

UNIVERSITY OF CAPE COAST

EVALUATION OF THE EFFECTIVENESS OF JUNIOR HIGH SCHOOL  
EDUCATION IN THE CENTRAL REGION OF GHANA

REGINA MAWUSI NUGBA

2020

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EDUCATION IN THE CENTRAL REGION OF GHANA

BY

REGINA MAWUSI NUGBA

Thesis submitted to the Department of Education and Psychology of the Faculty of Educational Foundations, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Doctor of Philosophy Degree in Educational Measurement and Evaluation.

APRIL 2020

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DECLARATION

**Candidate's Declaration**

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ..... Date: .....

Name:.....

**Supervisors' Declaration**

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: ..... Date: .....

Name:.....

Co-Supervisor's Signature: ..... Date: .....

Name:.....

## ABSTRACT

The study evaluated the quality of Junior High School (JHS) education in the Central Region of Ghana using context, input, process and product (CIPP) model by Stufflebeam (1971). Descriptive survey design was employed in the conduct of the study. The target population for this study was made up of public and private JHSs in all the 20 Metropolitan/Municipal/District Assemblies in the Central Region. Proportionate stratified random sampling was employed. In all, the participants for the study were made up of 1,260; 378 JHS three teachers, 756 pupils and 126 head teachers. Questionnaire and performance data sheet were used for data gathering. Descriptive and inferential statistics were employed in analysing the data. It was found that urban schools had class sizes larger than the recommended class size by GES, Ghana. Similarly, private schools had larger class sizes than the public schools. Also, textbook pupil ratio was better in urban schools and private schools as well for English, Mathematics and Integrated Science. In addition, other input factors were present in urban schools to a greater extent; these factors were poor for rural schools for teaching of core-subjects. Private schools reported the availability of other process factors than public schools. Mediation analysis revealed that process factors significantly mediated the relationship between input factors and output factors. The multi group analysis revealed a statistically significant difference between the indirect effect for the urban and rural schools. It was therefore, recommended that Ghana Education Service should provide sufficient infrastructure for the basic schools in Ghana. Also, parents of pupils in Basic schools in Ghana are encouraged to involve themselves in their wards' education.

KEY WORDS

Evaluation

Input factors

Junior High School

Process factors

Output/product

Quality of education

## ACKNOWLEDGEMENTS

I gratefully acknowledge Professor F. K. Amedahe, my Principal Supervisor and Dr. K. Asamoah-Gyimah, the Co-supervisor both of who went through great pains to read the work and the suggestions they offered to bring this study to this level.

My gratitude goes to Prof. Joshua A. Omotosho and Prof. Godwin Awabil, for taking pains to read through my work for me. I am very grateful to Mr. Kweku Arhin, the Faculty Officer who also sacrificed his time to go round with me in search of information to get my work to where it is now. I am thankful to Mr. Richard Ebow Bentil, the Regional Examination Officer and Mrs. Juliette Dufie Otami, Regional Human Resource Management and Development who helped by contacting teachers within the Central Region for the data needed for my work to be successful. I am much grateful to them. I am again grateful to Mr. Frank Quansah, Mr. Francis Ankomah and Mr. Enoch Ewoenam Tsey who sacrificed their time to get the work to where it is now. I am also thankful to Mr. Francis Nti who did all the printout for me. My appreciation also goes to Rev Samuel Amponsah Danquah, Rev. Gabriel Worlanyo Nugba, Apostle Eric Esseku Tetteh, Daniel Dzigbordi Nugba and Miss Rosemond Kutsidzo, for their concern, motivation and encouragement during the writing of my thesis.

I cannot forget the head teachers, teachers and students of the six selected districts who took part in the study, for accepting me and cooperating with me during the data gathering process. Also, I wish to express my appreciation to all authors whose work served as source of reference to my work. However, any error or shortfalls are solely mine.

DEDICATION

To my children, Kafui and Deladem

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## CHAPTER ONE

### INTRODUCTION

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

Education has become one of the most powerful weapons known for reducing poverty and inequality in modern societies. It is also used for laying the foundation for a sustainable growth and development of any nation. Basic education is the core of development and progress in modern societies. It is the level of education that develops the individual's capacity to read, write and calculate. In other words, it helps to eradicate illiteracy, which is one of the strongest predictors of poverty (Bruns, Mingart, & Rakotomalal, 2003). Thus, basic education is the only level of education that is available everywhere in both developed and developing countries as well as in urban and rural areas (Akinbote, 2001). This explains why basic education is the largest subsector of any education system and offers the unique opportunity to contribute to the transformation of societies through the education of young ones (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2001).

