidence from Latin American countries that the provision of drinking water facilities increases student learning. Finally, consider the impact of drinking water facilities on students' time in

school. Two studies, both of which are of high quality, provide 30 estimates of the impact of the availability of drinking water facilities on time in school. Of these estimates, 27 were statistically insignificant and only three had significantly positive impacts on time in school, which suggests at best a weak impact.

2.8.3 Toilet Facilities

The last utility variable to consider is sanitation, and more specifically toilet facilities. There are 33 estimates from four studies that examine the impact of the availability of toilets or separate latrines for boys and girls on student learning. These estimates suggest that having access to adequate sanitation facilities increases students' test scores at both the primary and secondary levels. More specifically, of the 33 estimates 11 are insignificantly negative and 6 are insignificantly positive, while 16 estimates from three different studies are significantly positive and none is significantly negative.

Yet when the evidence is limited to the two high quality studies, there is only modest evidence that access to adequate sanitation facilities increases students' test scores; while nine of the ten estimates from two high quality studies are positive, only two estimates, both from the study of Indonesia by Suryadarma et al. (2006), are significantly positive. Note that there are no RCT studies of the impact of toilet facilities on students' educational outcomes. One Latin American study examined the impact of sanitation facilities on educational outcomes, both test scores and time in school.

The study tracked students in the city of Puno in Peru and showed that the availability of sanitation facilities led to increased reading comprehension (Cueto et al., 2010). More specifically, both of the two estimates in this study were positive, of which one was significantly positive. The same study provides estimates on time in school;

the evidence provides no support for this intervention, as there were two insignificantly negative estimates. Finally, one study provides 26 estimates of the impact of the availability of toilet facilities on school attendance, at the elementary school level.¹⁵ Of these 22 were statistically insignificant, one was significantly negative and the other three were significantly positive; all of the estimates come from Afridi (2011) and they provide some, but rather weak, evidence that toilet facilities increase time in school for girls.

2.9 School Infrastructural Facilities and Students' Academic Performance

The school physical facilities are known as school plant and it includes the school buildings, classrooms furniture, equipment, instructional materials, laboratories, libraries, play grounds, etc. Lezotte and Passiroque (2008) carried out a study to find out the effect of school buildings on students' academic achievement. They formulated hypotheses based on prior students' achievement with study background, school building and students' achievement as the dependent variables. A total of 2,500 randomly selected students from 20 modern schools were used as sample.

The Pearson's product moment correlation coefficient statistical tool was employed at 0.05 alpha level of significance. The result showed that the school building accounts for significant variance in academic achievement. They recommended that classrooms should be spacious to promote flexibility of usage in groups and individual activities. Similarly, classroom plays a vital role in the education of the child. According to Nwachukwu (2014), the physical setting for learning affects the learner. The setting must be attractive enough to make students wish to spend long hours there. What we have presently in most of our secondary schools does not meet these requirements. The typical village classroom is part of an unattractive building.

The roof may still be in place or may have been blown off by wind. If the latter is the case, students are forced to study without being protected from the effects of the weather. This kind of situation as stated by Nwachukwu (2014) in which the physical comfort of the students cannot be guaranteed is not ideal for learning and does not enhance academic achievement. Still on the possible influence of school plant, Klafs and Amhein (2011) conducted research to find out the influence of recreational facilities on students' academic performance in Lagos State. They employed questionnaire, which was administered on 500 randomly sampled secondary school students from 10 schools in Lagos.

Four hypotheses were formulated for the study and analyses were made with chi-square (χ^2) statistics to find out how the scores vary. The investigation revealed significant results for the study. Klafs and his colleague found that availability of recreational facilities do not only lead to increase practice in skill acquisition by individuals but also serve to encourage mass participation in sporting programmes, thereby promoting students' academic performance. In an attempt to discover the factors affecting students' performance in agriculture, Ntekpere (2008) conducted a research. He randomly sampled a total of 207 males with a mean of 21.40 and a standard deviation of 3.58, and 139 female students with a mean of 17.94 and standard deviation of 4.25. Several findings were made.

One among them was the unavailability and lack of teaching materials significantly influenced the academic performance of the students in Agriculture. Still on the influence of physical facilities on students, Essien (2014), embarked on a study titled indicators for self-reliance among Nigeria students in Cross River State as perceived by administrators of tertiary institutions. Four hypotheses involving skills of self-reliance were formulated. From a population of 1,865 tertiary institution administrators, 400

were randomly selected to constitute the sample. Data for the investigation were collected using School Administrators Perception of Self-reliance Questionnaire (SAPSQ) and the hypotheses were tested at 0.05 level of significance using t-test of single mean (population t-test) technique. From one of the results, she observed that the Nigerian students would attain self-reliance in the area of exploitation of human and material resources if the educational system could make adequate provision of infrastructural facilities, equipment and facilities for teaching and learning in our educational institutions.

2.10 School Location and Students' Academic Performance

According to Mbipom (2010), schools are either situated in one geographical location or the other. These geographical locations are either termed rural (remote) where modern facilities such as leisure, easy transportation, cultural heterogeneity, and cosmopolitan population are lacking or urban (city) where there are adequate facilities such as leisure, cinema, easy transportation, cultural heterogeneity, and cosmopolitan population. Unlike the rural schools where the population is relatively small and the students know one another by name, interactions are personal. Urban dwellers live individualistic life and only relate with people they feel like relating with, without any form of permanency.

Ogili (2009) posited that the per capital income among rural people are low and there is general poverty. About 70% of the rural populations are engaged in farming at subsistence level while the urban populations are mostly civil servants, traders and artisans. The effect of nature has compelled man to either settle or dwell in an urban or rural area. This educationally implies that in the rural settlement or location there is

poor accessibility to the modern educational facilities and this serves as a hindrance to the motivation of a rural child to learning.

Denga (2008) maintained that each environment plays a part in shaping the development of the child academically and otherwise. Accordingly, a child gets from his environment all he needed to enable him develop best. Students of urban surrounding have more opportunities to radios, educative film shows, electricity, televisions, well equipped laboratories and libraries etc that help or contribute in moulding their approaches when compared to rural location students regarding academic achievement.

