

**UNIVERSITY OF GHANA, LEGON
COLLEGE OF HUMANITIES
CENTRE FOR SOCIAL POLICY STUDIES**

**IMPROVING TEACHING AND LEARNING THROUGH INFRASTRUCTURE
PROVISION IN BASIC SCHOOLS IN SHAI- OSUDOKU DISTRICT**

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DECLARATION

I, Sayuti Mohammed Nyassor do hereby declare that apart from the references I made to the work of other people for which I have duly acknowledged, this dissertation is the result of the work I carried out independently under the direct supervision of Professor Brigid Sackey at the Centre for Social Policy Studies, University of Ghana and as such this work has not been presented anywhere for partial or whole award of another degree.

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DEDICATION

I dedicate this work to the pupils and teachers of the schools in which I worked and the staff of the education office in Shai-Osudoku District for their invaluable contributions to the successful completion of this work. To my parents, Fati Mahama and Atsianyo K. Addai, and my wife Vera, for their supportive roles throughout the period I worked to complete this work: God bless and reward you for being there for me when I needed you most.

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ACRONYMS AND ABBREVIATION

ADP	Accelerated Development Programme
DANIDA	Danish International Development Agency
DfID	Department for International Development
ERP	Economic Recovery Programme
EU	European Union
fCUBE	free Compulsory Universal Basic Education
FGDs	Focus Groups Discussions
GDP	Gross Domestic Product
GLSS	Ghana Living Standard Survey
ICT	Information & Communication Technology
NSCE	New Structure and Content Education
OECD	Overseas Economic Co-operations & Development
SAP	Structural Adjustment Programme
SDGs	Sustainable Development Goals
SIDA	Swedish International Development Agency
UNICEF	United National International Children Education Fund
USA	United States of America
USAID	United States Agency for International Development
WB	World Bank
WSDP	Whole School Development Programme
GETFUND	Ghana education Trust Fund

KEY DEFINITIONS

The following words definition have been operationalised for the study.

Assessing: This word has been used in this study as the process of measuring the level of a phenomena.

Impact: In this research work, the word impact means the quantum of influence or control.

Infrastructure: Infrastructure by definition in this research does not only pertain to the building alone. Infrastructure therefore relates to all the facilities contained in the building and its environs. These may include, furniture, text books, the land scape, access to ventilation, class space provision, roofing of building, ceiling of building, lighting situation, painting of building, access route to the building, the location of the building and ancillary facilities like washrooms and play grounds etc.

Teaching and learning has been defined as the act of imparting knowledge to pupils and the process of assimilation by the pupils.

Basic School comprised of all classes from the crèche to J.H.S 3.

Improve is used in this work as change or development in the mental capacity of pupils as a result of the education they have received.

ABSTRACT

This study sought to assess the improvements generated in teaching and learning because of new facilities provided in some basic schools in Shai-Osudoku District in the Greater Accra Region. These improvements and challenges were captured in the collective experiences shared by respondents- teachers and pupils reflect the gap between policy prescriptions for school resource provision and actual practices at school level. An exploratory and descriptive approach was adopted through the use of in-depth interview and questionnaires to collect data. (Qualitative and quantitative methods were used. In-depth interviews and questionnaires were administered on teachers, pupils and other key respondents). Results of the interviews and questionnaires from sampled schools (four schools) which were compared with controlled schools (three schools) that did not receive major facilities from 2009 to 2017 showed varied levels of improvement in teaching and learning environment. I discovered that schools that hitherto had to halt classroom activities because of rain or overcrowding in class have had marked infrastructure sufficiency. Thus, increasing contact hours for teaching and learning. Meanwhile, because the facilities provided did not include pre-school and JHS the schools are compelled to improvise in order to accommodate pre-school and JHS. Constant engagement with communities would increase a sense of ownership of schools which is necessary for infrastructure provision. It is also recommended that the power to allocative resources and interventions towards provision of basic education infrastructure be centralized at the district level so that district authorities can properly identify, plan and execute timeously the infrastructure needs of schools in Shai-Osudoku District. The experiences of teachers and pupils shared during this research would enrich literature on school facility and teaching and learning outcomes and also inform school infrastructure policy decision at school, district and national levels.

CHAPTER ONE

INTRODUCTION

1.0 Background of Study

In recent times (after the global financial crisis of 2007-2008 which affected both national and donor countries), the challenge of quality education has been at the centre of discussion in development policies around the globe, especially in developing countries. This challenge has been captured by the Sustainable Development Goals (SDGs). A major developmental challenge in education is the absence of adequate, quality infrastructure in basic schools. It is therefore significant that the SDGs stress the need to ensure quality education through its goal number four (4) which encourages nations to “Ensure inclusive and quality education for all and promote lifelong learning”. Achieving quality education may be driven by a lot of factors. Among these factors are government dimension, teacher dimension, pupils dimension, community dimension, partners and donors dimension, the need for facilities, and the need for teaching and learning resources, among others. Within the government and community dimension falls the function of provision of infrastructure which is the focus of this dissertation. School infrastructure includes classroom level infrastructure (classroom, library, and science/ICT laboratory) and classroom characteristics (lightning, temperature, and air flow), classroom specific infrastructure (furniture, textbooks computers and science equipment) and school level infrastructure (electricity, potable water, and toilet, catering, sports fields and the condition of the building).

In their research on Latin American students, Murillo and Roman (2011), classified infrastructure into basic and school resources. Basic resources include portable water, electricity supply, sewage services and physical facilities for students and teachers whereas school resources include teaching

resources and learning materials for schools like textbooks and computers. In this study, I used the word infrastructure to refer to ventilated classrooms, library, ICT and science laboratories, toilets, fence wall, recreational/sporting grounds, water, electricity, catering and sanitation facilities, textbooks, furniture and other pedagogical materials, such as marker board/makers and Kindergarten worksheets that facilitate teaching and learning.

The need for infrastructural provision in Ghana has come to the lime light because of increasing enrollment in schools perhaps due to enlightenment and the fCUBE policy of the government (Foster, 1965; Scadding, 1989; Ghana Human Development Report, 1998). Again, in recent times, the health and safety of pupils at basic school level have also become issues of greater concern amidst incidents of school buildings collapsing leading to the death of pupils. It is, therefore, prudent that adequate infrastructural facilities are provided to ensure safety and comfort of schools to induce effective teaching and learning delivery in Ghanaian schools.

Owing to the above concerns for infrastructural provision, many countries are strategizing to provide the required infrastructure to enhance and improve their educational status. In Latin America, Murillo and Roman (2011) sought to investigate the incidence of school infrastructure and resource and how it affects primary school pupils. They found that availability of basic infrastructure and services do have effect on the performance of pupils in primary educational institutions in Latin America. Also, in rural China, Zhao and Glewwe (2009) undertook a study to find out what determines basic school attainment. Their findings concluded that providing a science laboratory is estimated to extend the years of schooling by 1.8 years. In a study across world regions and countries, Hanushek and Woessmann (2012) sought to answer the question: “do better schools lead to more growth”. Although their findings pointed to an independent relationship between growth and basic skills and high performer, they concluded that school policy can be an

important spur to growth. This means that good school policies, which include infrastructure policy on teaching and learning, is important for developing higher caliber human capital capable of contributing meaningfully to economic growth.

In examining published literature from 1990-2012 on the outcome of school infrastructure on student learning and enrolment with particular reference to Latin America, Cuesta, Glewwe and Krause (2015) concluded that there is evidence- though weak- in improvement in learning and enrolment with the provision of libraries, creation of new schools, toilets, laboratories and drinking water facilities. They therefore recommended high quality research to ascertain the outcome of infrastructure on learning and time in school in developing countries.

Whilst the above studies sought to relate school resource to specific attainable outcome at school level which feeds into national development, they did not focus specifically on how infrastructure/resource affects teaching and learning whose outcomes (the outcomes like attendance, enrolment, class/BECE results) were subjects for the above studies. Teaching and learning serves as a process through which resources allocated from education policy get converted into measurable outcomes like pupils' performances in exams, skills and values acquired towards becoming productive citizens in spurring growth for national development. Thus, the apparent gap in knowledge about school resources and improvements in teaching and learning. This makes enquiry into the role infrastructure plays in improvements in teaching and learning critical, especially as teaching and learning serve as a link between allocative resource to schools and desirable outcomes expected. This study therefore seeks to explore the role of school infrastructure in improvements in teaching and learning.

1.1 Problem Statement

Researchers have shown that education improves productivity, livelihood, health status, incomes of people and lower crime rates (Lockner, 2011; Hanushek & Woessmann, 2015). These researchers cited have also highlighted that education increases countries' rates of economic growth. While these studies offer strong support for investments in education, they shed no light on what types of educational investments produce the literate population. Lockner, 2011; Hanushek & Woessmann, 2015, however, noted that variables like availability of desks, availability of school buildings with the required facilities, teacher knowledge of the subject they teach, and teacher punctuality have significant effect on pupils' studies.

Whilst various research works have looked at education infrastructure and its impact in relation to specific outcome on a phenomenon elsewhere, similar studies have not been found in the literature on Ghana (Branham 2004; Foster, 1965; Scadding, 1989; Ferguson, 1991 & Wenglinsky, 1997). Again, much of the research works have centered on the correlation between educational infrastructure and students' academic performance (Jago & Tanner, 1999; Greewald, Hedges, & Laine, 1996; Mayron, et. al, 1974). Studies directly relating infrastructural provision to the multi-perspective of teaching and learning delivery in Ghana is lacking. Therefore, the extent of outcome of availability of infrastructure on teaching and learning delivery in Ghana has not been widely researched. In this respect, my study intends to examine the improvements in teaching and learning through the provision of infrastructure in basic schools in Shai-Osudoku District in Greater Accra region. Classroom blocks, textbooks, furniture, toilets and other pedagogical materials were supplied to schools like Kasunya, Asutsuare RC, Dodowa New Town 'C' and Asutsuare Estate D/A Basic Schools in Shai-Osudoku District.

This work examines the overall outcome of infrastructure provided for some basic schools (Kasunya D/A Basic, Asutsuare; R/C D/A Basic, Asutsuare; Asutsuare Estate D/A Basic; Dodowa New Town D/A Basic ‘C’; Luom Presby Basic; Dodowa Meth. Basic and Ayenya D/A Basic) in Shai-Osudoku District as it relates to improving teaching and learning from the experiences and perspectives of infrastructure providers (District Assembly, community members and NGOs) and beneficiaries (teachers and pupils) at the basic level of education in the District.

1.2 Objectives of Study

The general objective of the study was to examine the outcome of infrastructure provision on improvement in teaching and learning for schools in Shai-Osudoku District. Specifically, the following objectives guided this study.

1. To examine the types of policies on Infrastructure provision for schools in Ghana.
2. To ascertain the adequacy of Infrastructure provided in schools in Shai-Osudoku District.
3. To assess improvements in teaching and learning through infrastructure provision in Shai-Osudoku District

1.3 Research Questions

The study was guided by the following research questions:

- What are the existing policies on infrastructure provision in Ghana generally?
- How adequate are the infrastructure provided for schools in Shai-Osudoku District?
- What are the outcomes of infrastructure provision on teaching and learning delivery in Shai-Osudoku District?

- What are the challenges associated with the provision of infrastructure for school in Ghana generally and Shai-Osudoku District specifically?

1.4 Scope/ Limitations of the Study

The research covered infrastructural provision to basic schools. It was limited to the policies of infrastructural provision in Ghana, specifically the improvements on teaching and learning through infrastructure provision, the adequacy of infrastructure and the challenges in providing these facilities. Geographically, the study was conducted in only one (1) region out of ten (10) in Ghana. Other limitations of the study included difficulty in securing parents and community members to conduct interviews and administer questionnaires during data collection. They were either busy with farming activities or trading and therefore were not willing to avail their time to talk or provide answer to questionnaires. Hence their views were not sufficiently captured in this work as I had anticipated. Some of the limitations were data gaps in instrument designed and actual realities on the field during data collection. For instance, whilst I had intended in my methodology to collect list of students and teachers from the schools, order the lists into male and female and run a simple random sampling to select participants for interview, it turned out that many of the students are new in majority of the schools. The new pupils if selected randomly, would not be able to provide in depth information because of their short stay in the schools. Teachers who had been in the school for longer period had to assist in identifying pupils and teachers who have been in the schools for a longer time. Time factor and community entry challenges such as getting key opinion leaders and parents to get their perspectives, discuss issues on interview and questionnaire were encountered.

I had to use some teachers who reside in the communities to persuade some parents to get them for interview. I also identified food vendors at the schools who had their wards in the school to interview and administer questionnaire.

I also used the break periods and near closing times to get respondents and interviewees so as to maximize time use and also increase the output of my data collection.

1.6 Significance of the Study

The study will be significant in identifying the gaps in the existing infrastructural policies in the country. The unearthing of the infrastructural policy gap will set the agenda for review of some policies which are no longer contentious. Some of the policies and programmes include for example Free Compulsory Universal Basic Education (FCUBE), GETFUND Act, 2000 (Act 581) and Education Act, 2008 (Act 778). Whereas the 1992 constitution (Article 25, Clause 1A) enjoins government to provide free and compulsory basic education for pupils in Ghana, many pupils still lack access to school and are out of classroom. Those who are fortunate to be in school are faced with infrastructure inadequacy which may have impact on their total learning environment. The 1992 constitution anticipated infrastructure inadequacies in basic schools and had in Article 25 Clause 1E instructed that ‘the development of a system of schools with adequate facilities at all levels shall be actively pursued’.

On the other hand, Education Act, 2008 (Act 778) sought to devolve the function of providing infrastructure at basic school to district assemblies and the communities in which schools are located. Meanwhile, GETFund Act, 2000 (Act 581) which is the mainstay of infrastructure provision at basic level centralises resource allocative powers towards infrastructure provision in

the country. A clear dichotomy in decentralizing infrastructure provision and resource allocative powers which often turn to hamper the ability of the provider in providing school infrastructure timeously.

Also, it is always important to update policy makers on the outcome of the interventions they provide to basic school systems with the view that such information would inform future policy decision making processes. Moreover, the study would help in clearing the various arguments of whether there is an association between or among teaching, learning and school infrastructure and the extent to which these associations exist. Whilst some scholarly works proved such associations, other research findings returned weak relationships over the association of infrastructural provision and pupils' academic performances, effective teaching and learning delivery.

This study was designed to enquire about facility provision, teaching and learning outcomes. It employed both qualitative and quantitative approaches to establish the outcomes of teaching and learning as a result of lack/provision of infrastructure to some basic schools in Shai Osudoku District. Robust data collection tools like questionnaires and interview guides were designed to elicit relevant data from the key stakeholders that reflected their subjective and objective experiences on school facilities, teaching and learning outcomes.

1.7 Organisation of the study

The study was organized into five (5) chapters. Chapter one covered background of study, problem statement, and significance of study, research questions, research objectives, theoretical and conceptual frameworks, scope of study, organization of study and limitations of study. Chapter two highlighted the relevant literature in relation to the objectives of the study. Chapter three focused on methodology employed in the research. The sub-sections here included study design,

search strategy, population of study, sample size selection, data instruments design, ethical consideration, pre-testing, informed consent, confidentiality, data management and analysis. Chapter four was devoted to research result and analysis. Chapter five presented the summary of major findings, conclusion and policy recommendations. The Appendix presented the interview guides and questionnaire used for the study. List of respondent institutions and any other document deemed relevant to the study were attached.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter looked at the empirical works that have been done on the subject matter, namely infrastructure provision and quality teaching and learning outcomes. Literature was therefore reviewed based on the objectives of the study. The chapter started with definition of key variables in the research, reviewed existing policies on infrastructure globally and in Ghana. It further looked at the adequacy of infrastructure provision, assessed the association between infrastructural provisions in relation to teaching and learning delivery. The chapter then concluded with the various challenges of infrastructural provision.

2.1 Existing policies on Infrastructure provision in Ghana

It is believed that a nation's progress towards economic advancement which leads to well-being of its citizens depends largely on the level of education of its workforce. Citizens' capacity to participate in national development efforts is an outcome of the quality of education rendered. Educational infrastructure plays a critical role in the provision and maintenance of quality education. Research findings on educational infrastructure in key research areas provide divergent insights and perspectives to the contribution of infrastructure provision to educational outcomes. In his view, Branham (2004) asserts that the condition of school infrastructure has crucial consequences for school performance particularly in school attendance and drop-out rates. He argues that the best teachers, the best administrators and the best principals have absolutely no value in improving education if pupils do not come to school and *have no classroom to sit (classroom emphasis mine)*.