In Nigeria, it was not until 1976 that the new era in the history of primary education was opened when the then Head of State Lt General Olusegun Obasanjo officially announced the Universal Primary Education (UPE) and declared that every Nigerian child should from then regard basic education as his natural heritage, a right and no longer a privilege. This, of course, made basic education the sole responsibility of the Federal

Government. According to the Federal Republic of Nigeria as cited in World Bank, (2004) the aim was basically to;

1. wipe out illiteracy and evolve a uniform system of education throughout the country;
2. establish a wider base from which secondary schools could draw their entrants;
3. improve manpower needs of the country and
4. increase the number of intake in primary schools.

Access to education in Ghana is seen both as a fundamental human right and an essential element in the national development strategy to promote growth and ensure preparedness for a productive life. Ghana's aspiration to become a middle income country by 2020 rests to a large extent on her ability to improve educational access to the point whereby it has a highly educated population which can provide the human resource base for accelerated development (World Bank, 2004).

The concept of primary education for all children in Ghana (formerly Gold Coast) first took centre stage in the Accelerated Development Plan in 1951. This plan laid the foundation for six years of free and compulsory primary education and produced massive increase in primary school enrolments (World Bank, 2004). After independence in 1957, the new government introduced the 1961 Education Act which extended free and compulsory education for a further four years by introducing the middle school. In the late 1970s and early 1980s, participation in basic education (primary and middle schools) had suffered sharp decline due partly to a downturn in the national economy and partly to some level of political

instability. While in 1975 there were more than 2.3 million children in primary schools, by the early 1980s this number dropped by over one million (World Bank, 2004) in Ghana.

The next major initiative to expand basic education occurred with the introduction of education reforms in 1987. The reforms set out not to only improve access to basic education, but also emphasise measures that would improve *quality, efficiency, and equity* in the education sector. The 1987 reforms tackled the decline in educational performance and restructured the education system which required all children aged 6 to 14 to attend six years of primary school, followed by three years of Junior Secondary School (JSS) which were collectively named as basic education, three years of senior secondary school and four years of tertiary education (World Bank, 2004).

### **Goals of Basic Education (Junior High School) in Ghana**

The goals of basic education in Ghana were set in fulfillment of the mission of the Education Ministry by providing the following:

- (a) Facilities to ensure that all citizens, irrespective of age, gender, tribe, religion and political affiliation, are functionally literate and self-reliant;
- (b) Basic education for all children;
- (c) Opportunities for open education for all;
- (d) Education and training for skill development with emphasis on science, technology and creativity (Ministry of Education (MoE), 2003).

In providing these services, the Ministry of Education was to be guided by the following values: (1) Quality of education provided, (2) Efficient management

of resources, (3) Accountability and transparency, and (4) Equity (MoE, 2003).

At the primary level, emphasis was, and continues to be, on literacy, numeracy and problem-solving skills. Other objectives of primary education were to lay a foundation for inquiry, creativity and innovation, and develop an understanding of how to lead a healthy life. Good citizenship was also to be inculcated in children to enable them participate in national development and for them to develop the skills and attitudes for assimilating new knowledge (MoE, 2003).

The three-year junior secondary school (JSS) education programme was to provide opportunity for students to discover their interests, abilities, aptitudes and other potentials and to acquire basic scientific and technical knowledge and skills that would enable them to prepare adequately for further academic work and acquisition of technical/vocational skills at the senior high level (MoE, 2003).

The curriculum reforms of 1987 were intended to address two essential issues: (a) training citizens for job acquisition, and (b) scientific and technological training. Thus, basic education was intended to lay the foundation for pupils' inquiry and creativity, in literacy and numeracy and to develop their ability to adapt constructively to a changing environment. The Junior Secondary School (JSS) now called Junior High School (JHS) has been planned to provide pupils with basic pre-technical, pre-vocational and scientific knowledge, while the senior secondary education (which is next level of education after JHS education) was intended to reinforce the

knowledge and skills acquired during basic education, as well as provide opportunities to help students develop different talents and skills (MoE, 2003).