Effiong (2011) on his part opined that any two individuals with approximately equal intelligence but living in two separate and distinct environments may end up attaining unequal intellectual heights. Olasunkanmi (2007), in his research on the influence of school location on students' academic achievement in Lagos State, adopted a causal-comparative design with a random sample of 500 students from a population of senior secondary two students in the State. A six point likert type scale questionnaire was administered. Independent t-test analysis was used to test the hypotheses at 0.05 levels of significance. From the result, it was observed that students from rural areas tend to perform poorly while those within the urban areas tend to perform better due to the availability of modern educational facilities.

2.11 Schools Equipment/Instructional Materials and Students Academic

Performance

On the issue of instructional materials, Mbipom (2010) described instructional materials as that which the teacher uses to achieve his set objectives. She further observed that lack of educational resources in our schools has been a major problem in

the instructional process. She further concluded that ideally, no effective education can take place without equipment, facilities, materials etc. In her observation, a school environment that is handicapped by the non-availability of these teaching and learning facilities may strongly affect the level of students' academic performance. This then implied that learning equipment and materials have their own effects on the academic performance of the students. Instructional materials are channels through which contents stimuli are presented to the learner (Bassey, 2008).

Inyang-Abia (2008) identified the following categories of instructional materials, visual, prints, graphics, electronic, projectiles and audiovisuals, instructional materials. According to him when these materials are adequately made available for studies they will facilitate the teaching learning process, thereby increasing performance for both the students and teachers. Ajari and Robinson (2010), embarked on several researches which include the importance of instructional materials on students. They sampled 200 respondents through the simple random sampling technique. An ex-post facto research design was adopted for the study.

A four point likert type scale questionnaire was used for data collection. The data were analyzed using one way analysis of variance (ANOVA). From the results they observed that educational resources in the school environment are very important in the development of an ideal teaching and learning environment. They further revealed that poor teaching and learning environment result to poor academic performance. Egbona (2012) in his research to find out to what extent instructional materials are made available for the teaching-learning process, in Ugep educational zonal district discovered that, the most common instructional materials made available for teaching is chalkboard, cardboard, and life specimen even though his findings shows that availability of instructional materials has no significant relationship with academic

performance of students, he concluded that they should be made available as they facilitate the teaching – learning process.

In other words, Akpabio (2012) carry out a research on the topic Availability and Utilization of instructional and student academic performance in social studies. He formulated three hypotheses and tested them at 0.05, alpha level of significance. One of the hypotheses was test on how availability of instructional materials relates with academic performance of students in social studies. He found out that all the three hypotheses formulated were all significant. He concluded that instructional materials should always be made available during lessons as the present of these materials stimulates the interest of students and equally facilitates the teaching – learning process.

Etim (2011) carried out a research on the availability of instructional materials and academic performance of students in economics. He used Calabar municipality as his study area, and adopted stratified and simple random sampling for the selection of his sample. 200 students were used for the study. He discovered that most of the schools he visited did not have any instructional materials for teaching economics. The few schools that have instructional materials available perform better in the achievement test that was given. He therefore conclude that instructional materials should be made available for teaching economics as their availability will trigger the interest of both the teacher and the students.

Acha (2009) carried out a research on the availability of instructional materials and concluded that the availability of instructional materials could influence and improve students' academic performance if only the instructional materials are constantly made available in the classroom, but that if not constantly made available, may therefore have no influence on the academic performance of students. Samati (2012) carried out a research on the important of teaching social studies with instructional materials. He

discovered the availability of instructional materials does not have any significant relationship with students' academic performance in social studies. He justified his findings by saying that instructional materials will depend on how they are used to impact knowledge on students. Laboratory has been conceptualized as a room or a building specially built for teaching by demonstration of theoretical phenomenon into practical terms.

Farombi (2008) argued the saying that —seeing is believing as the effect of using laboratories in teaching and learning of science and other science related disciplines as students tend to understand and recall what they see than what they hear or were told. Laboratory is essential to the teaching of sciences and the success of any science course is much dependent on the laboratory provision made for it.

2.12 The School Building Design

The building design concepts of the schools of today did not begin to evolve until the middle of the twentieth century when architects began to experiment with such design concepts as the round and compact schools and such educational concepts as the open-space plan and team teaching. Schools were not perceived as facilities revolving around sound educational programs until as late as the 1970s (Castaldi, 2007). Prior to this, the assumption of those who design schools had been that as long as certain minimum standards for size, acoustics, lighting, and heating were met, a productive environment existed when the teaching-learning process would proceed normally (Conners, 2012). This is because the physical environment and the learning cannot be separated and are considered to be an integral part of each other (Taylor & Gousie, 2008).

Christopher (2008) asserted that the purpose of the designed environment is to provide a climate conducive to both teaching and learning. Although it is common knowledge that the fields of both architecture and education understand that there is a connection between school building conditions and student achievement, there has been little specific research to report exactly how and to what extent building influences student achievement. Several studies (Christopher, 2008; Hawkins & Overbaught, 2008) have tried to establish a connection between building condition and student attitude, but they have provided little solid evidence. Since the late 1970s, however, researchers have identified a more sophisticated research methodology to examine and explain the possible relationship between building condition and student achievement and behavior.

Growing numbers of educators and facility planners are considering the influence of such physical factors as school age, color, lighting, seating position, classroom design, density, privacy, noise, and presence or lack of windows on student attitudes and achievement. These studies have been well documented in reviews by Weinstein (2009), McGuffey (2012), and Lemasters (2007). One line of research examining the relationship between school building age and student achievement that emerged in 1978 uses the age of the school building as a proxy for the quality of the physical environment. However, the assumption that a newer building might have more modern technology and efficient conditions is not necessarily valid. Consequently, older schools are not automatically in worse condition than newer schools.

In most previous studies, school building age has been treated as an independent variable that indirectly influences student achievement with above standard building conditions being associated with higher student achievement. The age of a school building may reflect a combination of some conditions, such as the overall condition of the building, thermal control, acoustics, lighting, and other aesthetic considerations in

the environment (McGuffey & Brown, 2008). But it is not relevant to consider school building age without considering the other physical characteristics of a school that reflect the quality of the school environment. It is also likely that many older buildings have been upgraded or enhanced, perhaps even more recently than newer buildings.