Historically, the need for infrastructural development came into force during the Accelerated development Programme (ADP) for education, launched in 1951. The ADP gained legal backing through the 1961 Education Act, (Act 87) which provided Free, Universal and Compulsory Basic Education (fCUBE). Basic Education enrolments increased astronomically, rising from 1,081 in 1951 to 3,372 in 1952. As such, there was the need to increase infrastructure provision to correspond with the increased enrolments in basic education (Foster, 1965; Scadding, 1989). Based on the increased enrolment coupled with a corresponding increase in trained teachers, Ghana was adjudged the country with most developed educational system in the sub-region (Ghana Human Development Report, 1998).

Expansions in educational infrastructural provision declined when the recommendations of the Dzobo Committee were effected in 1974. This was due to the impending reform in the educational sector. The reform was generally known as *'the new structure and content of education (NSCE)*. Under the reform, pre-university education was reduced from 17 years to 13 years. Policy makers noted that, with the reduction in number of school completion years, the existing infrastructural facilities could be able to sustain the enrollments and that led to decline in infrastructural provision (Dzobo, The Report of the Education Review Committee-The New Structure and Content of Education for Ghana. , 1974). Economic down turns which ran from the 1974 through to the 1980' and 1990's Economic Recovery Programmes (ERP) and the Structural Adjustment Programmes (SAP) further dwindled the rate of infrastructural development especially in the education sector. School buildings, furniture and equipment were dilapidated and basic materials like textbooks and stationary were lacking (Akyeampong, 2004).

The Free Compulsory Universal Basic Educational reform in 1996 brightened the dimmed light to infrastructural provision. A number of donor agencies contributed substantial funds to educational

development, especially, primary education projects in the country. Among the agencies were, the United Nations Children's Fund (UNICEF), the Department for International Development (DFID), the World Bank (WB), the European Union (EU), the Swedish International Development Agency (SIDA). Others were the United States Agency for International Development (USAID) and the Danish International Development Agency (DANIDA). The participation of these agencies in education development triggered a range of interventional strategies (USAID & GHANA, 1995).

Another policy initiative that increased attention on education infrastructural base was the Whole School Development Programme (WSDP) in 1999. The Whole School Development programme was an ongoing process to provide support to teaching staff in basic schools. The WSDP provided a means for districts and schools to develop their schools for effective teaching and learning by focusing on literacy, numeracy and problem-solving skills. This WSDP was initiated by government with funding from The United Kingdom Department for International Development (DFID). The policy and strategy pathway were to place the District plans at the centre of change. The core focus of WSDP was to achieve quality teaching provided by competent teachers for efficient teacher delivery and learning outcomes. It was therefore imperative that, competent teacher capacity were built and resources made available to deliver quality education as envisioned by the current Education Act 2008, Act 778.

The Education Act 2008, Act 778, provides legislative policy framework for developing educational systems across all levels of education including basic education. At the core of this policy framework is the need to develop balanced individuals equipped with requisite knowledge, skills, values and attitudes that would make them contribute meaningfully to socio-economic development of Ghana.

To better achieve this goal, Act 778, 2008 directs the decentralization of executive responsibility to the district assemblies for the provision and management of necessary infrastructural needs and other facilities for basic education. The Ministry of Education commissioned an Education Strategic Plan (ESP) 2010-2020, preceded by four ESPs, which outline the policy areas, policy objectives, targets and strategies that would help develop and sustain provision of education in Ghana for the period 2010-2020. The ESP is built on core areas of access and quality with strategies geared towards achieving measurable outcomes in accelerating literacy and competency for economic growth and in reducing poverty among citizens. To this end, the ESP thus sees basic education as the start point of its objectives.

Prior to the passage of Education Act 778 in 2008, GETFund was established in 2000 through GET Fund Act, 2000 (Act 581) to provide supplementary funding for financing education across all levels of education in the country. Various programmes have been rolled out since its formation to reduce deficit in school level infrastructure and also provide teaching and learning materials for schools.

One of such programmes is the construction of classroom blocks at basic school level to eliminate schools held under makeshift structures termed ‘schools under tree’ This programme ,which started in 2009, intended to create equal opportunities for all pupils to have equitable access to basic education. In addition to the classrooms, programmes to provide free computers for ICT learning, textbooks, furniture and training of ICT teachers were rolled out between years 2012-2016 (GETFund Distribution Formula 2012-2016).

2.3 Adequacy of Infrastructure provided in schools in Ghana.

Infrastructural provision demands huge cost. To produce good schools with good academic performance, substantial financial resource allocation from the national budget are spent. Researchers have found strong correlation between school inputs and pupils' outcomes. For instance, Greewald, Hedges, & Laine, (1996) noted that, increases in spending on infrastructure are associated with effective teaching and learning as well as improved academic performance. Again, strong political commitment of government to ensure equity and universal access to education is also a pre-requisite. Educational Infrastructure include not only the existence of the building, but also the content or facilities in the building. These facilities are the elements of infrastructure. The elements of educational infrastructure may include availability of space, ventilation, places of convenience, playing grounds, sick bays, classroom requirements such as tables and chairs, black or white boards, adequate day light), among others (Cohen & Bhatt, 2012; Aveni & Adelabu, 2012).

Governments in developing countries have noted that education provides many benefits, and so they have steadily increased their funding of education. For instance, in Latin America, public spending on education as a percent of GDP has been increased from 3.9 percent in 1995 to 4.4 percent in 2010 (World Bank, 2012). Owing to this, primary school completion rates are close to 100 percent for almost all countries in Latin America and the Caribbean, although a few countries like Nicaragua (80 percent) had slightly lower rates. This higher spending on education has been accompanied by, and almost certainly has contributed to, higher school enrollment rates. The increase in enrollment over the past two decades, particularly at the secondary level, have been quite dramatic. Other countries such as Costa Rica, Cuba, and Jamaica are spending more than 6

percent of their GDP on education. International development partners have therefore advocated for the need for greater resources to be devoted to education (OECD, 2013).

2.3.1 Impact of Adequacy of Classrooms on Teaching and Learning Delivery

The number and size of classroom available has a bearing on the efficiency of teaching and learning. All things being equal, spacious classrooms give pupils the opportunity to be comfortable, smart and promotes conducive learning (Ferguson,1991). School with small classroom turn to be congested. Quiet apart form that, inadequate number of classrooms may have implied higher-class size, a situation Wenglinsky, (1997) and Wenglinsky, (2002), noted affects test scores of students. When class size is large, teachers are not able to give enough exercises, may not be able to control the class and below average pupils may also suffer in the teaching and learning process.

2.4 Impact of Infrastructure on Teaching and Learning in Ghana

This review of literature focuses on the impact of school infrastructure variables on teaching and learning, which include: the condition of the walls, floors, and roof; instructional materials in the classroom (such as flip charts and blackboards, textbooks); the availability of electricity, water, and toilets; and the availability of laboratories (science and computer), libraries and desks. Research has highlighted that, there is a relationship between learning outcomes and availability of educational facilities. Therefore, the quality of learning facilities available within an educational institution has positive relationship with the quality of teaching and learning activities (Olutola, 1989; Durosaro, 1998). The availability of the school buildings and furniture will determine how

decongested a classroom situation may be and how well teachers may be able to deliver instructional task (Aveni & Adelabu, 2012).

2.4.1 Educational Infrastructural location and Teaching and Learning Delivery

The development of pupils is best achieved if factors that may distract them are eliminated. Educational researchers posit that, the entire development of the learners in the mental, emotional and psychomotor domains of learning are best achieved in an environment that is conducive to teaching and learning. Leiringer and Cardellino (2011) noted that the degree to which a school is designed should be based on the support it offers the school's approach to teaching and learning. These conducive environments that are pre-requisites include for example, the provision of adequate and appropriate school physical facilities. Among the physical facilities is the location of the school. Even though, it is advocated that, the school should be geographically accessible, it should be devoid of noise such as markets sites, highways views, lorry parks, industries, refuse site and other known pollutants (Ogundare, 1999). Corroborating the above suggestion, Earthman and Lemasters (1998) reported that, pupils' academic achievement is associated with levels of noise as outside noise results in increased distracts of attention. On the other hand, it has been highlighted that, aside pupils being affected by noise, teachers are also hugely affected. Studies by Lackney, (1999) reported that, noise in the classroom impairs academic performance as it causes discomfort and reduces the teaching delivery. The atmosphere of the school should inspire, arouse and strengthen pupils' attendance in school. The comfortability of the classrooms, temperature and nonexistence of noise may have positive influence on teachers' effectiveness and pupils' academic performance.

2.4.2 Infrastructural Availability and Teachers output

Every act of learning stimulates response. Whether or not the person can respond to the expected outcome of what is taught may partly depend on the level of infrastructure available. All things being equal, it is expected that, a good environment fortifies the efforts of instructors through the provision of good stimulus for active teaching and learning to take place. Therefore, good school surroundings promote effective teaching and learning. For instance, enough space available in classroom setting makes it possible for teachers to go round or through the classroom to ensure that students are engrossed in teaching and learning (Hussaain, Iqbal, & Akhtar, 2010).

In support of the assertion by Hussaain, Iqbal and Akhtar, (2010), Okebukola, (2002) had also identified lack of adequate infrastructure and large classes as part of the major challenges to effective teaching and learning. Ipaye (2002), deepened the story as the researcher identified some of the causes as poor condition in the rural areas and lack of adequate infrastructure causing teachers' apathy. Aveni & Akinola, (2008) documented that, most schools lack well equipped staffrooms and more conducive classrooms to achieve educational quality assurance. Corroborating the above, Fafuwa (2010) noted that, a big gap in quality, resulting from large number of students in crowded classrooms, using insufficient and obsolete equipment and with disheartened teachers results in poor teaching and learning delivery. Moreover, Aveni and Adelabu (2012), noted that, deficiencies in learning infrastructure and environment constituted obstructions to effective classroom management, curriculum delivery and the full realisation of educational objectives in Nigeria.

2.4.3 Educational Infrastructure Quality and Teaching and Learning delivery

2.4.3.1 Air Quality and Pupils Health

Another educational infrastructure that impacts on the teaching and learning delivery is the design and quality of the infrastructure provided. There is a growing body of research linking quality of infrastructure to pupils output in both developing and developed countries. For instance, in the United States of America, poor air quality is widespread, and the effects are disastrous. According to Schneider (2002), the U.S General Accounting Office noted that, about fifteen thousand schools suffer from poor indoor air quality. This affects about eight million children and one out of five children are victims of this situation. This necessitated the fixing of air handling systems in most schools. The logic of the impact of poor air quality on pupils academic performance is that, teachers and pupils fall sick frequently and thus increasing absenteeism (Environmental Protection Agency, 2000; Leach, 1997). Corroborating this, many researchers have asserted that, some kind of illness among school children are attributed to the nature of the infrastructure. For instance, the American Lung Association, (2002), Kennedy, (2001) and Smedje & Norback, (1999) found that, there is strong relationship between airborne bacteria, mold and asthma in children which results in both teachers and children abstaining from school and this has serious repercussion on teaching and learning delivery.

2.4.3.2 Day lighting and Pupils Performance

Classroom lighting plays a crucial role in pupils academic performance. It is undoubted that, pupils may not be able to learn efficiently without much day light. Many studies have found lack of optimal lighting in classrooms as hindering effective teaching and learning delivery (Philips, 1997; Mayron et. al, 1974; Dunn et. al, 1985). Agreeing with the above assertion, another

researcher, Jago & Tanner, (1999) also cited over fifteen (15) studies that have found that appropriate lighting condition improved the test scores as well as significant improvement in teaching and learning. The outcome of these studies have resulted in many policy makers advocating the need for increased natural light in most school buildings. This is because, research has proved that, natural light is the best lighting condition than the fluorescent tube (Benya, 2001)

2.5 Challenges of infrastructural provision in Ghana schools

Efforts at educational infrastructure provision continues as population increases and the imperative for quality improvements grows. Factors such as economic, political, historical, socio-cultural, geographical location, data availability and adequacy, demographic and inadequate planning influence the initiation, provision, allocation and maintenance of infrastructure in Ghana. Whilst various governments have rolled out policies that sought to increase school infrastructure, the policy contents, implementation and end-user strategies differ towards achieving results. This affected and shaped the progress towards providing the type of adequate infrastructure for teaching and learning. For instance, political discourse, leading to the 2016 General Election in Ghana, between the main political parties in Ghana has been on access to education. Each party's appreciation of what constitutes access varies from physical infrastructure like classroom to fee-free and textbook availability for schools. This political party campaign promises find prominence in their manifestos which become the working documents for the party that wins election to govern in Ghana.

2.6 Conceptual framework

The concept below underpins the study. Conceptually, education at all levels takes place in a structure equipped with requisite facilities provided by the government, the community or benevolent organisations. This structure is the infrastructural provision. Teachers and pupils, who are the primary beneficiaries of the infrastructure, use these facilities in their daily teaching and learning activities. As such, provision of school adequate infrastructure is likely to affect teaching and learning outcomes directly. Similarly, provision of school facilities feeds into creating a learning environment necessary for effective teaching and learning. As such, creating a congenial learning environment would affect teaching delivery and learning outcomes. This expected outcome is the improved status of teaching and learning delivery as illustrated below.

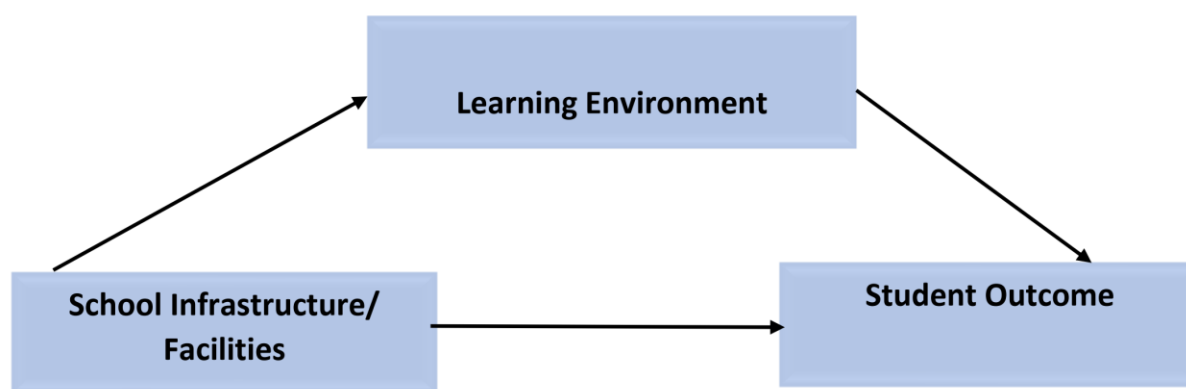
The conceptual framework indicates an interdependence among the three variables of school infrastructure, learning environment and pupil's outcomes. The framework shows that the independent variable is the condition of facilities in the school which is likely to moderate pupils' outcomes. Availability of basic infrastructure and services in school do influence the achievement of primary students in Latin America (Murillo & Roman, 2011).

The infrastructure helps in creating a good learning environment. Learning environment thus serves as a mediating variable likely to influence teaching and learning outcomes. Uline and Tschannen-Moran (2008) confirmed that quality facilities were significantly positively related to school climate variable. As such school climate plays a mediating role in the relationship between facility quality and student achievement.

Conceptual Framework

This conceptual framework above was built based on the literature reviewed. It demonstrates the condition of educational infrastructure and its interplay with school environment and student outcomes in basic schools.

Figure 1: Conceptual Frame Work Of Infrastructural Provision And Process Outcome



Source: Author's Own Construct, 2017

2.7 Summary

The various literature reviewed in this chapter afforded me the opportunity to have varied perspectives and inside into the works previously done on educational infrastructure, school environment and student's outcome. These works covered review of documents on policies and how they direct provision of basic education at national, international and global levels. The theories and concepts underpinning the academic pieces reviewed came to the fore. The perspectives on which the various academic works were carried out, the methods employed and why such methods were chosen, the analysis done leading to findings and conclusion shed light and shaped the concepts I have adopted to carry out this study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section of the dissertation presents the elements of the research approach employed to guide the study. The philosophical assumptions underpinning the research approach are examined together with the justifications for the use of a mixed methods for this study. Fundamental issues in this section are how data was collected and analysed, how study participants and schools were selected for the study, overview of data analysis procedures, and ethical considerations.