In 1992, the nine-year basic education was made mandatory under the new constitution, which called for the provision of free, compulsory and universal basic education (FCUBE). Shortly afterward, in 1995, the “free compulsory universal basic education” (FCUBE) implementation was commenced. FCUBE aimed to achieve Universal Basic Education (UBE) by 2005 and to improve girls’ enrolment. The FCUBE programme did have an impact but also met with several challenges and constraints including management weaknesses in the school system which undermined its impact (Fobih, Akyeampong, & Koomson, 1999). Weaknesses also appeared on the demand side of participation, especially with older children. Two important lessons from FCUBE and other educational expansion policies are the need to;

- (i) ensure that basic education is provided in ways that motivate children and parents to participate through to the end of Junior Secondary School (JSS), and
- (ii) promote school and system management to enhance efficiency and affordability (Fobih et al., 1999).

Two particular policy initiatives stand out in the more recent attempt to universalise basic education in Ghana. The first is the push for education decentralisation and management, and the second is the introduction of capitation grants. Decentralisation is intended to improve the operational efficiency and promote a more responsive approach to education service delivery at the district, community and school level. Although decentralisation has provided a good framework for improving educational performance in

general, some analyses suggest that it has, in some instances, caused further disparities in the provision of education (Fobih et al., 1999). For example, it has been observed to encourage wealthier communities (typically in urban areas) to provide the kind of support and resources required for educational improvement in their areas (including opting for private schools) while the less affluent communities (usually in rural areas) contend with relatively poor schools.

The capitation grant scheme was introduced in 2004 as part of a wider strategy to decentralise education provision. The scheme, which started with some pilot districts, now has been extended to embrace all public basic schools in the country with effect from September, 2005. Under the scheme, GH¢4.5 (equivalent to US\$1.40 as of January, 2015) per child per annum is paid in support of all public basic school pupils in the country (Bonney, 2016). Prior to the introduction of the capitation grant, basic school enrolment rate had decreased by 5% (Akyeampong, Djangmah, Seidu, Oduro, & Hunt, 2007). The capitation grant was to give schools the necessary funds to improve teaching and learning and relieve financial burdens of parents (Ministry of Education, 2003). Initial evidence indicates that its introduction led to massive increases in enrolment. However, it was realised that the grant was insufficient to provide the motivation to sustain higher enrolments, which eventually led to the dissipation of the initial effects over time.

The operational guidelines for the implementation of the basic education state that all schools, whether private or public, were expected to run a full forty-week school year (Fobih et al., 1999). Under the Primary School Development Project which was introduced in 1993, instructional time

in basic schools was increased from four to five hours a day. However, Fobih et al. found out that due to a number of factors, the actual instructional time in Ghana, particularly in public basic schools, was found to have averaged 450 hours a year. It has been observed that the actual teaching and learning time is often affected by weather conditions and by the unattractiveness of the school facilities, particularly in the rural areas. Many of the schools in the more deprived parts of the country have no proper school buildings. For example, some schools are still under trees, while a large number of school buildings have leaking roofs and other impediments (Quansah, 2000).

At the Junior High School level since 2007, the teaching subjects are English language, mathematics, social studies, integrated science (including agricultural science), Ghanaian language, technical and vocational education and training (TVET), information and communication technology (ICT) and French.

The Basic Education certificate is awarded to successful pupils on completion of the nine-year basic education programme. The total number of subjects taken by each candidate for the examination, therefore, is either eight or nine. It is eight (8) when a candidate does not offer French and nine (9) when the candidate offers French as a course. Candidates are graded based on performance in the external examination (70%) and school-based (internal) assessment (30%) marks provided by the schools. A nine-point scale (stanine in reversed form) is used in grading the candidates, with Grade 1 denoting the best performance and Grade 9, the poorest.

Education in Ghana, more especially, at the basic level, has witnessed a downward trend in academic outcome. According to available records, the

last decade alone saw over 3,669,138 Basic Education Certificate Examination (BECE) candidates sitting for that examination but out of that figure 1,562,270 (43%) of them failed to make the required grades (i.e., those who had aggregates 30 and above) for progression to any secondary, technical or vocational school. If as a country, we fail to arrest this situation early enough, education in the country will lose its credibility ultimately.

It is on this note that the study is being undertaken to evaluate the effectiveness (quality) of junior high school education in the Central Region of Ghana as a case.

### **Statement of the Problem**

A good educational system should be effective and that is to ensure quality. Effectiveness of education is concerned with the capability of producing a desired result or the ability to produce desired outcome. Quality can also be viewed as desirable outcome that encompasses knowledge, skills and attitudes and are linked to national goals of education.

Despite the various reforms (for example, 1987, 2005 & 2007) that have taken place in the Ghanaian education system to promote and maintain quality standards at the basic level, the education system appears to have some challenges, thus hindering its effectiveness (quality) as illustrated by the results at the end of the programme over the years.