The initial research into the relationship between academic achievement and building condition focused on the impact of one physical condition variable, such as age, color, lighting on student achievement, but this approach is less favored today than are other research approaches emphasizing the relationship between the “total” overall building condition and student achievement. In fact, the school age variable can be considered as a surrogate for the condition of the building (Earthman & Lemasters, 2016).

2.13 Conceptual Framework of the Study

Educational resources can be framed in a number of ways, including taxonomies (Grubb, 2008) and complex eco-systems (Zhao & Frank, 2013). The conceptual framing of educational resources has impact on how studies are conducted and what phenomenon rise to the notice of researchers. In the current project, possible resources included students, teachers, physical artifacts, and the relationships between them; however, they were not described as resources until they were *enacted* as resources. The critical element of this conceptualization of resource enactment is that resources can be any physical artifact, person, or relationships as long as they are *used* as resources.

Practically speaking, this model of resources had impacts on what was recorded in the data gathering and analysis processes. Specifically, phenomenon noted in analysis were instances in which students and teachers *arranged, modified, attended to,*

interpreted, or assigned value to an artifact, actor, or relationship. In short, resources were conceptualized as requiring enactment to truly be a resource, and the current project focused on those enactments. Furthermore, this model of resource enactment is similar in many ways to the model of classroom instruction put forward by Cohen, Raudenbush, & Ball (2013). In both models teachers and students are potential resources. Also, in both models, the classroom is conceptualized as a system of interactions and relationships.

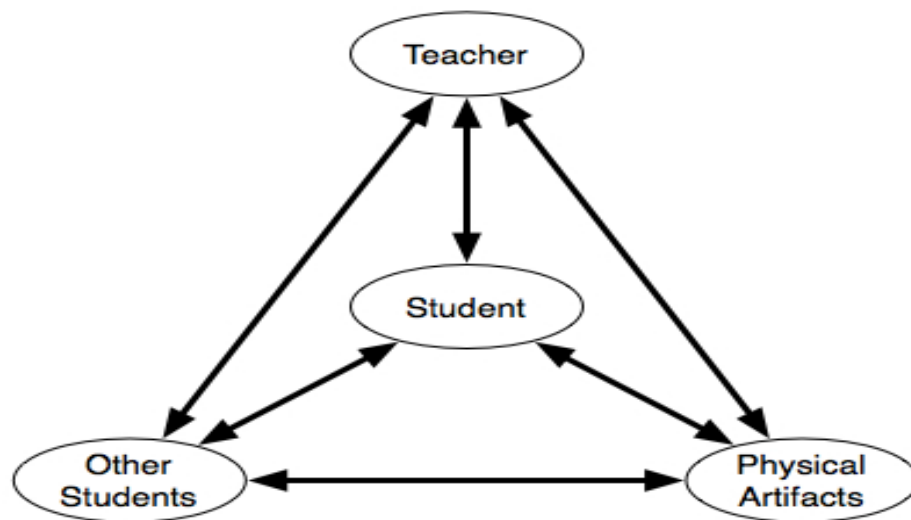
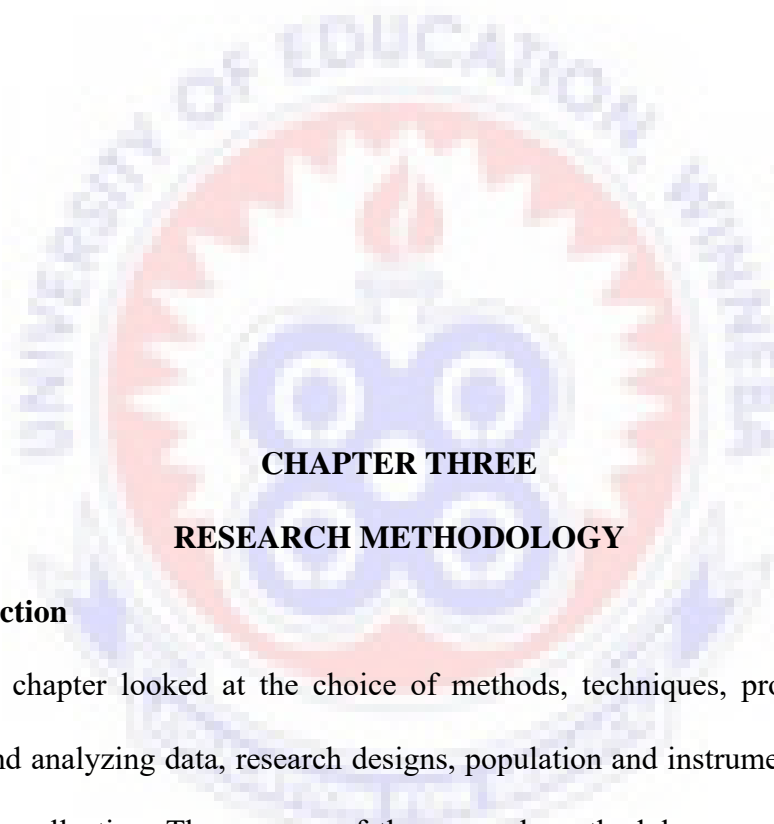


Figure 2.2: Enacted Educational Resources Model

Source: Cohen, Raudenbush, & Ball (2013)

2.14 Summary of Literature Reviewed

The study concluded that the availability of instructional materials could influence and improve students' academic performance if only the instructional materials are constantly made available in the classroom, but that if not constantly made available, may therefore have no influence on the academic performance of students.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter looked at the choice of methods, techniques, procedures for gathering and analyzing data, research designs, population and instrument that were used in data collection. The essence of the research methodology was to produce research findings that are based on relevant and verifiable evidence to warrant valid conclusion.

3.2 Research Design

Bless and Higson-Smith (2004) defined research design as a set of procedures that direct the researcher in the procedure of verifying a particular assumption and excluding

other possible explanation. The researcher used descriptive research design for the study. This refers to a research which specifies the nature of a given phenomena (Bryman, 2008). It determines and reports the way things are done (Kerlinger, 2006). Descriptive research thus involves collecting data in order to test hypotheses or answer research questions concerning the current status of the subject of the study (Kerlinger, 2006).

This research employed quantitative research methods and mainly used primary data in addition to secondary data. Quantitative research was used because it generated statistics through the used of methods such as questionnaires. Also, this type of research reached people in a much quicker way than qualitative research (Bryman, 2008).