3.1 Study Design

Mixed method was the approach used for the study. This approach combines both quantitative and qualitative methods to address the objectives of the study. The philosophy underling this approach is the pragmatic philosophical stance which holds that knowledge can be derived from validating the connection between the practice and theory of a phenomenon (Creswell & Creswell, 2017). Table 3.1 below presents the research philosophy underpinning each research question.

Table 3 1:Philosophical Paradigms for Each Research Question

Specific Objectives	Philosophical paradigm	Source of Data	Method of Analysis
1. To evaluate the existing policies on Infrastructure provision in Ghana	Phenomenological (based on lived experiences of Infrastructural providers and beneficiaries) to understand the empirical profile of Infrastructural provision in Ghana	Secondary data (GLSS R4,5 and 6) In-depth Key Informant Interview, Questionnaire administering	Spread sheet computation from data base of GETFUND, Ministry of Education etc Thematic Analysis
2. To ascertain the availability and adequacy of Infrastructure provided in schools Shai-Osudoku Dist. and in Ghana.	Positivism (To predict and address the gap in Infrastructural Provision)	GLSS R4, 5 & 6). In-depth interviews, Questionnaire administering	Computations from the Infrastructural provision data base Quantitative/Statistical Analysis with Tables/Charts Thematic Analysis
3. To assess the outcome of Infrastructure on improvement in Teaching and Learning in Ghana.	Realist approach (To transform and Emancipate society)	GLSS (R4, 5 &6). Questionnaire administering	Quantitative/Statistical Analysis with Tables/Charts Thematic Analysis
4. To identify the challenges associated with the provision of Infrastructure for Schools in Ghana.	Realist approach (To transform and Emancipate society). This philosophical paradigm will offer the researcher the opportunity to know the challenges of Infrastructural provision and the related mitigating strategies.	GLSS (R4, 5 &6). In-depth interviews (FGDs, Key Informant and Questionnaire administering	Quantitative/Statistical Analysis with Tables/Charts Thematic Analysis

Source: Author's Creation, 2017

The first part of the study used a qualitative research approach which is inductive in nature by making use of interviews. The philosophy underlying this principle is interpretivism in which results obtained are subjective in nature and cannot be generalized. The researcher undertook in-depth interviews to understand the problem statement to focus on the relevant aspects of the issues involved. This first step helped to gain access to in-depth information from stakeholders within the education sector.

The second part of the study used a cross-section quantitative survey design, with a positivist philosophical stance, which holds that genuine knowledge can be described as scientific knowledge, relying more on quantitative observation data and statistical analysis (Davies & Hughes, 2014). According to Davies & Hughes (2014), quantitative methods can give good description and overview of scientific analysis and is advisable to use as a primary method at the outset of a study. Also, the quantitative survey took the form of an ex-post exploratory design, where responses elicited for analysis took a before- and-after format. This was necessary to establish the outcome of provision of infrastructure to schools on teaching delivery and pupils' learning. Impact in this context can be defined as the difference between specific outcome indicators for the beneficiary and the non-beneficiary groups. The non-beneficiary group is taken as a proxy for an actual counterfactual and was selected carefully to be like the beneficiary group, apart from not receiving the treatment. The design of ex-post quasi-experimental meant that the data were collected after treatment has taken place and there were no baseline or panel data.

Although Davies & Hughes (2014) recommended the use of quantitative approach at the onset of research work, I chose to use qualitative method first because of the following reasons:

Using qualitative method before quantitative offered the researcher a chance to obtain the recurring themes in the experiences of the respondents during the interview. These themes feed into the design of questionnaires to verify how widespread the themes were among a sample of stakeholders of the phenomenon under study. Qualitative methods offer the researcher the opportunity to ask follow up questions on the spot. Probing these follow up questions may give leads that can be further enquired into during quantitative method.

3.2 The Sampling Plan and Rationale

Study Area

The study population was drawn from schools in the Shai-Osudoku District in the Greater Accra Region. The choice of Greater Accra Region was informed by GLSS 6 –Community facilities Report 2014, conducted by Ghana statistical Service for 2012/2013, in which Greater Accra was reported to have the lowest rate of 36.4% availability of pre-school and primary school compared to the other nine (9) regions in Ghana which average over 60%. With Junior High School, Greater Accra has only 27.3% of respondents affirm availability of JHS in their communities (GLSS 6 Community Facilities Report 2014, 26:29).

Similarly, the above report also stated that Greater Accra has 54% of rural communities reporting lack of school building as most serious problem in schooling compared to national average of 34.1%. Shai-Osudoku District is the poorest district among the 16 districts in Greater Accra Region with incidence and depth of poverty at 55.1% compared to 1.3% for La Dade Kotopon which has the lowest poverty incidence and depth in Greater Accra Region (GSS Ghana Poverty Mapping Report 2015).

Shai-Osudoku District was chosen based on the fact that though it is nearer to Accra yet it has the highest incident and depth of poverty in a region that is reported to lack school buildings among the ten (10) regions of Ghana. The Shai-Osudoku District serves as a peri-urban peripheral to Accra as in recent times most services are sited there as a way of decongesting Accra and to support government's decentralization policy. The District is multi-ethnic in nature and has vast access to land resources stretching from Dodowa to Asutsuare which shares boundary with North Tongu District in Volta Region.

Sampling Procedure

The target population encompassed head teachers, teachers and pupils in basic schools, officials of the Shai-Osudoku District Education Office, the District Assembly, some officials of the Ministry of Education and its agencies and community members. I selected four (4) schools namely Dodowa New Town D/A Basic 'C', Asutsuare Estate D/A Basic, Asutsuare R/C D/A Basic and Kasunya D/A Basic as schools to study. These schools were selected because they had received new facility (ies) within 2009-2017 (the period under study). Three (3) schools were also selected in the District for control purposes. They were Luom Presby D/A Basic, Ayenya D/A Basic and Dodowa Methodist D/A Basic 1. These schools had not received any major infrastructure within 2009-2017. These seven (7) schools were from two lists. One list from both GET Fund and The District Education Office consisting of schools whose new projects have been completed. The second list was from the District Education Office consisting of schools that needed facilities but have not been provided. From the District and GET Fund lists, eight (8) basic schools were completed and were being used by the schools out of which four (4) were selected for the study. See table 3.2 for List of Schools).

Table 3 2: List of Schools for the study

NAME OF SCHOOL	LOCATION
Kasunya Basic School	Kasunya
Asutsuare R/C Basic School	Asutsuare
Dodowa New Town Basic School ‘C’	Dodowa New Town
Asutsuare Estate Basic School	Asutsuare Estate
Ayanya Basic School	Ayanya No. 1
Luom Presby Basic School	Luom
Dodowa Methodist Basic 1	Dodowa Old Town
Total	

Source: Author’s Creation, 2017

Purposive sampling was used to select the seven schools with completed school infrastructure for the study. The seven schools were clustered based on the types of infrastructure and teaching and learning materials received. In this situation, classroom, toilets, furniture and books were facilities that many of the schools had either received all or some combinations of these facilities. Out of these four (4) key facility type clusters, four (4) schools were selected as samples to the study. Similarly, the three (3) schools selected -as control to the four (4) schools selected for the study- were also clustered into three (3) different types based on the level of repair or replacement of infrastructure needed. These levels were minor, major and reconstruction of the existing or non-existing facilities that the schools needed. Out of these three (3) clusters, three (3) schools were selected to serve as controls.

Additionally, at the first stage, the researcher introduced measures that ensured that the characteristics of the three (3) control schools were the same as the four (4) schools selected for study so as to eliminate discrepancies likely to prejudice the results obtained. The measures entailed the facts that the control schools selected were equidistance from the district capital, the

villages where the schools were located were of similar size, similar occupation of the villages with same basic amenities such as water, electricity and markets.

For the quantitative survey, a systematic random sampling technique was used to select pupils and a simple random sampling technique used to select teachers. Pupils and teachers' lists were collected and ordered. The pupils' population in each segment, lower, upper and junior high, was divided by the number of interviewees required to get the 'nth' number. Systematically, pupils were randomly selected from the ordered list using the 'nth' number within intervals. With the selection of teachers, the researcher wrote the names of teachers in each school from the ordered list of teachers and wrote them on an equal sheet of paper. The sheets were folded and a seven (7) year old pupil was asked to pick two. This process was repeated in all the seven schools.

Purposive sampling technique was used in selecting participants for qualitative interviewing. This technique was used in selecting head-teachers, teachers, pupils and officials from the district education office. For the head teachers and official, they were selected because of their considerable knowledge on the subject matter as well as their occupational positions.

Sample size

Determination of the sample size at the study participant/respondent level was undertaken using the sampling techniques described above. For the qualitative interviews, 28 out of the 35 participants participated in the study. Participants comprised of 3 teachers (one was a head teacher) and 2 pupils from each school. However, 4 teachers and 3 pupils were unavailable at the many times scheduled for their interviews. The key informants comprised two (2) officials of the Municipal Education Office, one (1) official from Ghana Education Trust Fund (GET Fund), one (1) official from Ministry of Education.

For the quantitative survey, the sample size was 138 respondents disaggregated by teachers and pupils.

3.3 Data collection Procedure

Data collection for this study was done at two levels. The first was the qualitative interviews. It took approximately 40 minutes to complete a qualitative interview for teachers and took an average of 30 minutes to interview pupils. The second level of data collection took the format of a field survey questionnaire administration. It took approximately 45 minutes to complete a questionnaire. The instruments were pretested in the Amasaman Municipal Area. Amasaman Municipality equally has similar socio-economic characteristics to the Shai-Osudoku District. All interviews were conducted during the break period or closing time so that teaching and learning was not disrupted. Data collection took two weeks to complete with the support of two research assistants. One key challenge during the data collection periods was the fact that most of the respondents had not been around during the year 2009.

Primary Data

The primary data collected were both qualitative and quantitative. These were gathered directly from the respondents and interviewees on the field.

Qualitative Data

The study made use of interview guides to collect information from principal stakeholders on variables such as the impressions on infrastructural provision, the adequacy and the challenges.

The instruments were validated by both content and construct validity. Each of the instruments were scrutinized by the research supervisors and experts in Educational infrastructural. Their suggestions were adhered to strictly and where applicable modifications were made in the relevant aspects of the instruments.

The voice data from the qualitative interviews were recorded, transcribed and edited. The transcription was compared with the audio recording to check for accuracy and deviations.

Quantitative Data

The main instrument used to collect the quantitative data was self-developed questionnaires. It had various sections such as bio-data, knowledge about existing infrastructural policies in Ghana, an assessment of adequacy of infrastructural services, improvement in teaching and learning and the challenges in infrastructural provision in the District and the expected policy recommendation.

The quantitative instruments utilized a 5-point Likert scale questionnaire of Highly Agree, Agree, Fairly Agree, Disagree and Highly Disagree for majority of the questions. The scale values allocated were 5, 4, 3, 2 and 1 respectively. The services of two research assistants were employed and trained to help the researcher in the administration of questionnaire.

The quantitative data was entered into an Excel workbook and then transferred into SPSS for data analysis.

Secondary Data

Secondary data were obtained from existing documents obtained from institutions and individuals. These documents were deemed to have relevant information to this work. The documents included: Ghana Living Standard Survey-GLSS round 2-5 (Ghana Statistical Service), Annual performance reports of Educational Infrastructural provision organizations, quality indicators for evaluating

school performance at pre-tertiary level (National Inspectorate Board), Education Act, 2008 and Ghana Education Trust Fund Act, 2000.

3.4 Data Analysis Procedure

I employed a thematic analysis to analyse the qualitative data. As such the emerging themes that run through the interview sessions formed the basis upon which the qualitative discussions were done in chapter five (5). Basic statistical tools such as the frequency tables with counts and percentages were employed to discuss the result of the quantitative data in the next chapter.

Before and After Result Determinant

A Before-and-After description of variables was used to ascertain the effects of infrastructural provision on improvement in teaching and learning delivery.

3.7 Ethical Consideration

Ethical approval was sought from Shai-Osudoku District Education office before data collection was undertaken. The respondents chosen were briefed about the research and the various objectives it hopes to achieve. Those who took part in the research gave their oral consent prior to the interview and the time for the interview were fixed where the respondent could not have time to instantly undertake the interview. The various head teachers agreed and allowed the research upon receiving a letter from the District Education Director. Again, the respondents were assured of strict confidentiality especially in management of data and report writing as the research involved pupils.

CHAPTER FOUR

RESEARCH RESULTS AND ANALYSIS

4.0 Introduction

This section presents the empirical findings of the study. It presents both qualitative and quantitative results according to the research objectives. It starts by providing the demographic characteristics of the quantitative data. Afterwards, it presents the findings for objectives one, two and three from the responses of respondents. The qualitative analysis follows along the emerging themes from interviewees in the schools studied.

4.1 Demographic Characteristics of Respondents in the Survey

The demographic characteristics of the respondents is summarized in table 4.1 below. These data include gender, years of being in the school and level of education. The respondents are disaggregated into teachers and students.

Table 4 1: Demographic Characteristics by Respondent Type

Variable	Teachers		Students	
	Frequency	Percent	Frequency	Percent
Gender				
Female	42	50	27	50
Male	42	50	27	50
Years of being in School				
1-5yrs	48	57.1	36	66.7
6-10yrs	18	21.4	9	16.7
Above 10yrs	18	21.4	9	16.7
Level of Education				
Primary/JHS Certificate	0	0	54	100
“A”/Diploma	27	32.1	0	0
Tertiary	57	67.9	0	0
Total	84	100	54	100

Source: Author’s fieldwork, 2017

The analysis on the gender of teacher respondents from Table 4.1 revealed that 50% are males just as females. Respondents who had been in the schools between 1-5years accounted for 57% of teachers and 67% of pupils interviewed. This could be explained by the fact that many of the schools were carved out of old schools and had started operation barely few years ago. 68% of teachers surveyed had tertiary education.

4.2 Types of Policies on Infrastructural Provision in Ghana

Policies for school infrastructure provisions have evolved over time and space. As such, their design and implementations have also been shaped by our economic, socio-cultural, political situations and global dynamics over space and time. The inter-play of these driving factors has in some cases garnered support for resource allocation to meet school infrastructure provision particularly where there was government goodwill behind such efforts or where there were also global/donor agenda to promote specific policy initiatives. For instance, school feeding, free textbooks, removal of “schools under trees” and Ghana Infrastructure Fund had massive governmental support at the start. However, some educational initiatives like construction of classroom blocks in basic schools have been abandoned years after their commencement. This renders such a facility unusable for the intended purpose because they have not been completed. For instance, a respondent lamented;

R21: *“The district assemblies between this time that you have mention (2009-2017) were providing this structure that is through the Ghana Education Trust Fund (GET Fund). They were providing a 3-unit classroom block. It started around 2012. No, it started around 2004 It has been there for about close to 14 years”*

Issues about existing infrastructural policies in Ghana

Having examined the Constitution of Ghana, (1992 Constitution) and the various policies (Education Act 2008, Act 778; Ghana Education Trust Fund Act 2000, Act 581; National Inspectorate Board Quality Indicator for Evaluating School Performance; Annual budgets for 2001-2017) on school infrastructure over the years and the attempts made by successive governments to streamline facility provision across all levels of education, coupled with my engagement with the various stakeholders through interview and questionnaire administering, it became clear to me that most stakeholders at the district assembly and teachers in the schools were aware of who provides infrastructure at basic level, which infrastructure types to provide, how and when to provide the facilities. There was evidence of awareness of existence of policy on infrastructure provision at basic school level among participants. Teacher respondents showed clear knowledge about who is responsible for provision of facilities at basic school level. They intimated that the district assembly and the community are supposed to provide infrastructure in basic schools in Shai-Osudoku District. For instance, in response to my question about knowledge of policy on infrastructure provision, interviewee “R7” had this to say in response:

“If that is the one you are talking about (infrastructure provision). Now it has been decentralized. I believe we are all under the Ministry of Education (MOE), but it draws down and some of the powers have been moved to the District Assembly. So, majority of the infrastructure that we have in schools are provided by the MOE. Except in some few cases where GET Fund must come in or some NGO intervention but I believe that 90% of the structures are from the District Assembly. So that is why this one we are sitting in, is from the District Assembly. My experience as an assembly man I can tell you most of the project are district assembly funded”.