There are obvious disparities in the provision of facilities for basic education in the country. The most felt disparity in terms of urban and rural education is the infrastructural deficit in the rural schools. Pupils in the urban areas have many advantages over those in the rural areas in terms of infrastructure, teaching and learning resources, computers and access to the

Internet. Again, students in the cities are being exposed to many social and environmental events that make their life far better than the rural pupils as part of the interaction they are exposed to which contribute to the depth of their knowledge and academic performance. Rural schools are often characterised by inadequate number of teachers, poor classroom structures and, in some cases, schools are under trees. For the schools under trees, it becomes impossible to have lessons during raining seasons and bad weather. Some rural pupils study under very dilapidated structures. In a news report, the Upper East Regional Directorate of the Ghana Education Service (GES) expressed worry at the alarming number of schools under trees and those in dilapidated conditions (MOE, 2016).

In most schools in the rural areas, a cloud forming in the sky is a threat to academic work because the schools have to be closed for the safety of the teachers and pupils. The situation causes these schools to lag behind, especially during the rainy seasons. External distraction of pupils' attention is very high when classes are held under trees as practiced in a number of rural schools. Another challenge associated with holding classes under trees is the size of the chalkboard. The mobile chalkboards are usually very small in dimension, hence cannot contain enough chalkboard illustrations; not to talk of the display of teaching learning materials (TLMs).

Appropriate teaching and learning materials (educational materials that teachers use in the classroom to support specific learning objectives, as set out in lesson plans) are indispensable in effective and efficient teaching and learning in our schools. The issue of inadequate teaching and learning materials in the Ghanaian basic schools cannot be overemphasised. For any

effective teaching to be done, appropriate TLMs and textbooks must be made use of. Virtually, all teachers are willing to use such materials to enhance their teaching but the question is whether these aids are available and adequate. Teaching and learning materials seem to be woefully inadequate in some schools as can be seen in Table 1.

Table 1- *Core Textbooks per Pupil in Public Basic Schools (2008-2013)*

	08/09	09/10	10/11	11/12	12/13	Target 2015	Deprived Dist. <u>2011/2012</u>	
KG	1:1	1:2	1:4	1:3	1:3		1:3	1:3
Primary	1:6	1:6	1:1	1:9	1:2	3	1:8	1:1
JHS	2:1	1:5	1:9	1:1	1:9	3	1:0	1:9

Source: GES 2015

Under the Ministry of Education (MOE) policy, each student in the basic school should have access to three government designated core textbooks, namely, English, Mathematics, and Science. The textbook ratio of 1:1 means complete individual access to these books. From Table 1, it can be seen that, at the JHS level, pupil-textbook ratio varies between 2:1 in 2008/2009 to 1:9 in 2012/2013. This means that in 2008/2009 for example, out of the three core textbooks, a pupil had access to only two of the textbooks (2:1). But in 2012/2013, one textbook was shared among nine pupils (1:9). From Table 1, the target for 2015 was every child should have access to the three core subject textbooks. According to the Ministry of Education report (MOE, 2016), this target was not achieved. Rather, what was achieved was a ratio of 1:6 for Mathematics and English and 1:5 for Science textbooks at JHS in 2015/2016 academic year. As a result, completion of the syllabus became a problem at grade level leading to a deficit syndrome as noted by Attram

(2014) that teachers found it very difficult to complete the syllabi despite their efforts.

In a study on coverage of the syllabus conducted at the basic level in Ghana by Mereku, Amedahe and Etsey (2005), about 30% of teachers indicated they were able to cover only half of the English syllabus. Only about 20% completed the English syllabus but the majority of teachers were not able to cover 80% of the content of the English syllabus. It also came to light that 31% of teachers covered only half of the mathematics syllabus content while only 21% of the teachers indicated that they covered all contents in the syllabus. Mereku et al. also reported that the majority of the teachers were not able to cover 80% of the content of the mathematics syllabus.

Due to inadequate supply of textbooks and non-existence of supplementary readers, children essentially go home without any reading materials to read in the evening. Attram (2014) confirmed this by stating that due to the deficit syndrome, the syllabi are not completed before transition of students from one level to another takes place.

With respect to teacher quality, according to Ministry of Education (2016), 71.1% of teachers at the JHS level in both public and private schools were trained with 28.9% untrained. The percentage of trained teachers in public JHS schools stood at 89.6% while that of the private JHSs is 18.7%. However, the private school pupils tended to perform better than the public schools in the BECE over the years.