3.3 Population

In the opinion of Agyedu, Donkor and Obeng (2009), population of a study refers to a complete set of individuals (subjects), objects or events having common observable characteristics in which the researcher is interested. They further stressed that population constitutes the target of a study and must be clearly defined and identified. The population for the study included head teachers, and teachers of three selected basic schools in the Bosomtwi District namely Pramso Demonstration school, Aputugya Roman Catholic and Feyiase Demonstration Basic schools. The study population was 39 respondents.

Table 3.1: Population and Sample size

<i>Name of Institution</i>	<i>Total no. of Headteachers</i>	<i>Total no. of teachers</i>	<i>Sample size selected</i>

Pramso Demonstration	2	12	14
Basic school			
Aputugya Roman	2	10	12
Catholic Basic school			
Feyiase Demonstration	2	11	13
Basic schools			
Total	6	33	39

Source: Field survey, (2018)

3.4 Sample size and Sampling Technique

Purposive sampling technique was used to select all the thirty nine (39) participants for the study. Purposive sampling method refers to the complete enumeration of a universe. A universe may be a place, a group of people or a specific locality through which we collected the data. Purposive method is necessary in some cases like population census, for gaining vast knowledge. But in contrary this method was not applicable as well as needed to some social problems because it was costly and time consuming. It was difficult to study the whole universe because financial aid was required for it to complete the study. For this purpose we used sampling method to pick up a sample from the whole universe. Data collection through purposive method gave opportunity to the investigator to have an intensive study about a problem. The investigator gathered a lot of knowledge through this method. In this method there was higher degree of accuracy in data. No other method was accurate like census method when the universe was small. This method was also applicable for units having heterogeneity or difference. In certain cases this method was very important and

suitable to be used for data collection. Without this method the study of a universe remains uncompleted.

3.5 Instrumentation

The main instrument that was used to collect information for the study was questionnaire. The questionnaire was structured to consist of closed ended type of questions in order to elicit feedback from the respondents with the most part being Likert scale. The questionnaire was in four sections. Section one contained the demographic information of the respondents, including the respondents age, gender and educational qualification of the respondents. Section two investigated if there was a significant influence of school equipment and instructional materials on students' academic performance. Section three investigated the extent to which school facilities influenced student enrolment and attendance in selected basic schools in the Bosomtwi District and section four identified the types of school infrastructures available at the selected basic schools in the Bosomtwi District. The administration of the questionnaire was conducted after the questionnaires were designed and validated. The questionnaire administration was conducted by the researcher. Respondents were informed of the topic for study and what the study generally intended to examine. The questionnaires were printed and presented to the respondents to answer by themselves.

3.6 Sources of data

There are two main sources of data. These are primary data and secondary data. Both primary and secondary data were used for the purpose of the study.

3.6.1 Primary Data

These are first-hand information collected from the field and it might be the first time of using such information (Bryman, 2008). Questionnaires were used in collecting data at the case study institutions. The researcher gathered information from the teachers and head teachers by the use of questionnaires for the needed information.

3.6.2 Secondary Data

Secondary data are already existing information which might have been used for several times. Secondary hand data were gathered from books, journals and theses.

3.7 Data Collection Procedure

Primary data was collected through a field survey from selected Basic school teachers and head teachers in the Bosomtwe District. Data were collected through the use of a written questionnaire hand-delivered to participants in the selected Basic Schools in the Bosomtwe District. Questionnaires were filled out by participants and the researcher went for the questionnaires on the same day of distribution.

3.8 Ethics

Ethics in the study such as confidentiality, anonymity, access, betrayal, informed content were critically addressed. During the study, high ethical standards were maintained to ensure that no harm was caused to any of the participants. Steps were taken to keep information provided confidentially and anonymous, seeking the participants consent was addressed. They were also assured of the fact that the data was be used solely for the purpose for which it was been collected.

3.9 Reliability

Reliability is the degree to which a measurement instrument can be depended upon to secure consistent results upon repeated application where validity is the degree to which any measurement instrument succeeds in describing what it is designed to measure (Wagner et al 2008). The reliability of research data collection instruments and the validity of the data collected are fundamental in every research studies. As Drost (2011), noted any measurement or data is only as good as the rules that directs its application. The goodness of the rules reflects on the reliability and validity of the measurement. To ensure the reliability of the instruments test and retest methods were applied where by the researcher administered the instruments to teachers and head teachers of some selected schools.

In this study, split-half reliability measure was employed by dividing the questionnaire items into two equal parts on the bases of odd and even appearances. The first part of the research instrument having been administered and the result obtained, the second part was subsequently administered and the results noted. Pearson's product moment coefficient of correlation (r) was then used to compare the two scores obtained and by giving an alpha value of 0.8, indicating that the data collection instrument was reliable.

3.10 Validity

In this study validity of the data was ensured in a number of ways. In the first place feedback from fellow teachers were used to check for the acceptability of the instruments by participating as being logical in the face of it. The content of the instrument was also validated by the thesis supervisor. According to Wagner, et al,

(2008), content validity guarantees that the instruments employed in research adequately represents the universe of questions that could have been asked. To ensure constructs validity, data was collected from multiple sources (head teachers and teachers) for triangulation, this allows for cross verification of the questionnaires. Hence the researcher's bias was reduced to allow for objective scrutiny of the data.

3.10 Analysis of Data

Quantitative techniques of data processing were used in the data analyses and presentation. Data obtained from the field were organized through data cleaning and processing; this involved data coding and editing before the data entry process. The field data was afterwards disaggregated to reflect responses from the respondents. To facilitate some comparative analysis, Statistical Package for the Social Sciences (SPSS) version 20 was used since its application makes data presentation and analysis convenient. Descriptive statistics such as the use of frequencies, percentages were used to present the data for easy comprehension. Data collected on respondents were analyzed using quantitative techniques.



CHAPTER FOUR
RESULTS/FINDINGS

4.0 Introduction

The main purpose of the study was to assess the impact of school infrastructure on students' academic performance in selected basic schools in the Bosomtwi District. The chapter discussed the following research objectives: a) identifying the types of school infrastructures available at the selected basic schools in the Bosomtwi District, b) investigating the influence of school equipment and instructional materials on students' academic performance, c) investigating the extent to which school facilities impact student enrolment and attendance in selected basic schools in the Bosomtwi District. The analysis of the study was based on these research objectives.