(Head Teacher, Asutsuare RC DA Basic School)

Interviewee “R18” also shared this with me in response to questions about awareness of policy on facility provision:

“It is still the District Assembly but fortunately for us we have the Golden Exotics Company around to assist. You saw that there is a new structure here. They have not yet given it to us. I think they will have to furnish it with teacher’s tables and chair and desks after which they will hand over to us. Our JHS is in that building. The place is very bad, and it does not have light so that is why they have not handed it over. They are helping because they are using the land of the Kasunya people so that project is part of their Corporate Social Responsibility but apart from that it is the Assembly that does everything. The government does it through the Assembly”

(Head Teacher, Kasunya DA Basic School)

The submissions of these respondents correspond with literature reviewed on policies on infrastructure provision in basic schools as the current policy guiding provision of facilities is Education Act 2008, Act 778. Act 778 states in section ‘2’ clause ‘3’ that “A district assembly shall subject to section 3, provide the necessary infrastructural needs and any other facilities for the education of the population in the area of its authority”

Further, the evidence from the quantitative survey revealed the following findings about awareness among sampled teachers of policies on infrastructure provision in basic schools.

Table 4 2: Awareness of Infrastructure Policies

Awareness of Infrastructure policies	Frequency	Percent
No	27	32.1
Yes	57	67.9
Total	84	100

Source: Author's fieldwork, 2017

From table 4.2 above, 68% of teachers were aware of the existing policy on infrastructure provision. This means that 2 out of every 3 teachers know who provides infrastructure and therefore are likely to direct their infrastructural needs to the right people for attention.

Table 4 3: Participation in Infrastructure decision-making

Participation in Infrastructure decision-making	Frequency	Percent
No	42	50
Yes	42	50
Total	84	100

Source: Author's fieldwork, 2017

The data from Table 4. 3 suggests that 50% of teachers participate in facility decisions in their school. Broader participation in policy formulation increases pool of ideas, deepens inclusiveness of varied stakeholder interest with a greater chance of acceptance of decision. When stakeholders identify easily with a decision, its implementation has higher success rate.

Implications of delay in infrastructure provision to teaching and learning delivery in schools

District assemblies often struggle to meet the needs of its stakeholders because of low revenue generation challenges coupled with their competing expenditure outlays. A review of respondents' submissions reveals that provision of facilities by the District Assembly is often associated with

delays, supplies done in piecemeal and in some situations, facilities are not provided at all. This affects the quality of delivering teaching and also the depth of knowledge acquired by pupils. According to some head teachers interviewed, community mobilisation towards facility provision is daunting because they believe that since government is providing free education at basic school level, the community should not be tasked to assist. Teachers often have to improvise in order to ensure teaching and learning takes place. Respondents 'R3 and R1 share their coping mechanisms and how teaching and learning is affected by delays in provision of basic school facilities. R3 coping mechanism and its impact on KG learning:

“Yes, that is our.... We do not have the new building [Laughing....] Kindergarten do not have a block. So, we are using the ICT laboratory for the mean time. We use the new building store room”.

“Yes, they need spacious room because as children as they are I will say yes. The 4-year children and above are very active and need spacious classroom to write, sing rhythm and do some actions but once the place is not spacious it becomes difficult for them including we the teachers as well”

“During those times these children learn mostly out of play. But during the imparting or teaching them and because of the heat they keep sweating, using their hands to wipe the sweat thereby loosing focus as human as we are because they are not feeling fine. The heat makes them uncomfortable so some of them even come out of the classroom. As children they will not be able to tell us. At times we need to get out of the classrooms and be under the trees for sometimes”

(A Teacher at Asutsuare Estate DA Basic 2)

On coping mechanisms R1 had this to say:

“The teachers manage by grouping the pupils so that more people used few books during English language subject. Sometimes the teacher uses the chalk to help the student”

(Head Teacher at Asutsuare DA Basic School 2)

It is clear from the above submissions that resource allocation and disbursement pose huge challenges to the provision of infrastructure to basic schools in Shai-Osudoku Assembly. Whiles Act 778 devolved provision of physical infrastructure, teaching and learning materials to the District Assembly, absolute disbursement of allocated resources is yet to be decentralized to the district level. The District still must wait for financial resources to be released from central government for developmental projects and supplies to be rolled out in the district. This delays execution of critical projects like construction of classroom blocks and the supply of essential learning materials and equipment for use in basic schools.

4.3 Adequacy of infrastructural provision in Shai-Osudoku District Assembly

For teaching and learning to take place, it is necessary to create a balanced environment in which teachers have adequate facilities to teach and for pupils to also learn. This is achieved when a teacher can effectively impart knowledge for pupils to assimilate without compromising the effectiveness of the processes through which impartation and assimilation is exchanged. Table 4.4 presents data on schools with new infrastructural facilities since 2009, disaggregate by teachers and pupils.

Table 4 4: New Infrastructure Facility disaggregated by Teacher and Pupil

New Infrastructure Facility	Teacher Frequency	Percent	Student Frequency	Percent
No	39	46.4	9	16.7
Yes	45	53.6	45	83.3
Total	84	100	54	100

Source: Author's fieldwork, 2017

From table 4.4, 54% of teachers opined receiving new major infrastructure compared to 83% of pupils who stated same claim towards facility provision.

Table 4 5: Type of Facility

Type of Facility	Teacher Frequency	Percent	Student Frequency	Percent
Classrooms	30	66.7	30	66.7
Classroom and Toilet	9	20	15	33.3
Toilet	6	13.3	0	0
Total	45	100	45	100

Source: Author's fieldwork, 2017

Table 4.5 provides extra information on the type of new facility received. 87% (66.7%+20.00%) of sampled teachers indicated receiving classroom and or toilet whilst all pupils stated receiving classroom and or toilet. This can be explained by the fact that all the four (4) schools sampled as experimental variables have received a new 6-unit classroom block with ancillary facilities.

Table 4 6: Who provided Facility

Who provided Facility	Teacher Frequency	Percent	Student Frequency	Percent
Government	30	66.7	39	86.7
Non-government	15	33.3	6	13.3
Total	45	100	45	100

Source: Author's fieldwork, 2017

Table 4.6 showed that 67% of teacher interviewees recognized government as to have provided the new major facilities against 33% who mentioned non-governmental providers. 87% pupils indicated government as provider of the new facilities.

Table 4. 7: How often new facilities are provided or replaced

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Regularly(Reasonable time)	3	6.2	3	3.3	6	4.3
Less regularly	6	12.5	27	30	33	23.9
Not regularly	27	56.2	48	53.3	75	54.3
Never	12	25	12	13.3	24	17.4
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

From table 4.7 among those who did not received any infrastructure facility over the period, 56.2% indicated not receiving new infrastructure regularly compared to 25% in same category stating they never received any new major facility in the stated period (2009-2017). In the group of those who received facilities, 53% stated they do not get new facilities regularly. This can be explained by delays in the provision of major facilities to schools particularly by the District Assembly.

Table 4. 8: Awareness of other schools receiving new facilities

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
No	9	18.8	21	24.1	30	22.2
Yes	39	81.2	66	75.9	105	77.8
Total	48	100	87	100	135	100

Source: Author's fieldwork, 2017

From table 4.8, 81% of schools that did not receive major facilities over the period of the study stated they were aware other schools in the study area received new facilities. Meanwhile, 76% of

interviewees whose schools received new facilities said they were aware other schools in the surveyed area had received new facilities. The table information provides knowledge of the spread in information about provision of new facilities in the study area and how that could urge on schools that do not have to get their problems solved.

Table 4. 9: The Adequacy or Inadequacy of Existing Facilities

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
Very Adequate	3	6.2	0	0	3	2.2
Fairly Adequate	9	18.8	15	16.7	24	17.4
Adequate	9	18.8	9	10	18	13
Inadequate	24	50	48	53.3	72	52.2
Fairly Inadequate	0	0	18	20	18	13
Very Inadequate	3	6.2	0	0	3	2.2
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.9 presents information on the adequacy or inadequacy of facilities that existed in both experimental and control schools before new infrastructure was provided. 56% of samples that did not receive new facilities stated inadequacy of facilities, 73% of sampled schools which received new facilities reported inadequacy of infrastructure prior to receiving new infrastructure. The higher incidence of prior inadequacy of facilities in schools that received new major facilities could explain the priority given to providing the new interventions as they were deemed to have been very critical compared to other schools that still do not have.

Furthermore, qualitative evidence gathered revealed the following findings on the adequacy of infrastructure provided in schools sampled in the study area. Generally, themes that emerged from the data collected are mainly along the lines of new teaching and learning facilities provided, the

adequacy and inadequacy of these facilities, how learning and teaching has/hasn't improved over the period of provision of the new facilities and the challenges associated with the use of the new facilities. As such, common responses from my in-depth interview sessions have been organized along key dimensions of infrastructure types. These infrastructure types are school environment infrastructure (water, fence wall, toilet, urinal, catering), classroom infrastructure (classroom, library, laboratory, offices and teachers' common rooms) and classroom specific facilities (furniture, textbook, computers and other learning and teaching materials). This enabled me to sub cluster the direct responses of the respondents which are basic to specific infrastructure type and the frequency of these responses so that I can build a complete picture of the phenomenon under study.

4.3.1 Issues about adequacy of infrastructure provision in Shai-Osudoku District Assembly

School environment infrastructure

School environment infrastructure are facilities that are provided within a school to help teachers and pupils undertake their learning and teaching activities. They include water, catering, fence wall, sanitation, toilets and urinals. The proximity of these facilities creates a congenial atmosphere within which school stakeholders can undertake their work. Availability of such facilities reduces the time spent on moving around to access these facilities from far places and creates a 'one stop shop' for users. Table 4.10 below, which was synthesized through qualitative interview and observation during my research, shows the outcome of these facilities in the seven schools sampled.

Table 4. 10: School environment infrastructure (Qualitative perspective)

Infrastructure type	Responses	Outcome on learning	Outcome on teaching
Water	Inadequate	Pupils regularly use contact hours to fetch water to fill containers for use in school.	Teachers loose contact hour of teaching when pupils go fetching water for use in school
Fence wall	Not available	Pupils clean human excrete from miscreant who enter classroom after class; move learning material every day from class to secured offices in the school; Learning and teaching materials wear and tear because they are moved to and from classroom every day.	Teachers cannot mount teaching corners in classroom for KG pupils who learn through visual observation and role play; Intrusions by outsiders disrupt pupils' attention from lessons being taught.
Toilets/Urinal	Fairly adequate	Pupils clean toilets mess up from community usage/fetch water for use after visiting toilet.	Contact period with pupils is affected as time used to clean toilets reduces the lessons taught. Teachers have to find other ways like teaching before/after class to compensate time lost through cleaning toilets and fetching water to use after visiting toilet.
Catering	Not available	Food is sold in the open place under trees without adequate covering of food from flies and bird drops from the trees; pupils sit and eat under trees without proper hand cleaning facilities with flies hovering over their food.	Irregular attendance from pupils who often fall sick. Draws back progress of class teaching as teachers have to take pupils who skip class because of sickness through previous lessons before starting a new lesson.

Source: Author's fieldwork, 2017

From table 4.10 infrastructure within schools' environment featured prominently in the responses elicited from interviewees with each respondent expressing different levels of appreciation for the lack, adequacy or the inadequacy of each facility.

Water

Provision of portable water in schools is an important discussion in school systems. Access to good water in schools contributes to improvements in healthcare through good hygiene and sanitation practices and reduces time spent on moving to and from far distances in search of water. In the seven (7) schools sampled, only one school had a standing tap that supplies portable water to the school. Though the other six (6) schools had poly tanks storage, they did not have any source of water located on their school premises. Pupils fetched water regularly from boreholes and other sources from the communities in which the schools are located to wash their hands after visiting the toilets or for drinking purposes. In response to my question on availability of water for drinking and washing hands, respondents R21 and R25 had this to say:

R21 "We do not have water. In the community there is only one stand pipe and it is not extended to the school but rather at the central town. You know that washing should be done with a running water. But because of the situation we fetch water, put a cup there and the pupils fetch it for their friends. So that is what we do.

(Head Teacher at Luom Presby DA Basic School)

R25: "No, we do not have running water so always we have to go to the community. So, if the tap is not flowing or there is no water in the poly tank at the community..."

(Teacher at Ayenya DA Basic School)

Fetching water from outside the school premises appeared to have imposed additional burden on both pupils and teachers. Whilst pupils lost contact hours with their teachers for classroom learning, teachers on the other hand must supervise the pupils to fetch water. This has the tendency to disrupt classroom teaching and learning activities because pupils would have to fetch water during school hours. Time spent or wasted on fetching water could have been saved for learning if there was water on the premises of these schools. In response to my question on whether fetching water would affect learning, respondent R25 responded that:

“Yes, that is it. Sometimes when you go there to fetch water they will tell you that they were told the woman has locked the tank because she is cooking or bathing. So, the children must sit and wait for her. At the end of the day the kids will not be in when you want to teach them. Maybe it could be just one or two, but you still must wait for them. So, it wastes our time and you do not get effective teaching and learning”.

(A Teacher at Ayenya DA Basic School)

The safety of the source of water and the means by which these pupils carry the water to the school also have health implications. Where the source of water is contaminated, and the bucket is also not clean, pupils would be at risk of using water that is contaminated with water borne diseases like bilharzia which would affect their health. Sickness from contaminated water would keep pupils from school which means they would miss out on lessons within the period that they were absent from school. This could affect their academic performance.

Fence Wall

Pupils, teachers and school property are important components within a school system. Safe guarding them therefore must be a top most priority for policy makers so that a congenial atmosphere would be created for effective and quality teaching and learning. All the seven (7) schools sampled in Shai-Osudoku District did not have any form of security around the schools. Their premises are opened to entry by anyone including animals who intrude at will and anytime to share in the use of school property with teachers and pupils. I saw animals, children and grown-ups engaged in other activities- footpath, social events, resting place, use of toilets and play grounds- rather than teaching and learning on the premises of the schools during school hours.

Pupils and teachers shared various accounts of intrusion by community members which tends to affect teaching and learning in many ways. Pupils complained that community intruders interfere with their concentration on lessons delivered in class and their teachers also complained about community use of facilities meant for use by only pupils and teachers. In response to questions during my in-depth interviews pupils and teachers shared the following experiences:

R25 “The place is not secured. There is no fence wall nor security. At first when the NGO was here they hired a security man and paid him salary but now that they are not there who will pay him. They do not have any source of income so that could not sustain him making it difficult”. “Not really. They think that as far as it is in the community and it is in the school then it is for us all. During vacation we locked the whole place and when you returned they have spoilt most of the padlocks. So, they will be going there for as long as we would be on recess. Even if it is 6 weeks and by the time you come back they have messed the whole place”.

R27: “They will be disturbing and making all sort of noise. My friend is one of the school dropout so when he is passing he will be shouting and calling me in front of the teacher” “When they are shouting my name and the teacher is teaching I will be listening to them through the window”

(A Pupil of Ayenya DA Basic School)

R7 “Sometimes when you want to go and do your night studies you see wee smokers around and it tends to threaten them, and we do not have any security man as well. Sometimes when you come you will see that people have eased themselves even though there are plenty toilet facility. These things you cannot control them”

(Head Teacher at Asutsuare RC DA Basic School)

These responses from teachers and pupils were predominantly echoed by many of the respondents to have serious security challenges as to where and how they keep learning and teaching materials and the danger of people attacking teachers should there be any issues.

When I sought teachers and peoples view on finding solutions to this lack of security and protection of people and property on school premises, these were some of the responses of interviewees:

R24 “If they build a quality school wall with fence wall and a gate. Even if there is no security but it has a gate they can lock it after school. You will be here, and a parent will pass by and entered the toilet to ease himself and they will come and pass by again meanwhile the toilet is for the school”.