The researcher sent 39 questionnaires out for distribution. Out of 39 questionnaires sent out for primary data, 31 questionnaires were properly answered and received by the researcher. This means that the analysis of the study was based on 80% response

rate. This was considered adequate for achieving the objectives of the study (Source: Field survey, 2018).

4.2 Demographic Characteristics of Study Participants

Table 4.1 gave results on the demographic characteristics of the respondents used for the study, including the respondent's gender, age categories, highest academic qualification and working experience of the respondents.

Table 4.1: Gender of the Respondents

<i>Gender</i>	<i>Number of Respondents</i>	
	Head Teachers	Teachers
Male	4 (66.7)	15 (60)
Female	2 (33.3)	10 (40)

n= 31, Source: Field survey, (2018)

Table 4.1 revealed that four head teachers representing 66.7% were males, two head teachers representing 33.3% were females, 15 teachers representing 60% were males while 10 teachers representing 40% were females.

Table 4.2: Age Category of the Respondents

<i>Age category</i>	<i>Number of Respondents</i>	
	Head Teachers	Teachers

Below 25	0	3 (12)
25 – 30	0	12 (48)
Above 30	6 (100)	10 (40)

n= 31, Source: Field survey, (2018)

Table 4.2 indicated that six head teachers representing 100% were above 30 years, 12 teachers representing 48% were between the age ranges 25-30 years, 10 teachers representing 40% were above 30 years while three teachers representing 12% were below 25 years.

Table 4.3: Educational Qualification of the Respondents

<i>Educational qualification</i>	<i>Number of Respondents</i>	
	Head Teachers	Teachers
Basic	0	0
Diploma	0	8 (32)
Bachelor's	3 (50)	12 (48)
Masters	3 (50)	5 (20)

n= 31, Source: Field survey, (2018)

Table 4.3 The study results indicated that three head teachers representing 50% were holding Bachelor's and Master's degrees respectively, 12 teachers representing 48% were holding Bachelor's degrees, eight teachers representing 32% were possessing

Diplomas as their highest academic qualification, while five teachers representing 20% were possessing Masters degrees.

Table 4.4: What kinds of school infrastructures are available at the selected basic schools in the Bosomtwi District?

Availability of School Infrastructure	Inadequate N (%)	Adequate N (%)	Not available N (%)	Total N (%)
Classrooms with electricity	8(72.7)	3(27.3)	-	11(100)
Laboratories	0	2(18.2)	9(81.8)	11(100)
Libraries	9 (81.8)	2(18.2)	-	11(100)
Computer room	2(18.2)	2(18.2)	6(63.6)	11(100)
Computers with internet connection	0	3(27.3)	8(72.7)	11(100)
Text books	10(90.9)	-	1 (9.1)	11(100)
Scientific equipment for teaching Science	2(18.2)	-	9 (81.8)	11(100)

Source: Field survey, (2018)

Table 4.4 showed that at Pramso D/A Basic school, eight respondents representing 72.7% said that classrooms with electricity were inadequate while three respondents representing 27.3% indicated that classrooms with electricity were adequate. Moreover, nine respondents representing 81.8% indicated that laboratories were not available

while minority two respondents representing 18.2% said that laboratories were adequate. Also, nine respondents representing 81.8% revealed that libraries were inadequate while two respondents representing 18.2% said that libraries were adequate.

To add more, six respondents representing 63.6% said that computer rooms were not available, while two respondents representing 18.2% said that computer rooms were adequate and inadequate respectively. Moreover, eight respondents representing 72.7% revealed that computers with internet connection were not available while three respondents representing 27.3% indicated that computers with internet connection were adequate.

Also, 10 respondents representing 90.9% said that textbooks were inadequate while 1 respondent representing 9.1% said that textbooks were not available. The study results show that nine respondents representing 81.8% revealed that scientific equipment for teaching science were not available while two respondents representing 18.2% said that scientific equipment for teaching science was inadequate.

Table 4.5: The Kinds of School Infrastructures Available at Aputugya R/C Basic school

Availability of School Infrastructure	Inadequate n (%)	Adequate n (%)	Not available n (%)	Total n (%)
Classrooms with electricity	8(80)	2(20)	-	10(100)
Laboratories	0	3(30)	7(70)	10(100)
Libraries	9(90)	1(10)	-	10(100)
Computer room	3(30)	2(20)	5(50)	10(100)
Computers with internet connection	0	4(40)	6(60)	10(100)
Text books	9(90)	-	1 (10)	10(100)
Scientific equipment for teaching Science	3(30)	-	7(70)	10(100)

Source: Field survey, (2018)

Table 4.5 showed that at Aputugya R/C Basic school, eight respondents representing 80% said that classrooms with electricity were inadequate while two respondents representing 20% indicated that classrooms with electricity were adequate. Moreover, seven respondents representing 70% indicated that laboratories were not available while minority three respondents representing 30% said that laboratories were adequate. Also, nine respondents representing 90% revealed that libraries were inadequate while one respondents representing 10% said that libraries were adequate.

To add more, five respondents representing 50% said that computer rooms were not available, while three respondents representing 30% said that computer rooms were inadequate, while two respondents representing 20% revealed that computer rooms were adequate. Moreover, six respondents representing 60% revealed that computers with internet connection were not available while four respondents representing 40% indicated that computers with internet connection were adequate.

Also, nine respondents representing 90% said that textbooks were inadequate while one respondent representing 10% said that textbooks were not available. The study results show that seven respondents representing 70% revealed that scientific equipment for teaching science were not available while three respondents representing 30% said that scientific equipment for teaching science was inadequate.

Table 4.6: The Kinds of School Infrastructures Available at Feyiase D/A Basic schools

Availability of School Infrastructure	Inadequate n (%)	Adequate n (%)	Not available n (%)	Total n (%)
Classrooms with electricity	7(70)	3(30)	-	10(100)
Laboratories	0	2(20)	8(70)	10(100)

Libraries	7(70)	3(30)	-	10(100)
Computer room	2(20)	2(20)	6(60)	10(100)
Computers with internet connection	0	2(20)	8(80)	10(100)
Text books	8(80)	-	2(20)	10(100)
Scientific equipment for teaching Science	4(40)	-	6(60)	10(100)

Source: Field survey, (2018)

Table 4.6 suggested that at Feyiase D/A Basic schools, seven respondents representing 70% said that classrooms with electricity were inadequate while three respondents representing 30% indicated that classrooms with electricity were adequate. Moreover, seven respondents representing 70% indicated that laboratories were inadequate while minority three respondents representing 30% said that laboratories were adequate. Also, seven respondents representing 70% revealed that libraries were inadequate while three respondents representing 30% said that libraries were adequate.