(Head Teacher at Ayenya D/A Basic School)

R7 “Even without security if there is a fence I do not think they can jump. Seriously there must be a fence in every school because all the schools are in the community, so they become community school. Sometimes you the head cannot challenge things because the people who will come and argue with you are the same parent to monitor and supervise you. They have their children here, so they can come at any time. So, we are in partnership with them. Sometimes they come here to do certain things, but you do not have the power to do so much but if there was to be a gate you would seek permission to enter. Even they come here to do their family meetings and funeral without seeking approval from any of us. You will come in and then notice that there is a family meeting. So, you must keep quiet”

(Head Teacher at Asutsuare RC D/A Basic School 1)

Catering Services

Catering services are essential activities associated with every human endeavour. As such it was not surprising at all to observe vigorous catering activities that took place in all the seven (7) basic schools sampled. Vendors of food and food items sold their wares under trees to pupils during break periods. There were no structures built for their activities and pupils buy food and eat whilst standing. Pupils who could not stand would either sit on the bare floor or at the edge of gutter concrete slabs. I observed in all the schools sampled that the catering activities brought a lot of housefly around the vending area. As opened as the vending areas were, the wind blew freely carrying towards the area sand and other invisible particles that could contaminate the food the pupils were buying and possibly the vendors’ wares.

Equally eye catching in these schools was the hand washing regimes in place for pupils to wash their hands before and after eating. Whilst some schools provided water for hand washing on the corridors of classroom blocks and at toilet areas, there were no conscious effort to provide appropriate hand washing opportunities around the opened eatery area for pupils to properly wash their hands before eating. Many of the schools left that function entirely in the hands of food vendors. The food vendors provided a bowl of water for pupils to wash their hands, but I did not see any attempt to regularly replace the water in the bowl with fresh and clean water. Some of the interviewees shared their experiences on the catering arrangements made in their schools:

R4 “No. People cook from their various houses and sell them over here. So, we do not have a canteen but rather use the trees under. Something can fall from the tree and enter your food whilst eating. The way they manage the food systems are not okay”

(A female Pupil of Asutsuare Estate D/A basic school 2)

R5 “The fingers are all not equal. Some people are coming from different background so if they can discuss among the parents and teachers at a PTA meeting. So, if they can afford then they can implement that policy. If they cannot afford then at least there must be a structure for the people to come and sell their food underneath so that our food will be protected”

(A male pupil of Asutsuare Estate D/A Basic 2)

Classroom Infrastructure

Provision of classroom infrastructure constitutes a major requirement for a sound educational system. Significantly, teaching and learning occurs in classroom enclosures which provides protection from the vagaries of the weather and intrusion of outsiders so that a congenial

atmosphere is created for effective learning. In an in-depth interview, a respondent shared this view of classroom as an important facility:

R2: “It is better than none. Even though not all the things are provided. I think it has helped us in one way or the other. At least we have ended the shifting cycle”

(A Teacher at Asutsuare Estate D/A Basic School 2)

Next, I turned attention to specific classroom infrastructure in the schools used for the study. Table 4.11 provides a summary of the various classroom infrastructures that featured prominently in the response of the interviewees.

Table 4 11: Classroom Infrastructure

Infrastructure Type	Responses	Outcome on learning	Outcome on teaching
Classroom	Some classrooms are available but inadequate. Part of class 1-6 classrooms are used for kindergarten pupils. This reduces classroom space for class 1-6	Some classrooms conditions like no ceiling, cracks, floor potholes, heat, dust, overcrowding and noise thus affect learning when it rains or during afternoon when the sunshine heats up. Congestion as a result of reduced classroom space affects pupils’ concentration during class hours.	Loss of contact hours and draw backs in lesson delivery because of sickness and absenteeism. Loss of concentration from pupils and class control due to overcrowding, heat, noise and bad classroom floor.
Library	Not available	Unable to access learning materials for references and also have a serene environment for reading.	Poor reading habit of pupils.
ICT/Science Laboratory	Not available	Unable to undertake practical lessons in ICT and science which are critical to learning outcomes.	Unable to demonstrate with teaching aids necessary for effective teaching

Source: Author’s fieldwork, 2017

Classrooms

Adequacy or inadequacy of classroom provision was a topical issue in the narratives elicited from respondents and interviewees across both experimental and controlled schools. Although the four (4) experimental schools had received some amount of facilities particularly classrooms, which the three (3) controlled group schools did not receive, all the seven (7) schools expressed views of inadequate classroom space. All the four schools that received 6-unit classroom blocks had challenges with space for kindergarten (KG) 1 and 2 classes because the facilities were not constructed with pre-school space. They had to improvise to accommodate the KG pupils. Rooms designed for library and stores were converted into KG class which have become part of the basic school system. This brought in its wake numerous problems in the use of the store and library for unintended purposes.

The store had only one window and the space was also small. However, the teachers responded that children of KG stage need spacious classrooms where they can play around and at the same time have areas prepared for their afternoon naps. The KG classroom must also have spaces termed ‘corners’ where teachers can mount learning materials for the children who at their ages learn through observation and role plays with mounted teaching and learning materials (TLM). Teachers were not able to mount TLMs to teach pupils. This also created heat and overcrowding in many of the KGs classroom because the rooms did not have ceiling cover to shield the class from direct heat from the roof. Teachers and upper primary/JHS pupils who observed the outcomes of these challenges with the KGs improvisations as a result of inadequate classroom share their experiences:

R3: “Yes, that is our.... We do not have the new building [Laughing.....] Kindergarten does not have a block. So, we are using the ICT laboratory for the mean time. We use the new building store room”.

(A Teacher at Asutsuare Estate D/A Basic School 2)

Despite these challenges, classroom infrastructure provided in the four (4) schools have also been deemed as a ‘God-sent’ intervention in all the schools that benefited. Whilst some of the respondents said its provision was timely, others believed it was long overdue. Schools that were running shift systems (a school running separate sessions in the morning and afternoon because of large pupils’ population and lack of facilities) day in a day out with its attendant challenges of pupil absenteeism had the opportunity to revert to normal day stream. Some schools, before the classrooms were provided, had overcrowded class size twice the average teacher-pupil ratio of 1-40. It was difficult for teachers to supervise, teach, mark homework and above all control such a large class size. Interviewees’ account of the reliefs provision of the new classrooms has brought to them is stated below:

R06: “When we were under trees, anytime it is about to rain we must close the school. So, we spent less time with the children previously but this time around we are secured anytime it is about to rain. So, in a way it has solved that problem. So, if there is a lessen you are about to teach and the rains are coming then you must run around to find shelter for them has been resolved. So, in a way there is maximum time spent with children. That means we have adequate time with them unlike previously. Also, the teacher is not afraid of any bird defecating on him whilst teaching. Sometimes when the teaching is going on the student will be looking around all corners. If there

is a car passing and it make a sudden noise, that will draw everybody's attention but here in this case the teacher is able to have some attention from the people"

(A Teacher of Asutsuare RC D/A Basic School 1)

R04: *"Yes, because the shift system has been ended because of the new block that was constructed. This has really helped but we are having a problem with the newly built classroom because I do not know the type of cement they used. Just after three months the cement started cracking producing excessive dust on the floor and these are all kids because it is then primary block".*

(A Pupil of Asutsuare Estate D/A Basic School 2)

Science/Information and Communications Technology (ICT) laboratory

Five (5) out of the seven (7) schools studied did not have science or ICT laboratory, Even the two that had an ICT laboratory were not spacious enough to take an entire class of pupils during ICT sessions. Computers were very few in the laboratory which made it impossible to have a computer per pupil during ICT class. Lack of electricity supply to the schools also hampers the use of the few laptop computers provided by government for the two (2) schools that had some sort of a laboratory. ICT teachers had to carry the laptop computers to their homes to charge the batteries so that they could be used the next day for teaching and learning in school.

Science equipment that are portable are brought to class for demonstration during related subject lessons rather than mounting them in a laboratory setting for periodic practical lessons. They do not have the laboratory space and the necessary equipment to learn with. Respondents were of the

view that practical sessions provide the teacher with a forum to demonstrate in real terms the application of theory with which pupils can relate easily. This was what they shared:

R5: “Sometimes our ICT teacher teaches only the theory aspect. So, let me give you an example. He would say creating a folder on the desktop. He will tell you to click an empty space on the screen of the desktop. Meanwhile you cannot see the screen. So how do you click on the empty space? How do you move your mouse pointer, so you have to practice to perfect it in your mind Practice makes man perfect?”

(A Pupil of Asutsuare Estate DA Basic School 2)

R28: “We have some tiny computer laboratory. At first it used to be a store room and then it was converted into a laboratory. But the computers are few. when they are to do practicals, it seems the ICT teacher is saying that it is like the ratio is 4: 1 {4:1 Then accessibility becomes a challenge} So at times they are divided into 2 groups One group goes in and when they are done then the other goes in after waiting on the verandah. So, if it is one hour. Each of them will use 30 minutes both”

(Head Teacher of Dodowa Methodist Basic 1)

Classroom specific facilities

Table 4.12 presents an overview of some of the classroom specific facilities respondents mentioned as necessary for an effective basic school system.

Table 4 12: Classroom specific facilities

Infrastructure type	Responses	Coping mechanism	Outcome on learning	Outcome on teaching
Furniture	Inadequate	3 or 4 pupils share dual desk/ provide benches for pupils to use	Discomfort in seats, lack of concentration, copying work among pupils, absenteeism among pupils, poor hand- writing skills	Difficulty in identifying slow learners, additional teaching time to make up for lost of attention by pupils
Textbook	inadequate	Group reading/teacher writes on board/photocopying of textbooks	Poor reading skills/unable to read at home to do assignments	Time spent to write on chalkboard. Copy work, inadequate reading time to allocate to pupils
ICT/Science equipment	5 of the 7 schools have no ICT/science equipment	Demonstrate with few computers in class for teaching and learning	Less practice in learning ICT/science subjects/	Unable to demonstrate with a set laboratory equipment/unable to develop the skills of pupils in ICT/science subjects/lack of interest of pupils in these subjects because of unavailability of laboratories.
Electricity	5 of the 7 schools didn't have electricity	Charge computer batteries at home for class use/manage all school activities during daylight time	Lack of practice with ICT/science equipment/Cannot do evening studies in school, poor visibility in class/heat during afternoon	Unable to demonstrate ICT/ science equipment in class, poor lighting system affects pupils' attention span

Source: Author's fieldwork, 2017

Furniture

Furniture provision in the schools studied remains a challenge to both the use of teachers and pupils. The classrooms were constructed without providing any furniture in some of the schools. Even where few were later provided, it could not meet the needs of teachers and pupils. For instance, dual desks meant for two (2) pupils are sometimes used by three or four pupils in class. Pupils feel uncomfortable in such seating arrangements during class sessions. They cannot have sufficient space to seat and write, they fidget in their seats as each adjust the body to secure a balance in stability so that they do not fall.

Teacher respondents indicated that pupils' concentration on lessons taught reduces because as you teach, pupils pay equal attention to their sitting posture just as they listen to lesson delivery. If you ask them to recall what you said they were unable to say anything. Pupils copy a lot of their colleagues' work because of proximity in seating arrangement. This affects their independent learning skills. As such, teachers are compelled to put pupils in groups during examinations. Each group takes a turn to write the exams so that there would be space to do independent work without copying. This creates additional work for teachers who must do more hours in such situations because of inadequate furniture in their schools. The following experiences were expressed by the respondents:

R11: *“So, for example we are facing a lot of difficulties with furniture and the GES said they will provide us with furniture. When we came to this school last year there was nothing in the room. It was just the classroom structure alone. The teacher does not have anything to sit on. Just an empty classroom”. “Sometimes by the time you finish the day’s activity, your waist will be paining you. So, it took a long time with that condition before they brought these things. Even as I am talking*

right now the children are also feeling the same thing and it is not comfortable. So, during examination or class text I must divide them into 2. So that when the first group finish then the other group will come in”

(A Teacher at Dodowa D/A Basic School C)

R19: “There were no desk and people sat on the floor”. “Seriously. They sit on the floor to write. So, we must organize a board and put it on the floor for them to write on. So, people will be writing and pushing each other. The desks that we had was dangerous, and you cannot sit on it because you will be sitting on it and the next minute it will break. When we came we mended some. So, we put the small ones and the big ones by just trying to fix them. So, it delayed the teaching process. If they were writing on the table then that will not be a problem because of that some people left the school”.

(A Teacher at Kasunya D/A Basic School)

R09: “The chairs are not enough, and the tables are meant for the teachers and headmaster”. “Some sit in 3 or 4”. “Yes. The small space that you must write even you will stand from the chair and put the book on the chair and then start writing”.

(A Pupil of Asutsuare RC D/A Basic School 1)

Textbooks

Textbooks are described as an essential material in the success of the basic education system delivery. Adequate and prompt provision of this material is crucial to effective delivery of lessons by teachers and enhanced academic prospects of pupils. In the course of this research work, both

schools that received or did not receive major infrastructure since 2009 expressed varied levels of inadequacy of textbooks supplies across schools and subject areas. Teachers improvise by adopting various methods to cope with the situation. In schools where there are no textbooks or insufficient textbooks teachers have to group a number of pupils to a book and let them read in turns. Notes and passages are written on black or marker boards for pupils to copy. Teachers often are challenged in giving assignment to pupils to take home because many do not have the requisite textbook. To alleviate pupils', struggle the schools have had to appeal to parents to consider buying books for their children until government supplies become adequate.

However, the average low-income levels of parents (mostly farmers) in many of the communities coupled with the expectation that government would provide free books have affected the rate at which parents are willing to support their wards with learning materials. According to Ghana Statistical Service(GSS) poverty mapping report, Shai-Osudoku District has the highest rate of 23% depth and 55% incidence of poverty in Greater Accra Region, (GSS Poverty Mapping Report, 2015). They see it as government's obligation and are thus unwilling to buy books, even if they could afford to do so. These are some of the views respondents in the study provided to support the issue of textbooks:

R18: "We only rely on the government textbooks. You realize that some of them are quite old and the information in them are not updated. We are waiting until government supplies textbooks. People in this area do not buy books because they have heard that everything is free. We ask them (parents) to come and pay something and they will not".

(Head Teacher at Kasunya D/A Basic School)

R24: *“Yes. We have about 8 subjects in JHS and not even a single textbook nor syllabus”.
“Anyway, when the NGO was here it was fast but with government... We started the JHS last year, so this is the second year. We have not been given any text books. They have given dictionary but no syllabus yet. So, at times you must rely on other schools for copies and appeal to the parent to buy their own textbooks from the market”.*

(A Teacher at Ayenya D/A Basic School)

R12: *“Oh, that will be the textbooks. In education without reading, writing, and understanding school will be useless. So, if they come to school and they get more furniture without the textbooks I do not think teaching will be improving”*

(A Teacher at Dodowa New Town D/A Basic School C)

4.4 Assessing improvements in teaching and learning through infrastructure provision in basic schools in Shai-Osudoku District.

In this section, assessment is done along the lines of before and after outcomes of facilities provided, the extent to which these facilities have improved teaching and learning environment of the schools under study. Indicators for assessing these improvements include class attendance, BECE results (where applicable), enrolment, learning, teaching, sanitation, security/safety and extra-curricular activities.

Below is quantitative findings about improvement in teaching and learning are presented

4.4.1 Description statistics on general activities undertaken in schools

Table 4 13: Most activities undertaken in schools

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
learning	9	18.8	36	40	45	32.6
sports	9	18.8	12	13.3	21	15.2
teaching	30	62.5	42	46.7	72	52.2
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.13 presents data on the most activities that is undertaken in the schools sampled. 62% of respondents who did not receive new facilities considered teaching as the major activity in their school. Of those respondents who received infrastructure 47% and 40% stated teaching and learning respectively as major activities in their schools. Teaching and learning appear to be the most dominant activities respondents considered as important compared to sports and other extra-curricular activities.

Table 4 14: Three top activities of schools

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
extra-curriculum	3	6.2	12	13.3	15	10.9
learning	36	75	45	50	81	58.7
sports	3	6.2	3	3.3	6	4.3
teaching	6	12.5	30	33.3	36	26.1
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.14 presents information on the three top most activities sampled respondents undertake in their schools. 75% respondents in schools without new facilities stated learning, 13% teaching and

6% extra-curricular/sporting. 50% learning, 33% teaching and 13% extra-curricular respectively for respondents in schools which had new facilities. The total result turned in learning, teaching and extra-curricular activity as the most important activity in basic school system.

Table 4 15: The top-most extra-curricular activity

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
entertainment	6	12.5	12	13.3	18	13
extra curriculum	9	18.8	27	30	36	26.1
sporting	33	68.8	51	56.7	84	60.9
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.15 reported sporting as the top most extra-curricular activity embarked on in schools that did not receive new facility. 57% responded sporting as the top most extra-curricular done in schools with new facility. Respondents total response to sporting at 61% compares favourably with their total response of 59% to learning as the most important activity in school.

4.4.2 Grading of facilities before and after the time of new infrastructure provision

Table 4 16: Perception of teaching before infrastructure provision

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
Very Bad	0	0	6	6.7	6	4.3
Bad	3	6.2	9	10	12	8.7
Good	27	56.2	21	23.3	48	34.8
Very Good	12	25	24	26.7	36	26.1
Excellent	6	12.5	30	33.3	36	26.1
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.16 presents how respondents graded teaching in their schools before new infrastructure was provided. Of respondents from schools without new facilities (control group), 94% stated teaching was good and 83% of respondents from schools with new facilities said teaching was good. Less than 7% and 17% respectively considered teaching as bad before new facility.

Table 4 17: Perception of teaching after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Good	21	43.8	27	30	48	34.8
Very Good	24	50	36	40	60	43.5
Excellent	3	6.2	27	30	30	21.7
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.17 puts forward respondents' grading of teaching after major new facilities had been provided. 40% of sampled respondents from schools with new major infrastructure graded very good improvement in teaching after receiving new facilities. This compares favourably to their grading of 27% in teaching improvements before new facilities were provided.

Similar trend shows in their grading of 30% good improvement in teaching after new infrastructure against 23% grading before provision of new facilities.

However, 60% of respondents from schools that had received some facilities did not consider improvement. They believe facility provision must be comprehensive. It should include adequate textbooks, furniture and other learning materials in order to achieve significant improvement.

Schools that did not receive major infrastructure since 2009 stated 50% very good improvement in teaching as against 25% reported before new infrastructure was provided to the experimental schools. This favourable grading could be explained that though these schools did not receive any major new infrastructure like classroom block, they had piecemeal supplies of other learning

materials like textbooks and furniture from the District Assembly and NGOs. It could also be explained that teaching improvements could also be affected by other factors rather than major infrastructural provisions. For instance, a qualitative data provided a semblance of this plausibility although its strength in frequency among respondents' response rate is weak. This was what the interviewee shared:

*R12: "We are not waiting only for infrastructure to help the children, but we are here purposely for them. So, **we are going to help them** and yet still we will be waiting for other infrastructure"*

(A Teacher at Dodowa D/A Basic School C)

*R18: "I will say 8 because it has improved because apart from the challenges you realize that the teacher is **motivated**. We make sure they still do their best. So, it has improved especially there is a reading program ongoing you realize that It is a reading clinic organize on Saturdays whereby the children come and participate. It has helped in the overall learning because at the end of the term when they have finished with their exam they have a brush they prepare, and it is over 600 but you realize that most of them scored around 560. So, it has improved"*

(A Teacher at Kasunya D/A Basic School 2)

Self-motivation and commitment by teachers to improvise in order to teach pupils appear to have made the difference in improvements score produced by the quantitative data even though these schools did not receive any major facilities within the study period.

Table 4 18: Perception of learning before infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	3	6.2	6	6.7	9	6.5
Bad	6	12.5	12	13.3	18	13
Good	36	75	33	36.7	69	50
Very Good	3	6.2	30	33.3	33	23.9
Excellent	0	0	9	9	9	6.5
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.18 presents data on tested respondents grading of learning in their schools before new facilities were provided. Of the sampled respondents, 33% very good and 37% good were how learning was graded by respondents before new facilities in their schools. 75% of respondents in schools without new facilities graded learning in their school as good.

Table 4 19: Perception of learning after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	6	12.5	6	6.7	12	8.7
Bad	6	12.5	6	6.7	12	8.7
Good	24	50	36	40	60	43.5
Very Good	9	18.8	33	36.7	42	30.4
Excellent	3	6.2	9	10	12	8.7
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

From table 4.19, 36% and 40% of sampled respondents in schools with new facilities graded learning as very good and good respectively after receiving new facilities. This compares marginally favourable to the 33% and 37% reported before new facilities were provided. Respondents who did not receive any major infrastructure in their schools graded learning at 50% good, a reduction from 75% grading before facilities were provided. Lack of improvements in learning in these schools without major facility in the stated period could be explained with the

level of motivation of teachers to continue improvising with the few facilities available and the level of discipline in the school in order to help pupils to learn. Such attribution was captured in an interviewee response during this work and stated below:

R05: “Students here actually are not “truants” They come to school. I will say 90% but some little or few people are stubborn, and they must be punished. Here discipline is effective just that our facilities are inadequate”

(A Pupil at Asutsuare Estate D/A Basic School)

Table 4 20: Perception on extracurricular activities before infrastructure provision

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
Very Bad	6	12.5	6	6.7	12	8.7
Bad	3	6.2	3	3.3	6	4.3
Good	24	50	54	60	78	56.5
Very Good	9	18.8	21	23.3	30	21.7
Excellent	6	12.5	6	6.7	12	8.7
Total	48	100	90	100	138	100

Source: Author’s fieldwork, 2017

Table 4.20 presents information on grading of extra-curricular activities by sampled respondents before new facilities were provided. 60% and 23% of respondents in schools with new major facilities graded extra-curricular activities as good and very good respectively. On the other hand, 50% and 19% of the respondents in schools without major new facility scored extra-curricular activities as good and very good respectively.

Table 4 21: Perception on extra-curriculum activities after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	3	6.2	3	3.3	6	4.3
Bad	3	6.2	6	6.7	9	6.5
Good	27	56.2	51	56.7	78	56.5
Very Good	6	12.5	24	26.7	30	21.7
Excellent	9	18.8	6	6.7	15	10.9
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

From table 4.21, sampled respondents graded extra-curricular activities after new major facilities had been provided. Respondents from schools with new facilities graded extra-curricular activities at 57% good and 27% very good. A marginal drop of 3% and 4% in good and very good. This could be explained by a lack in provision of facilities like good playing fields, jerseys, football and other logistics needed for extra-curricular activities. Sampled respondents from schools without new major facilities graded extra-curricular activities at 56% good from 50% before new facility and 19% very good compared to 19% before facility provision. This is almost of same marginal effect as explained under schools with new facilities though the change in good score is positive.

Table 4 22: Perception on safety/ security before infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	9	18.2	30	33.3	39	28.3
Bad	15	31.2	24	26.7	39	28.3
Good	21	43.8	30	33.3	51	37
Very Good	0	0	3	3.3	3	2.2
Excellent	3	3	3	3.3	6	4.3
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.22 reports sampled responses grading safety and security before new major facilities were provided in some schools. 60% of respondents in schools with new major facilities graded safety

and security as bad, with 40% grading security as good. 50% of respondents graded security as bad whereas 47% graded as good in schools without major new facility.

Table 4 23: Perception on safety after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	3	6.2	6	6.7	9	6.5
Bad	6	12.5	18	20	24	17.4
Good	27	56.2	48	53.3	75	54.3
Very Good	12	25	15	16.7	27	19.6
Excellent	0	0	3	3.3	3	2.2
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.23 presents sampled responses from respondents after provision of new major facility. 73% of respondents with new facility graded security as good and 27% graded security as bad. The 73% scores compare better than the 40% score of good security before new classroom was provided. This 33% improvement is the good security score in safety situation in schools that have received major infrastructure is significant within the scope of school environment studied where teaching and learning is interfered with the activities of the wider community. This improvement could be explained with the new classroom blocks provided where doors and windows could be locked anytime to prevent intrusion. Qualitative data responses elicited corroborates this statistical result indicating improvements in security. 81% of respondents with no new facilities graded security after major facility as good and 19% graded security as bad.

Table 4 24: Perception on enrolment before infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	6	12.5	0	0	6	4.3
Bad	9	18.8	27	30	36	26.1
Good	30	62.5	51	56.7	81	58.7
Very Good	0	0	6	6.7	6	4.3
Excellent	3	6.2	6	6.7	9	6.5
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.24 presents data on grading by respondents on pupils' attendance before major new facilities were provided. 70% of respondents from schools with new major facility graded enrolment good with 30% grading enrolment as bad. 69% of respondents in schools without major new facilities graded pupils' enrolment good with 31% grading enrolment bad.

Table 4 25: Perception on enrollment after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Bad	3	6.2	6	6.7	9	6.5
Good	9	18.8	24	26.7	33	23.9
Very Good	9	18.8	48	53.3	57	41.3
Excellent	27	56.2	12	13.3	39	28.3
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

From table 4.25, responses of sampled respondents on enrolment after provision of new facilities is presented. 93% of sampled respondents with new infrastructure graded enrolment good with 7% bad. This compares favourably with 70% good grading before new facility. 94% of respondents without new major facility graded enrolment good and 6% bad. 94% grading an improvement over 69% reported before new facility. Similar percentage increase in good rating of perception of

enrolment in schools without any major facilities surmises that the improvements in good score for both experimental and controlled schools could be attributable to many factors rather than only new infrastructure provision. This is because though no major new facilities had been provided in the controlled schools their ratings for improvements in enrolment had risen. Other government interventions like school feeding could draw pupils to school thus increasing enrolment.

Table 4 26: Perception of teacher attendance before infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	3	6.2	0	0	3	2.2
Bad	6	12.5	15	16.7	21	15.2
Good	12	25	30	33.3	42	30.4
Very Good	15	31.2	33	36.7	48	34.8
Excellent	12	25	12	13.3	24	17.4
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.26 presents information on sampled respondents on teacher attendance before new facility. 83% sampled respondents with new facility graded teacher attendance good with 17% grading bad. 81% of respondents without new facility graded teacher enrolment good with 29% bad grading. Significant here is that despite the gap in facility provision, both experimental and controlled schools reported high scores for teacher attendance.

Table 4 27: Perception of teacher attendance after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Good	3	6.2	18	20	21	15.2
Very Good	30	62.5	42	46.7	72	52.2
Excellent	15	31.2	30	33.3	45	32.6
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

In table 4. 27 respondents’ grading of teacher attendance data after provision of new major facility is presented. All respondents graded teacher attendance good after provision of new infrastructure. 100% good grading compares favourably against 83% score by respondents before new major facility and 81% respondents without any major new facility.

Again, the positive scores in teacher attendance both in experimental and controlled schools limits the extent to which the improvement can be attributed solely to provision of infrastructure. However, qualitative responses underscore the positive motivation teachers derived from provision of infrastructure for the work of a teacher.

Table 4 28: Perception of pupil attendance before infrastructure provision

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
Very Bad	6	12.5	3	3.3	9	6.5
Bad	0	0	12	13.3	12	8.7
Good	33	68.8	45	50	78	56.5
Very Good	9	18.8	27	30	36	26.1
Excellent	0	0	3	3.3	3	2.2
Total	48	100	90	100	138	100

Source: Author’s fieldwork, 2017

Table 4.28 presents information on sampled respondents grading of pupils’ attendance before new major infrastructure was provided. 83% of respondents from schools with new facility graded pupils’ attendance good with 16% scoring it bad. 88% of respondents in schools without any major new facility graded pupils’ attendance good with 12% grading bad pupil attendance.

Table 4 29: Perception of pupils' attendance after infrastructure provision

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
Bad	9	18.8	0	0	9	6.5
Good	12	25	27	30	39	28.3
Very Good	18	37.5	51	56.7	69	50
Excellent	9	18.8	12	13.3	21	15.2
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.29 reports on sampled respondents grading of pupils' attendance after provision of major new facility. All respondents from schools with major new facilities graded pupils' attendance good against 83% reported before new facility provision. A significant increase of 17% in attendance after new classroom was provided could be attributed to provision of new classroom block provided to schools that hitherto were either running shift system or lessons held under trees. Qualitative interviewees' responses during the study also averred similar improvements in pupils' attendance. 81% of respondents in schools without new major facilities graded pupils' attendance good after new facility compared to 88% before facility. This indicates a 7% reduction in grading of good attendance. Again, qualitative data indicated how pupils avoid school with less or dilapidated facilities.

Table 4 30: Perception on class/BECE results before infrastructure provision

	No Freq.	Percent	Yes Freq.	Percent	Total Freq.	Percent
Very Bad	3	6.2	0	0	3	2.2
Bad	3	6.2	12	13.3	15	10.9
Good	33	68.8	63	70	96	69.6
Very Good	9	18.8	15	16.7	24	17.4
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.30 presents sampled respondents grading of class /BECE results before new infrastructure was provided. Of schools with new facility, 87% of respondents graded class result good with 13% bad. 88% respondents in schools without new facility graded class results good with 12% graded bad.

Table 4 31: Perception on class/BECE results after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Good	18	37.5	24	26.7	42	30.4
Very Good	24	50	51	56.7	75	54.3
Excellent	6	12.5	15	16.7	21	15.2
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.31 shows grading of sampled respondents' responses about class results after provision of new major infrastructure. All respondents in schools with new facility graded class result as good after new facility compared to 87% grade before new facility. Similarly, all respondents without new facility also graded class result good. The coincidence of improvements in both experimental and controlled group outcomes as good makes direct attribution to infrastructure provision sensitive.

Similarly, qualitative data also did not yield marked attributable outcome to this effect since many of the schools started using the classrooms provided not long enough to generate sufficient data from which conclusive result in examination improvements could be measured over time.

Table 4 32: Perception on sanitation before infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Very Bad	6	12.5	0	0	6	4.3
Bad	3	6.2	21	23.3	24	17.4
Good	21	43.8	45	50	66	47.8
Very Good	12	25	24	26.7	36	26.1
Excellent	6	12.5	0	0	6	4.3
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.32 presents sampled respondents grading of sanitation before new major facility was provided. 77% of respondents from schools with new major facility graded sanitation as good with 23% grading sanitation bad. Of respondents from schools without any major facility, 81% graded sanitation as good with 19% grading sanitation bad.

Table 4 33: Perception on sanitation after infrastructure provision

	No		Yes		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Bad	9	18.8	6	6.7	15	10.9
Good	15	31.2	12	13.3	27	19.6
Very Good	18	37.5	69	76.7	87	63
Excellent	6	12.5	3	3.3	9	6.5
Total	48	100	90	100	138	100

Source: Author's fieldwork, 2017

Table 4.33 presents respondents grading of sanitation after provision of new major facilities. 93% of respondents from schools with new facilities scored sanitation good compared to 77% graded

before provision of new facility. This indicates an improvement of 16% in sanitation over the prior period's grading. With schools without major new facilities, respondents grading remained same.

Table 4 34:Trends in Financing Education Through Budgetary Allocation- 2012-2017. Education Allocation as a Share of Gross Domestic Product (GDP) - Including Get fund

DESCRIP TION	2012	2013	2014	2015	2016	2017
Nominal GDP	69,771,85 3,142	88,764,00 0,000	105,503,60 0,003	135,010,80 6,378	168,738,38 0,320	203,405,65 1,671
Total Appropriati on Budget	13,529,70 6,950	31,839,60 0,605	36,209,423, 662	44,001,266, 921	50,109,852, 855	65,467,404, 869
Total MDAs Allocation	10,322,07 4,841	15,651,97 8,952	19,270,677, 116	18,534,328, 713	24,909,159, 845	25,599,402, 815
Total Education Budget	2,851,680, 218	4,412,695, 383	6,555,762,2 74	7,584,336,6 01	7,666,027,5 23	9,120,323,9 77
MoE as a % of GDP	4.1%	5.0%	6.2%	5.6%	4.5%	4.5%
MoE as a % of Total Appropriation	21.1%	13.9%	18.1%	17.2%	15.3%	13.9%
MoE as a % of MDA Allocation	27.6%	28.2%	34.0%	40.9%	30.8%	35.6%

Source: Adapted from Budget Statement and Economic Policy of the Government of Ghana, 2012-2017.

From the above table, national resources allocated to financing education related expenditure at all levels increased as a proportion of GDP between 2013 and 2014 by a percent but decreased in the last three years. As such the proportion of education allocation as part of overall appropriation decreased over the last three years. This reduction affects how education is financed because the government is the biggest financier of education and any reduction in budgetary allocation affects the extent to which goods and services can be procured towards basic education. Private sector

participation particularly in basic education financing is predominantly in urban areas where people can afford to pay their wards. Thus, reduction in funding to education is likely to affect the quality of services provided at schools and pupils in rural areas may suffer greatly as they may not have alternatives in privately run schools to opt for. Even where such privately run schools exist, low income levels of parents could affect their ability to pay for their wards to attend.