To add more, six respondents representing 60% said that computer rooms were not available, while two respondents representing 20% said that computer rooms were inadequate. Moreover, eight respondents representing 80% revealed that computers with internet connection were inadequate while two respondents representing 20% indicated that computers with internet connection were adequate.

Also, eight respondents representing 80% said that textbooks were inadequate while two respondent representing 20% said that textbooks were not available. The study results show that six respondents representing 60% revealed that scientific equipment for teaching science were not available while four respondents representing 40% said that scientific equipment for teaching science was inadequate.

Table 4.7: What is the influence of school infrastructure on students' academic performance?

Statement(s)	1 n(%)	2 n(%)	3 n(%)	4 n(%)	5 n(%)	Total n(%)
Instructional materials are used by teachers to achieve their set objectives.	9(29)	19(61.3)	3(9.68)	0	0	31(100)
Lack of educational resources in our schools has been a major problem in the instructional process.	0	29(93.55)	2(6.45)	0	0	31(100)
Effective education cannot take place without equipment, facilities, materials etc.	0	27(87.1)	4(12.9)	0	0	31(100)
A school environment that is handicapped by the non-availability of these teaching and learning facilities may strongly affect the level of students' academic performance.	6(19.4)	24(77.4)	1(3.23)			31(100)
Learning equipment and materials have their own effects on the academic performance of the students.	0	25(80.65)	4(12.9)	2(6.45)	0	31(100)

The availability of educational infrastructure will facilitate the teaching learning process, thereby increasing performance for both the students and teachers.	5(16.1)	20(64.5)	4(12.90)	0	2(6.45)	31(100)
Poor teaching and learning environment result in poor academic performance	11(35.5)	18(58.1)	2(6.45)	0	0	31(100)

Source: Field survey, 2018

Table 4.7 showed that 19 respondents representing 61.3% agreed that instructional materials are used by teachers to achieve their set objectives, nine respondents representing 29% strongly agreed, while three respondents representing 9.68% were neutral. Moreover, 29 respondents representing 93.55% agreed that lack of educational resources in their schools has been a major problem in the instructional process, while two respondents representing 6.45% were neutral. Furthermore, 27 respondents representing 87.1% agreed that effective education cannot take place without equipment, facilities, materials etc. while four respondents representing 12.9% were neutral.

Also, 24 respondents representing 77.4% agreed that a school environment that is handicapped by the non-availability of these teaching and learning facilities may strongly affect the level of students' academic performance, six respondents representing 19.4% strongly agreed, while one respondent representing 3.23% were neutral. To add more, 25 respondents representing 80.65% agreed that learning equipment and materials have their own effects on the academic performance of the students, four respondents representing 12.9% were neutral, while two respondents representing 6.45% disagreed.

The study results revealed that 20 respondents representing 64.5% agreed that the availability of educational infrastructure will facilitate the teaching learning process, thereby improving the performance of both the students and teachers, five respondents representing 16.1% strongly agreed, four respondents representing 12.9% were neutral, while two respondents representing 6.45% disagreed. Moreover, 18 respondents representing 58.1% agreed that poor teaching and learning environment result to poor academic performance, 11 respondents representing 35.5% strongly agreed, while two respondents representing 6.45% were neutral.



Table 8: The Correlations between School Infrastructure and Academic Performance

Academic Performance	School Infrastructure	Instructional materials are used by teachers to achieve their set objectives	The availability of educational infrastructure will facilitate the teaching learning process, thereby increasing performance for both the students and teachers.	Learning equipment and materials have their own effects on the academic performance of the students.
The overall performance of this school in national examinations	Pearson Correlation	-.01	.853**	.217
	Sig. (2-tailed)		.000	.187
	N	31	31	31
The overall performance of this school influenced by the existing physical facilities of the school	Pearson Correlation	.853**	-.01	.187
	Sig. (2-tailed)	.000		.261
	N	31	31	31
Positive influence	Pearson Correlation	.219	.187	-.01
	Sig. (2-tailed)	.187	.261	
	N	31	31	31

** . Correlation is significant at the 0.01 level (1-tailed).

It is evident from Table 8 that, there is a negative insignificant relationship between school infrastructure and academic performance of students. The effective use of instructional materials by teachers to achieve their set objectives negatively influenced the overall performance of students' results in national examinations. The availability of educational infrastructure facilitated the teaching learning process, thereby increasing performance for both the students and teachers and that correlates well with the overall performance of students. Learning equipment and materials have a positive effect on the academic performance of the students.

4.4 How do school facilities influence student enrolment and attendance in the selected basic schools in the Bosomtwi District?

Table 4.9 explained the extent to which school facilities influence student enrolment rate in selected Basic primary schools in the Bosomtwi District.

Table 4.9: Student's enrolment rate

<i>Name of schools</i>	<i>2015/2016</i>	<i>2016/2017</i>	<i>2017/2018</i>
Pramso D/A Basic school	422	423	401
Aputugya R/C Basic school	536	523	522
Feyiase D/A Basic schools	422	412	409

Source: Field survey, (2018)

Table 4.9 showed that in Pramso D /A Basic School the pupils' enrollment rate increased from 422 in the 2015/2016 academic year to 423 in 2016/2017 academic year and decreased to 401 in 2017/2018 academic year. Furthermore, in Aputugya R/C Basic school the pupils enrollment rate decreased from 536 in the 2015/2016 academic year, to 523 in the 2016/2017 academic year and 522 in the 2017/2018 academic year. Also in Feyiase D/A Basic schools the pupils' enrollment rate decreased from 422 in the

2015/2016 academic year, 412 in the 2016/2017 academic year, and 409 in the 2017/2018 academic year.