4.5 Discussion of Findings

This section presents a synthesis of key empirical findings presented above which is outlined along the lines of the objectives I set out to enquire.

Examining types of policies on infrastructure at basic school level

Infrastructure policy objectives do not reflect adequately in the type of infrastructure provided in schools. Whilst the Education Act 2008, Act 778 designed and legislated basic education to include two (2) years of kindergarten education, the new classroom infrastructure provided in the schools studied was not designed to include kindergarten space. This created a huge gap in policy initiated and the outcome of its implementation resulting in improvisation by teachers to accommodate and teach kindergarten pupils. Space earmarked for storeroom and ICT laboratory were converted into kindergarten to accommodate pupils. Such arrangements were unsuitable for educating pupils as young as kindergarten pupils who, in their formative learning, need spacious environment to explore through play and display of learning materials hanged or positioned in ‘corners’.

Whereas education policy had devolved the responsibility to provide infrastructure at basic school level to the Shai-Osudoku District Assembly, some resource allocative powers still centralized. For instance, GET Fund (established by Act 581) approves and designs prototype classroom

infrastructure to be rolled out at the district level of education. Although the District Assembly awards the project and owns them, payment for work done is made at GET Fund secretariat in Accra. Delays in payment for work done affects the quality and early completion of the project for which the Shai-Osudoku District Assembly has no control. Respondents complained about shoddy works done with visible cracks in walls, floor screeds removing, weak windows and doors in new classroom blocks. If the resources were decentralized and the District had control over its usage, it would be in a position to better prioritise its developmental needs and allocate sufficient funds for basic school projects to be executed timeously.

There is a lag between policy implementation and evaluation which is supposed to provide feedbacks into policy regeneration. This puts strains on the use of existing infrastructure for teaching and learning. During the study it was noted that policy evaluation takes time to feed into shaping initial policy objectives. Thus, interventions are delayed or never really provided to correct implementation challenges in terms of adequacy of infrastructure provision.

Educational infrastructure provision is not properly coordinated at basic school level in Shai-Osudoku District. Different government institutions and agencies under Ministry of Education provide varied infrastructure and school resources from the centre with little input from the district assembly level. As such, gap are created in what the schools require urgently and the resources provided from the national level agencies.

Ascertain the adequacy of infrastructure provided.

Infrastructure inadequacy existed in classroom, furniture, textbooks, toilet and girls changing rooms facilities provided in all the basic schools studied. Classrooms were provided in the schools

studied without set complement of furniture for use. Whereas these schools had been moved ostensibly from ‘under trees’ into new classrooms, there were little or no furniture for both teachers and pupils to teach and learn respectively.

With the exception of one (1) school that had a 3-unit toilet provided, all the other schools did not have new toilets provided. This puts pressure on the use of the old toilets as a result of increased numbers in enrolments. Thus, compromising the hygienic condition of school environment as pupils get exposed to insanitary conditions that can lead to disease epidemics like cholera, diarrhea and infections from hepatitis among others. Pupils who get sick are most likely to miss class activities and lose contact hours for teaching and learning.

In all the schools studied, the new classrooms helped reduce overcrowding in class size and the use of makeshift structures to accommodate pupils. However, some schools reported increase in enrolments as a result of population increase in their catchment areas or the new classroom attracting pupils to seek transfer. Subsequently their numbers started increasing. Coupled with lack of adequate furniture and textbooks for the new classrooms, teaching and learning activities are beginning to overwhelm the infrastructure currently in use.

Assess improvements in teaching and learning through infrastructure provision

Both qualitative and quantitative data obtained point to varied levels of improvements across the core activity areas in the schools studied. In the areas of enrolment, teaching and sanitation, statistical data returned significant improvements with 17% improvements in perception of pupils’ attendance, 17% improvement in perception of teacher attendance, 23% increase in perception in enrolment, 16% improvement in sanitation and 33% increase in the score for perception of good

security and safety. A marginal 6% improvement in good score for perception of learning was recorded.

Similarly, qualitative data obtained from interviewees suggest varied levels of improvement in spite the fact that they lack some set of complementary facilities, teaching and learning materials in their schools. Both teachers and pupils reported that providing them with a classroom was motivating enough to come to teach or learn compared to their previous situation of overcrowding, a shift system and dilapidated structures. A new classroom was an attraction for pupils to opt to enroll in these schools with the expectation of learning in new facility.

Pupils and teachers opined that they felt safer in the new classrooms provided compared to the danger posed in their old structures built many years ago without any renovations or the makeshift structures they had to use. They could now have their learning materials and furniture safe in the classroom where doors and window are locked after school without moving them to safer locations outside the classroom.

The new classrooms also reduced the level of interference from the community members who intrude during lesson hours. As a result, diverting pupils' attention from classroom learning and teaching activities had reduced. The vagaries of the weather, except heat and rain on the roof which is not ceiled, when it rained has reduced in terms of its impact on classroom activities. School does not close anymore when it is about raining or during strong winds.

On sanitation, interviewees recognised the improvements in the use of the new facility has generated. They talk about less dusty classroom environment compared to open sheds and

dilapidated structures they hitherto used where winds blew into their class. Their learning materials and uniforms easily get dirty. Notwithstanding, teachers and pupils expressed concern about lack of access to portable water on the premises of these schools. A situation they considered affects health and hygiene of schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This concluding chapter provides a summary of the major findings of the study and draws key conclusions from the analysis. The chapter further makes policy recommendations to policymakers and stakeholders in the education sector.

5.1 Summary of Major Findings

The following major findings were made during the course of the study:

There were major policies on who should provide infrastructure and how infrastructure should be provided in basic schools in Shai-Osudoku District Assembly. The findings showed that majority of stakeholders like teachers, parents and education office staff were very much aware of the policy on infrastructure provision in basic schools.

The study also revealed that the major infrastructure provided in schools sampled was a classroom block without the complement of other infrastructure and learning material like kindergarten facility, furniture, toilet and textbook for the effective use of the classroom provided. As such, provision of classroom improved teaching and learning by eliminating overcrowding and holding schools under trees which hitherto gave rise to absenteeism and loss of contact hours.

However, inadequate provision of furniture and textbooks to schools affected effective teaching and learning. Meanwhile the roofs of the classrooms provided had no ceilings. Thus, teaching and learning were affected in the afternoon because of heat and also noise from rain water on the roof anytime it rains.

Lack of kindergarten space in the basic school system affected the foundational and functional learning of pre-school pupils. This situation deprived pupils in class 1-6 from adequate space because they have to share classroom space with kindergarten pupils.

Similarly, changing room facilities were not adequately provided for female pupils to handle their regular monthly menstrual issues.

Again, disability friendly facilities were either absent or where provided, remained unusable by physically challenged pupils.

The provision of classrooms also provided a measure of safety and security for the pupils within the school environment. Studying in a classroom helps retain the attention and concentration of pupils who hitherto get distracted by passerby when lessons were held under trees.

Lessons are no more held under trees or at the vagaries of the weather. Tables, chairs, books and other classroom material are kept safely in the new classrooms without moving them elsewhere for safe keeping. Doors and windows are locked to protect school property.

Active community participation and real ownership of basic schools in the area of infrastructure provision was evidently minimal with both The Shai-Osudoku District Assembly and the communities in which the schools are located still grappling with the provision of requisite basic school infrastructure.

5.2 Conclusion

Based on the findings on the study the following conclusions are presented.

5.2.1 There are gaps in educational policy prescriptions and implementation practices at school level.

Nine years after the passing of Education Act, 2008 (Act 778), schools in Shai-Osudoku District are still grappling with basic facilities necessary for effective teaching and learning. Their struggle

comes from inadequacy in facility provision such as classroom space, textbooks, furniture, electricity and water resulting from delays, piecemeal and in many situations non-provision of infrastructure, teaching and learning materials by the key stakeholders (government and communities). For instance, Education Act 2008, Act 778 defines basic education to include two (2) years of kindergarten education. However, the 6-unit classrooms provided in the schools that received some facilities did not provide space for kindergarten.

Far from the usual expectations of prudent management of resource at school level, teachers had to improvise with little or nothing to impart knowledge whilst pupils' outcome as envisioned in Act 778 to become a "well balanced individual with the requisite knowledge, skill, values, aptitudes...to become functional and productive citizens for the total development and the democratic advancement of the nation" remains a daunting challenge. These challenges which were captured in the collective experiences shared by respondent teachers and pupils reflects the gap between policy prescriptions for school resource provision and actual implementation practices at school level.

5.2.2 School level initiatives lack support from Shai-Osudoku District Assembly

Many school level decisions initiated and adopted by the District Education Office lack proper support for their implementation. Three (3) out of the four (4) schools that had received 6-unit new classroom blocks for primary pupils had initiated and started Junior High School (JHS) streams for pupils graduating from their new primary without any facilities particularly classrooms. They had to use part of the new classroom blocks provided for primary pupils to accommodate the JHS pupils. This has brought back the overcrowding that existed as a major problem for which the Assembly had to build these new primary classroom blocks. A bottom- up approach to finding

solutions to developmental challenges in educational system particularly at the basic level could be the optimum way of bridging the gap in infrastructure deficit in many basic schools in Shai-Osudoku District Assembly.

5.2.3 Low level of community participation in provision of school facilities

Mobilising community support towards provision of essential basic school facilities for schools in Shai-Osudoku District received mixed reaction from community members. Education Act, 2008, Act 778 renders community support a permanent feature in basic school infrastructure provision at the district level. Responses from respondents opined a reduced interest of community members to contribute to school development agenda particularly on the backdrop of free education policy pronouncements of successive governments towards basic education and the restrictions placed on schools levying pupils in respect of parent-teacher association (PTAs) fees. As a result, community members are reluctant to assist in providing essential and critical facilities in schools in the Shai-Osudoku District Assembly. This affects efforts by schools to broaden the participatory processes through which many people can contribute to supplement mainstream funding for school infrastructure, a lack of which is affecting teaching and learning.

Although the District Assembly and the community of Shai-Osudoku District have been providing some number of basic school infrastructure, the findings of this study point to the fact that there remain challenges with provision of critical facilities like classroom, furniture and toilets. With no end in sight for these challenges teachers improvise with the little or no resources to ensure teaching and learning takes place. For how long this improvisation would continue depends on the readiness with which the Assembly and the community harness their resources to provide adequate infrastructure for improved teacher delivery and pupils learning. The time to act is now.

5.3 Recommendations

This study makes the following recommendations for policy improvement:

It is important that policy is shaped by actual practices at school level. This can be done through evaluation of school environment in an ongoing manner. Clear measuring tools should be scientifically developed by the National Inspectorate Board of the Ministry of Education to be able to measure key variables in school inputs and output indicators in various school environments based on the immediate and long term needs of each school. With this, policy initiation would be done based on real problems in school environment and how the intended policy can address issues of teaching, learning and improvement at basic school level.

Greater community engagement to foster acceptance and ownership in schools located in communities should form part of the Shai-Osudoku District Assembly's drive towards mobilizing assured funding for school infrastructure provision. Such engagements can be achieved through an enhanced relationship in participatory decision making which creates awareness among teachers, school management committees, parent-teacher associations, chiefs, assemblymen, corporate organisations and civil society organisations in the District about existing needs of each school.

This relationship if properly established and harnessed means that everyone becomes more involved in sharing in the vision of community ownership of schools and the strategies to adopt to acquire, maintain and sustain adequate provision of infrastructure for school improvement.

Government interventions (through Ministry of Education) in basic schools like building facilities, capitation grant, free textbooks and furniture to schools should be properly coordinated and centralised at the District level to reduce the turnaround time for their delivery to the intended

beneficiary basic schools. This would help avoid a situation where one government agency provides classroom alone whilst the schools wait for another agency to provide furniture and textbook at another time. Building such a responsive capacity to deliver resources to basic school infrastructure provision would go a long way to assure unimpeded access and continuous teaching and learning whilst at the same time improve the outcome of school learning environment.

With this, the Shai-Osudoku District Assembly would be more accountable in infrastructure provision to its people. Direct accountability to the people deepens and entrenches decentralization, a prerequisite for participatory democratic governance.

Inclusive education requires an integration of persons with disability pupils into mainstream education. Infrastructure provided in basic schools ought to take into account the needs of pupils with special needs so that the facilities could be easily accessible, friendly and usable to both able and disabled persons without putting extra burden on pupils and teachers to supporting special need pupils in their use of school facilities.

Female pupils must have specifically designated facility suitable for attending to their monthly menstrual needs without difficulty. Regular access to water plays a key role in this area of girls' hygiene. This needs to be addressed by the Shai-Osudoku District and the communities. All of these issues if properly identified per each schools' peculiar needs stands to improve school attendance and hygiene as special needs pupils and girls are likely not to skip school because of absence of adequate facilities to meet their needs.

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APPENDIX 1: Questionnaire

UNIVERSITY OF GHANA

CENTRE FOR SOCIAL POLICY STUDIES

Questionnaire designed to collect data on improvements in teaching and learning through infrastructure provision in basic schools in Shai-Osu-Doku Municipality

The incidence of inadequate school facilities has become regular feature in public discourse over the years. Of interest recently has been school pupils who died when a weak classroom block collapsed on them whilst they were in school. This drew a lot of concerns from local managers of our economy and the international community over how school resources are provided to develop the requisite human capital necessary for accelerated socio-economic development. Thus, a sharp focus on the need to assess our school infrastructure provision and its attendant ramifications for improvements in teaching and learning environment at basic school levels.

Purpose

Primarily, this questionnaire aims at collecting data on infrastructure provided to some basic schools since 2009 and how it has contributed to teaching and learning in Shai-Osu-Doku Assembly. This is part of research work for post graduate studies by a student of Centre for Social Policy Studies, University of Ghana.

Objective of the Study

To identify, through data collection, classification and analysis, improvements in teaching and learning through provision of infrastructure in basic schools.

Composition of the Questionnaire

The questionnaire consists of two sections. Section A dwells on the personal information of the respondents and Section B attempts to gather information on infrastructure provision and improvements in teaching and learning.

Statement of Confidentiality

The researcher holds in high esteem the confidentiality of the respondents. Any information provided for the work would be treated with utmost secret. The data collected would be used exclusively for academic purpose.

For any enquiry of clarification, please contact the researcher, Sayuti Mohammed Nyassor on 0241441938 or nyassor2001@gmail.com.

Thank you very much for your invaluable contribution to this piece of work.

SECTION A

DEMOGRAPHIC QUESTIONS

1. Please specify your age.
a. 18- 25yrs [], **b.** 26-35yrs [], **c.** 36-45yrs [], **d.** 46-55yrs [], **e.** > 55yrs []
2. Gender **a.** Male [], **b.** Female []
3. How long have you/your ward been in this school?
a. 1-5yrs [], **b.** 6-10yrs [], **c.** Above 10yrs []
4. Which class are you?
a. Lower primary **b.** Upper primary **c.** J.H.S >>> **Skip to Q5 if you are a teacher/parent**
5. What is your level of education?
a. None [], **b.** Primary/JHS [], **c.** SHS/'O&A' Levels [], **d.** Certificate "A"/Diploma [], **e.** [], Tertiary (Please specify)>>> **Skip to Section B if you are a pupil**
6. What is your occupation?
a. Farmer [], **b.** Teacher [], **c.** Administrator [], **d.** None [], **e.** Others (please specify).....
7. How long have you been in this employment?
a. 1-5yrs [], **b.** 6-10yrs [], **c.** 11-15yrs [], **d.** 16-20yrs [], **e.** 21-30yrs [],
f. >30yrs [].

SECTION B

**QUESTIONS ON TEACHING AND LEARNING IMPROVEMENTS AND
INFRASTRUCTURE PROVISION IN BASIC SCHOOLS.**

Knowledge of infrastructure policy

8. What is your understanding of the term ‘infrastructure’?
.....
.....
.....
.....
.....
9. Are you aware of the policies on infrastructure provision for schools?
a. Yes [], **b.** No []
10. Do you participate in taking decisions on provision of infrastructure for this school?
a. Yes [], **b.** No [].
11. If yes, please describe the extent to which you are involved in the decision making process.
.....
.....
.....
12. If no, how do you get your needs for facilities provided by the authorities?
.....
.....
.....

Existence of infrastructure in school

13. Have new facilities been provided in your school since 2009?
a. Yes [], **b.** No []
14. If yes, what type of facilities were provided?
a. Classroom [], **b.** Furniture [], **c.** Toilets [], **d.** books/learning materials [], **e.** Others
(Please state).....
15. Who or which organization provided the facilities?

a. Central Government [], **b.** Municipal Assembly [], **c.** Community [], **d.** NGOs [],
f. Others (Please specify).....

16. What is your opinion on the current state of infrastructure in this school?

.....
.....
.....

17. Are the facilities adequate for the needs of the school?

a. Yes [], **b.** No []

18. How adequacy were the facilities provided to your work?

a. Very adequate [], **b.** Fairly adequate [], **c.** Adequate [], **d.** Inadequate [], **e.** Fairly Inadequate [], **f.** Very Inadequate [], **g.** None [].

19. Were the new facilities provided at same time or at different times? Please specify

a. Same time [], **b.** Different times [].

20. How long did it take to provide each of the facilities you had mentioned?

a. 0-5yrs [], **b.** 6-10yrs [], **c.** 11-15yrs [], **d.** >15yrs []

Adequacy of facilities

21. How often are these facilities provided or replaced if needed?

a. Regularly [], **b.** Less regularly [], **c.** Not regularly [], **d.** Never []

22. Are you aware if same facilities have been provided to other schools in the district?

a. Yes [], **b.** No []

23. If yes, were they of the same standard as those provide in your school?

a. Yes [], **b.** No []

Experiences before facilities were provided

24. What types of facilities did you have in your school before 2009? Please specify

.....
.....
.....

25. What were their condition at the time of use?

a. Very good [], **b.** Fairly good [], **c.** Good [], **d.** Bad [], **e.** Fairly bad [], **f.** Very bad [], **g.** None [].

26. How adequate were these facilities to your work?

- a. Very adequate [], b. Fairly adequate [], c. Adequate [], d. Inadequate [], e. Fairly Inadequate [], f. Very Inadequate [],

27. What are the activities in your school? i.e. learning/teaching/sporting/entertainment

.....

.....

.....

28. Mention the three (3) top most activities you do in your school.

.....

.....

.....

29. Before the new facilities provision, please grade the following activities: Please tick(✓)

ACTIVITIES	EXCELLENT	VERY GOOD	GOOD	BAD	VERY BAD	WORST
Teaching						
Learning						
Extra-curricular activities						
Safety/Security						

Please skip if not a teacher. Otherwise tick (✓) as appropriate:

ACTIVITIES	VERY GOOD	GOOD	ENCOURAGING	POOR	VERY POOR	WORST
Enrollment						
Teacher attendance						
Pupils' attendance						
Class/BECE results						
Extra-curricular activities						
Cleaning/sanitation						

30. Did the facilities help you deliver your top most activities?

- a. Yes [], b. No []

31. If yes, how successful were you able to achieve your core activities on a scale of 1-10 points

.....
.....
.....

32. If no, what were the challenges? Please list.

.....
.....
.....

33. Did you wish the facilities had been provided before 2009? Please specify

.....
.....
.....

Experiences after facilities were provided

34. What type of new facilities have you received since 2009?

a. Classrooms [], **b.** Furniture [], **c.** Books [], **d.** Toilet [], **e.** Others (please specify)
.....

35. Are the facilities adequacy and appropriate for your work?

a. Yes [], **b.** No []

36. If yes, how adequate were they?

a. Very adequate [], **b.** Fairly adequate [], **c.** Adequate [], **d.** Others
.....

37. If no, how inadequate were they?

a. Inadequate [], **b.** Fairly Inadequate [] **c.** Very Inadequate [],

38. Has the facilities provided been helpful to the work you do?

a. Yes [], **b.** No []

39. If yes, what are the three top most activities that were affected? Please state.

.....
.....
.....

40. How did the facilities help in improving these aspects of your work and not other aspects?

.....

.....

.....

41. After the new facilities provision, please grade the following activities: Please tick (✓)

ACTIVITIES	EXCELLENT	VERY GOOD	GOOD	BAD	VERY BAD	WORST
Teaching						
Learning						
Extra-curricular activities						
Safety/Security						

Please skip if not a teacher. Otherwise tick (✓) as appropriate:

ACTIVITIES	VERY GOOD	GOOD	ENCOURAGING	POOR	VERY POOR	WORST
Enrollment						
Teacher attendance						
Pupils' attendance						
Class/BECE results						
Extra-curricular activities						
Cleaning & sanitation						

42. What were the challenges with the new facilities provided?

.....

.....

.....

43. Did these challenges occur at the start of use of these facilities or during their use?

.....
.....
.....
44. How have you been coping with these challenges arising from the new facilities?

.....
.....
.....

45. Have you reported the challenges to the appropriate authorities?

.....
.....
.....

46. How have they responded to your report?

a. None [], **b.** Immediate [], **c.** Delayed [], **d.** Indifferent []

47. What facilities would you have considered as appropriate to your work?

.....
.....
.....

48. Why preference for the above facilities instead of the new that have been provided?

.....
.....
.....

END

THANK YOU

APPENDIX 2: Interview Guide- Stakeholder

UNIVERSITY OF GHANA CENTER FOR SOCIAL POLICY STUDIES INTERVIEW GUIDE FOR IN-DEPTH INTERVIEW

I am a student of Master's in research and Public Policy in the above institution who is conducting a research on the topic: "Improving teaching and learning through infrastructure provision in basic schools in Shai-Osu-Doku municipality". Any information provided would be for academic purpose only and the confidentiality of the respondent would be protected. I would be most grateful if you could grant few minutes of your time to answer the following questions: The interview guide for an in-depth interview covers the four (4) objectives of the study as stated below:

1. To evaluate the existing policies on Infrastructure provision in Ghana.
2. To ascertain the adequacy of Infrastructure provided in schools in Ghana.
3. To assess improvements in teaching and learning through infrastructure provision for schools in Ghana.
4. To identify the challenges associated with the provision of infrastructure for schools in Ghana.

Interview Guide for in-depth interview with Dir. Planning, budgeting, monitoring and evaluation, MOE/Municipal Dir. of Education/Dir. National Inspectorate Board:

SECTION 1

DEMOGRAPHIC DATA

1. What is your name and the organization you work for?
2. What position do you occupy and how long have you been in this position?
3. Could you kindly share with me the functions of your office?

SECTION 2

Infrastructure policy and planning

Do you have facilities in your office? If yes, what type of facilities do you have?

If no, why do you not have facilities? How do you cope without facilities?

Who provides these facilities for you?

Does the community also provide facilities? If yes, how is the community's involvement in facility provision?

Are the facilities procured for you or you are given money to procure them?

If you do not procure, how do those who procure for you know which facilities you need?

Do you get the funds for the facilities in time? If yes how early are the funds provided?

How regular do you get facilities for your office?

Are they adequate? If no, how do you manage with what is provided in delivering your job?

Are you able to achieve your goals with insufficient facilities? If no, how does it affect your performance?

Who do you communicate these challenges to? How responsive are those you report to in addressing your facility difficulties?

Are infrastructure challenges a regular occurrence? If yes, how often does it occur?

Is it about only providing finance or it also includes identifying the type of facility and its procurement processes and delivery?

Delivering education

Could you please tell me what the current education act, Act 778 (2008), seeks to do at the basic level of education?

How does it plan to achieve what it seeks to do? Could you state the steps?

What type of educational system does the act envisage?

Does the act seek same approach to the levels within the basic education system? If no what are the approaches to each level within the basic education system?

Who provides education infrastructure?

Are the infrastructure provided at national/regional/district and community level?

How are these facilities owned?

Are these facilities school specific or district wide tailored?

What type of facilities are provided in basic schools in your area? Please mention them.

Are the facilities targeted at specific outcome in a specific school? If yes how is it done?

If no, how are each schools specific teaching and learning needs ascertained?

Who identifies each school's needs for teaching and how are the facilities identified?

Are teachers involved in identifying schools teaching needs? If yes, how are they involved?

Are facility needs of a school identified and decided upon by teachers? If yes, how do they communicate them?

To whom is it communicated?

If no, who and how are these facilities identified?

Do they serve the immediate and long term needs of each school if the teachers are not involved in identifying facilities needed?

Are there any criteria for identifying basic school infrastructure?

Are pupils part of the education system? If yes, how are they?

Infrastructure type

Could you please share with me the approved standardized school facilities for basic schools?

Are they classroom based or relate to school environment? Please explain?

Are they all critical and core to teaching? If yes, do you provide all at the same time?

How do you prioritize facility provision if all are not provided at the same time?

School input and teaching outcome

Do you link infrastructure to specific school activities (like teaching, recreation, sanitation)? Please state activity and related facility.

What criteria do you use to match facility and school activities? Explain.

Please explain if no criteria are used and why?

Do the stated facilities affect the activities you have mentioned? If yes, how do they affect the activities and how do you know?

What do you think is (are) the cause if facilities provided do not improve stated activities?

What do you do in such circumstances?

Do you involve the beneficiaries in finding solutions to the mis-match facility and activity outcome? If yes, how do you go about it?

Do you get assistance from the community or NGOs to bridge the gap in facility deficit?

School input and learning outcome

Do you consider the learning needs of a school when providing infrastructure in basic schools?

What are these learning needs and who are they targeted?

Are these needs only classroom related (insert) or school related (insert)?

Who decides these learning needs?

Are the intended beneficiaries involved in deciding these learning needs?

Are these needs achieved? If yes, how are they achieved?

What do you do if the facilities do not meet the learning needs of the beneficiaries?

Do these needs change over time and how often?

How do you adjust to accommodate these changes?

Do you get the involvement of the community and other stakeholders to meet the changing learning needs of the schools?

How do you achieve this participation of the other stakeholders and government in this respect?

UNIVERSITY OF GHANA
CENTER FOR SOCIAL POLICY STUDIES
INTERVIEW GUIDE FOR IN-DEPTH INTERVIEW

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3. To assess improvements in teaching and learning through infrastructure provision in schools in Ghana.
4. To identify the challenges associated with the provision of Infrastructure for Schools in Ghana.

Interview guide for Circuit supervisors/Head-teachers/Teachers/PTA:

SECTION 1

DEMOGRAPHIC DATA

What is your name and the school you work for?

What position do you occupy and how long have you been in this position?

Could you kindly share with me the functions of your office?

SECTION 2

Knowledge of policy on infrastructure

Do you know who owns the school you work in? If yes please state.

Are you aware of the policy on infrastructure provision in schools? If yes, what are the policies?

If no, who provides infrastructure in your school?

Who takes decision on providing facilities at your school(s)?

Do you participate in such decision making process? If yes, to what extent are you involved?

If no, how do you get your facility needs across for resources to be allocated to it provision?

Existence of facilities in school

Have facilities been provided in your school since 2009? If yes, can you share with me the type(s) of facilities provided?

Who or which organizations provided these facilities? Please name them

How were they provided; at the same time or at different times?

How long did it take to provide each of these facilities?

Adequacy of facilities

How often are these facilities provided or replaced if need be?

Are the infrastructure provided complementary in use or independently used? If yes, can you name some of these facilities?

If no, how do you cope with their use if they are supposed to be complementary?

Are you aware if same facilities have been provided to other schools you know of in the district?

If yes, could you share them?

Were the facilities provided the other schools of the same standards compared to those provided your schools? If no, what were the differences and were they significant?

What would you consider facilities provided in your school since 2009 ad adequate for your work? If yes how adequate were they?

If no, what would have been sufficient for effective work?

Experiences before facilities were provided

What type of facilities did you have in your school before 2009? Can you state them, please?

Were they sufficient and adequate for your use? If yes, please state how adequate were they in carrying out your work.

Were they classroom related facilities? If yes what type of classroom activities were they provided for your school to undertake?

How useful were they to these classroom activities?

What were their condition at the time of use?

Can you share with me if these facilities did help in delivering your core duties? If yes, how successful were they?

If no, what were the challenges associated with the use of these facilities in delivering on your core duties? Please share with us.

Would you have wished additional facilities were provided before 2009? If yes, how should it have been provided both in time and space?

Experiences after facilities were provided

Has there been school infrastructure provided in your school since 2009? If yes, please share with us the types of facilities provided.

Who provided the facilities, central government/district assembly/community/NGO?

Were the facilities adequate and sufficient for the work you do?

What is your opinion about the facility(ies) provided? Were they helpful?

If yes, how helpful were they in your work?

If no, what other facilities would you have preferred were provided to meet the needs of your work?

Did the facilities help in improving your work? If yes, in what manner?

Which aspect of your work did it affect most? Please share with me.

Would you consider the infrastructure provided as delayed or timely provided? If delayed, when would its provision have been deemed as timely?

END

APPENDIX 3: Interview Guide- Pupil

**UNIVERSITY OF GHANA
CENTER FOR SOCIAL POLICY STUDIES
INTERVIEW GUIDE FOR PUPILS**

I am a student of Master's in research and Public Policy in the above institution who is conducting a research on the topic: "Improving teaching and learning through infrastructure provision in basic schools in Shai-Osu-Doku municipality". Any information provided would be for academic purpose only and the confidentiality of the respondent would be protected. I would be most grateful if you could grant few minutes of your time to answer the following questions:

The interview guide covers the four (4) objectives of the study as stated below:

5. To examine the existing infrastructure provision in Shai-Osu-Doku Municipality.
6. To ascertain the adequacy of infrastructure provided in schools in Ghana.
7. To assess improvements in teaching and learning through infrastructure provision in Ghana.

Focus group discussions with School pupils

SECTION 1

DEMOGRAPHIC DATA

4. What is your name and which class are you in?
5. Which community do you come from and how far is it from your school?
6. Have you moved to or from any school recently?
7. How long have you been in this school?

Knowledge about infrastructure

What kind of school facilities does the school have?

What kind of learning materials does the school have?

Do you know who provides them, GES, MOE, PTA?

Were they provided before or after you have joined the school?

Existence of infrastructure

Do you have facilities like tables and chairs/ black board/ building in your school?

What were the nature of facilities (roofed building/furniture/toilet) in your school before these new ones were provided?

How did you cope at that time without the new facilities (furniture/building/toilet)/?

What type of facilities (academic, recreational, health and sanitary, safety and security) are they?

Can you please mention them?

Can you tell me the use of these facilities?

Have you used any of these facilities before in your school?

What did you use the facility for?

Facility use and Pupils experiences

Can you tell me how long you have been using your school facilities that you mentioned above?

Please tell me your experiences about how you used these facilities:

Did you know how to use them?

Were you guided or taught how to use them?

Who taught you how to use them?

Were they easy or difficult to use?

How easy was it to use?

If difficult, were you assisted and who assisted you to use it?

Do you think the facility provided you were useful?

Which of the facilities and materials served you the most?

Why do you consider that facility or material as such?

How does use of the desks/table/etc improve learning?

How does unavailability affect your learning?

Contribution to learning

Can you tell me how useful the facilities were in the following manner:

Academic learning (classroom/computer laboratory/textbooks/tables/library/electricity)

Was it appropriate for what you were learning?

If yes, how relevant was it?

If no, what did you use to do your work?

Did the different thing you used work for you?

What did you use and how did it work for you?

How difficult or easy was it to learn without using the facility?

Did it serve your purpose well?

Did the use of the facility or material resulted in a change in what you do?

If yes, how big or small was the change in your learning?

Do you think the change occurred because of the facility or material you used?

Have you stopped using the facility or material for your learning?

If yes, why have you stopped using it?

Was your teacher happy about how the use of the facility helped your work?

Challenges

Do you have challenges with facilities provided in your school?

If yes, what are these challenges?

Are the challenges with only the use of the existing facilities?

If no, what are the other challenges and with which facilities and materials do they affect?

How regular are you provided with what you need to learn, recreate, and feel safe and healthy in the school?

Are you happy with the time and manner in which these facilities and materials are provided? If no, please explain?

If no, when and how do you think the facilities and learning materials be provide?

Recreational activities (availability of space, play facilities and grounds.

SAME QUESTIONS AS UNDER ACADEMIC LEARNING MATERIALS

Health and hygienic environment (dinning facility/toilets/water/dust bins/refuse disposal)

SAME QUESTIONS AS UNDER ACADEMIC LEARNING MATERIALS

Security and Safety (fence wall/pavements/good classroom facilities)

SAME QUESTIONS AS UNDER ACADEMIC LEARNING MATERIALS

END