Table 4.10 Students School Attendance Rate

<i>Name of schools</i>	<i>2015/2016</i>	<i>2016/2017</i>	<i>2017/2018</i>
Pramso D/A Basic school	30%-50%	50%-69%	50%-69%
Aputugya R/C Basic school	30%-50%	30%-50%	50%-69%
Feyiase D/A Basic schools	30%-50%	30%-50%	50%-69%

Source: Field survey, (2018)

Table 4.10 indicated, in Pramso D/A Basic school pupils attendance rate decreased from 30%-50% in the 2015/2016 academic year and increased to 50%-69% in the 2016/2017 and 2017/2018 academic year respectively. Moreover, in Aputugya R/C Basic school pupil's attendance rate decreased from 30%-50% in the 2015/2016 and 2016/2017 academic year and increased to 50%-69% in the 2017/2018 academic year. Finally, in Feyiase D/A Basic schools, pupil's attendance rate decreased from 30%-50% in the 2015/2016/2016/2017 academic years respectively and increased to 50%-69% academic year.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.0 Introduction

The main purpose of the study was to assess the impact of school infrastructure on students' academic performance in selected basic schools in the Bosomtwi District. The chapter discussed the following research objectives: a) identifying the types of school infrastructures available at the selected basic schools in the Bosomtwi District, b) investigating the influence of school equipment and instructional materials on students' academic performance, c) investigating the extent to which school facilities impact student enrolment and attendance in selected basic schools in the Bosomtwi District.

In terms of the types of school infrastructures available at the selected basic schools in the Bosomtwi District. The study indicated that majority of the respondents disagreed that there are enough books, TLMs, educational resources, libraries for the subjects they learnt at school. These results are in agreement with Akpabio (2012), who concluded that instructional materials should always be made available during lessons as the presence of these materials stimulated the interest of students and equally facilitates the teaching – learning process. Etim (2011) carried out a research on the availability of instructional materials and academic performance of students in economics. He used Calabar municipality in Nigeria as his study area. He discovered that most of the schools he visited did not have any instructional materials for teaching economics. The few schools that have instructional materials available performed better in the achievement test that was given. He therefore concluded that instructional materials should be made available for teaching economics as their availability triggered the interest of both the teacher and the students.

In terms of availability of learning infrastructure, the study shows that most of the respondents indicated that classrooms with electricity were inadequate. Moreover, laboratories were not available. Also, libraries were inadequate. Furthermore, home science rooms were not available. Computer rooms were not available. Moreover, computers with internet connection were not available. Also, textbooks were inadequate. The study results showed that scientific equipment for teaching science was not available. The study results indicated that educational resources in the school environment are very important in the development of an ideal teaching and learning environment. They further revealed that poor teaching and learning environment result to poor academic performance. This result is in agreement with Egbona (2012), the most common instructional materials made available for teaching were chalkboard, cardboard, and life specimen. Even though his findings shown that availability of instructional materials had no significant relationship with academic performance of students, he concluded that they should be made available as they facilitate the teaching – learning process.

In terms of the influence of school equipment and instructional materials on students' academic performance, the study results indicated that the availability of educational infrastructure facilitated the teaching learning process, thereby increasing performance for both the students and teachers. Moreover, poor teaching and learning environment resulted in poor academic performance. These results were in agreement with Mbipom (2010) who described instructional materials as that which the teacher uses to achieve his set objectives. She further observed that lack of educational resources in our schools has been a major problem in the instructional process. She concluded that ideally, no effective education could take place without equipment, facilities, materials etc. In her observation, a school environment that was handicapped

by the non-availability of these teaching and learning facilities may strongly affect the level of students' academic performance. This then implies that learning equipment and materials have their own effects on the academic performance of the students. Instructional materials are channels through which contents stimuli are presented to the learner.

With regards to the influence of school equipment and instructional materials on students' academic performance, the study made it clear that school equipment and instructional materials have a positive influence on students' academic performance. Acha (2009) carried out a research on the availability of instructional materials and concluded that the availability of instructional materials could influence and improve students' academic performance if only the instructional materials were constantly made available in the classroom, but that if not constantly made available, they may have no influence on the academic performance of students. Samati (2012) carried out a research on the important of teaching social studies with instructional materials and discovered that the availability of instructional materials does not have any significant relationship with students' academic performance in social studies. He justified his findings by saying that instructional materials will depend on how they are used to impact knowledge on students. Laboratory has been conceptualized as a room or a building specially built for teaching by demonstration of theoretical phenomenon into practical terms. These results concur with Farombi (2008), who argued that laboratory is essential to the teaching of sciences and the success of any science course is much dependent on the laboratory provision made for it.

In terms of the extent to which school facilities influence student enrolment and attendance in selected Basic primary schools in the Bosomtwi District, the study revealed that in Pramso D/A Basic school the pupils enrollment rate increased from 422

in the 2015/2016 academic year to 423 in 2016/2017 academic year and decreased to 401 in 2017/2018 academic year. Furthermore, in Aputugya R/C Basic school the pupils enrollment rate decreased from 536 in the 2015/2016 academic year to 523 in the 2016/2017 academic year and 522 in the 2017/2018 academic year. Also in Feyiase D/A Basic schools the pupil's enrollment rate decreased from 422 in the 2015/2016 academic year, 412 in the 2016/2017 academic year, and 409 in the 2017/2018 academic year.

The study indicated that, in Pramso D/A Basic school pupils attendance rate decreased from 30%-50% in the 2015/2016 academic year and increased to 50%-69% in the 2016/2017 and 2017/2018 academic year respectively. Moreover, in Aputugya R/C Basic school pupil's attendance rate decreased from 30%-50% in the 2015/2016 and 2016/2017 academic year and increased to 50%-69% in the 2017/2018 academic year. Finally, in Feyiase D/A Basic schools, pupil's attendance rate decreased from 30% - 50% in the 2015/2016, 2016/2017 academic years respectively and increased to 50% - 69% in 2017/2018 academic year.

These results disagrees with Nwachukwu (2014), who indicated that the physical comfort of the students cannot be guaranteed or not ideal for learning and does not enhanced academic achievement. On the issue of instructional materials, Mbipom (2000) described instructional materials as that which the teacher uses to achieve his set objectives. She further observed that lack of educational resources in our schools has been a major problem in the instructional process. She further concluded that ideally, no effective education can take place without equipment, facilities, materials etc. In her observation, a school environment that is handicapped by the non-availability of these teaching and learning facilities may strongly affected the level of students' academic

performance. This then implied that learning equipment and materials have their own effects on the academic performance of the students.



CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter contains the summary of findings, conclusion, recommendations and suggestions for further research.

6.1 Summary of Findings

The main purpose of the study was to assess the impact of school infrastructure on students' academic performance in selected basic schools in the Bosomtwi District. The researcher used descriptive research design for the study. This research employed quantitative research approach. The population for the study included head teachers, and teachers of three selected basic schools in the Bosomtwi District. The purposive sampling technique was used to select all the thirty nine (39) participants for the study. Questionnaires were the main instrument used to gather primary data.

6.2 Major Findings of the Study

1. The study results revealed that the books for the subjects students learnt at school were not enough. The school does not have a laboratory in which the equipment are well stored. Moreover, library set with relevant books arranged orderly were not available. The study results revealed the school buildings were not well maintained.
2. The study shows that classrooms with electricity were inadequate. Moreover, laboratories were not available. Also, libraries were inadequate. To add more, computer rooms were not available. Moreover, computers with internet connection

were not available. Also, textbooks were inadequate. The study results showed that scientific equipment for teaching science were not available.

3. The study showed that insufficient instructional materials used by teachers did not help them to achieve their set objectives. Moreover, lack of educational resources in the schools has been a major problem in the instructional process.
4. Learning equipment and materials have their own effects on the academic performance of the students. The study results indicated that the availability of educational infrastructure would facilitate the teaching learning process, thereby increasing performance for both the students and teachers. Moreover, poor teaching and learning environment resulted in poor academic performance.
5. The study results indicated that school equipment and insufficient instructional materials have a negative influence on student's enrolment, attendance rates and overall academic performance.

6.3 Conclusions

The study concluded that insufficient school equipment and instructional materials have a negative influence on student's academic performance. Also, the school equipment and materials like classrooms with electricity, laboratories, libraries, home science rooms, computer rooms, and computers with internet connection, textbooks and scientific equipment for teaching science were not sufficient for the successful teaching and learning. Moreover, the insufficient instructional materials have a negative influence on student's enrolment, attendance rates and overall academic performance.

6.4 Recommendations

According to the major findings of the study, the researcher recommended that;

1. The Ghana Education Service through the District Education Directorate should provide adequate educational infrastructure and teaching and learning materials to improve teaching and learning at the selected schools.
2. The Ghana Education Service through the District Education Directorate should furnish the selected schools with well stocked libraries to improve learning.
3. There is the need to provide well stocked laboratories and computer rooms with adequate computers and internet connectivity to improve teaching and learning.

6.5 Suggestions for Further Research

Based on the recommendations of the study, the researcher suggested that a similar study should be conducted to investigate the impact of educational resources on student's academic performance. Moreover, the geographical scope of the study should be broadened by using selected schools in Ghana as case study.

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APPENDIX A

UNIVERSITY OF EDUCATION, WINNEBA COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

QUESTIONNAIRE FOR THE TEACHERS AND HEAD TEACHERS

Dear respondents,

The researcher is a product of UEW, Winneba, and Kumasi Campus conducting a piece of research on **THE IMPACT OF SCHOOL INFRASTRUCTURE ON STUDENTS ACADEMIC PERFORMANCE IN SELECTED BASIC SCHOOLS IN THE BOSOMTWE DISTRICT**. I respectfully request that you form part of this research by completing the attached questionnaire. This is seeking to solicit your opinion on the impact of school infrastructure on academic performance of pupil's. Anonymity and non-traceability are assured. It is my fervent hope that you participate in the study. May I thank you for your valuable cooperation.

Section A: Demographic information of the respondents

1. What is your gender?

Male Female

2. Age ranges of the respondents

Below 25 years 26-30 years 31-35 years Above 35 years

Section B: The types of school infrastructures available at the selected Basic schools in the Bosomtwi District.

Assess the current status of the learning infrastructure in your school in the table shown.

Key: 1=Inadequate, 2=Adequate, 3=Not Available.

Facilities	1	2	3
3.Classrooms with electricity			
4.Laboratories			
5.Libraries			
6.Computer room			
7.Computers with internet connection			
8.Text books			
9.Scientific equipment for teaching Science			

Section C: The influence of school equipment and instructional materials on students' academic performance.

	1	2	3	4	5
10.Instructional materials are used by teachers to achieve their set objectives.					
11.Lack of educational resources in our schools has been a major problem in the instructional process.					
12.Effective education cannot take place without equipment, facilities, materials etc.					

13.A school environment that is handicapped by the non-availability of these teaching and learning facilities may strongly affect the level of students’ academic performance.					
14.Learning equipment and materials have their own effects on the academic performance of the students.					
15.The availability of educational infrastructure will facilitate the teaching learning process, thereby increasing performance for both the students and teachers.					
16.Poor teaching and learning environment result to poor academic performance.					

17. How would you rate the overall performance of this school in national examinations?

1) Excellent [] 2) Good [] 3) Average [] 4) Poor [] 5) Very poor []

18. In your opinion, is the overall performance of this school influenced by the existing physical facilities of the school?

1) Yes 2) No

19. What is the influence of school equipment and instructional materials on your students’ academic performance?

Positive influence [] Negative influence [] Not sure []

Section D: The extent to which school facilities influence student enrolment and attendance in selected Basic primary schools in the Bosomtwi District.

20. What influence students to attend school?

Good school facilities Past academic performance history of the school Good teachers other(s) please specify.....

21. What is the school pupil enrollment at the beginning 2015/2016 academic year?

[]

22. What is the school pupil enrollment at the end 2016/2017 academic year?

23. What is the school pupil enrollment at the beginning 2017/2018 academic year?

[]

Please tick as appropriate

24. What is the attendance rate of pupils in your school?

2015/2016 academic year. {>90% , 70% -89% , 50% -69% , < 50% }

2016/2017 academic year. {>90% , 70% -89% , 50% -69% , < 50% }

2017/2018 academic year. {>90% , 70% -89% , 50% -69% , < 50% }

25. How do you rate students' participation in your class when using instructional materials and modern school facilities?

High () Low () Not at all ()