While the country has, over the years, improved upon access of basic education to the citizenry, there are concerns about the quality of the outcome. According to Ampiah (2010), countries that are striving to guarantee all

children the rights to education have their main focus on access and often overshadowing attention to quality. Yet, quality determines how much and how well children learn and the extent to which their education translates into a range of personal, social and developmental benefits (UNESCO, 2005). UNESCO indicated that most pupils may find themselves in school but due to poor education delivery and quality, their achievement may be low. Mishra (2007) also indicated that quality education delivery becomes poor when there is poor management of the system. This is evidenced by a national biennial representative measure of pupil competency in Mathematics and English language in Ghanaian basic school Grades 3 and 6 (BS 3 and BS 6) in the National Education Assessment (NEA). The NEA has consistently revealed that children in both grades were finding it difficult to complete the English test and to perform grade-appropriate or simple mathematical operations (MoE, 2013). In the NEA, the minimum competency level is put at 35% of the total score while the proficiency level is established to be 55% performance. Table 2 indicates the results of the NEA as conducted in Ghana for lower and upper primary pupils' in English Language and Mathematics between 2005 and 2011. From Table 2, the percentages for minimum competency and proficiency for primary 3 in English decreased by 0.4% (M-C) and (1.4%) in 2007, but increased progressively to 2011, however, in terms of mathematics, percentages for both minimum competency and proficiency appear to be fluctuating over the years. In terms of primary 6, the percentage pass for minimum competency for English increased from 2005 to 2011. In the case of mathematics, the percentage passes fluctuated over the years in terms of minimum competency and proficiency.

Table 2- Overall Distribution of Minimum-Competency and Proficiency NEA 2005, 2007, 2009, and 2011

year	Primary 3				Primary 6			
	English		Mathematics		English		Mathematics	
	M-C	Profic	M-C	Profic	M-C	Profic	M-C	Profic
2005	50.6	16.4	47.2	18.6	63.9	23..6	47.2	9.8
2007	50.2	15.0	42.6	14.6	69.7	26.1	46.2	10.8
2009	57.6	20.0	61.2	25.2	76.9	35.6	61.9	13.8
2011	66.3	24.2	52.6	18.2	78.9	35.3	56.9	16.1

Source: MOE (2011, 2013) \*\*\*M-C level fixed at 35% and Proficiency level at 55%

In 2013, a few items were added to the test, specifically, to help assess children’s basic reading and mathematics competency. For basic six mathematics, only approximately 11% of the pupils reached the proficiency level and 22% in basic three. In English, the results were relatively better with 28% of the pupils reaching proficiency at basic three and 39% at basic six. In Ghana, both basic three and six, approximately 40% of the pupils failed to achieve the minimum competency in Mathematics and English. This poor performance has serious implications for the management of learning in the next decade because this poor elementary performance flows upward through the system, creating weak performance at higher levels in education.

Another evidence of relatively poor teaching effectiveness at the basic level is shown in terms of students’ performance published by West African Examination Council (WAEC) in 2015 Basic Education Certificate Examination (BECE) for three core subjects of Mathematics, English and Science. The detail results are presented in Table 3.

Table 3- National Results of the BECE in Mathematics, English and Science in 2015

	Mathematics			English			Science		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Total	435,322	228,440	206, 882	435,322	228,440	206,882	435, 322	228,440	206,882
Pass	330,321	177,542	152,779	329,304	171,173	158,131	331,169	177,515	153,654
% pass	75.9%	77.7%	73.8%	75.6%	74.6%	76.4%	76.1%	77.7%	74.3%

\*\*\*A student is considered to have passed if he/she achieved grade 1-8

Source: MOE (2015).

From Table 3, it can be seen that candidates of the Basic Education Certificate Examination could not obtain 80% pass rate in any of the core subject areas nationwide. In the Central Region, for example, the results were not better than the national average. Table 4 shows the performance of students in the BECE in Central Region in 2015.

Looking at Table 3 and 4, it can be seen that, the results are almost similar although Table 3 presents national BECE results in 2015 and Table 4 presents Central Region 2015 BECE results.

The Ghana News Agency (GNA) reported on some results of some selected schools in the Central Region and indicated that six schools in the Assin Central Municipality of the Central Region recorded zero percent in the 2015 Basic Education Certificate Examinations (BECE). The schools are Nyankomasi M/A JHS, Gold Coast Camp M/A JHS, Fosu Catholic 'A' JHS, Fosu M/A 'B' JHS, Bereku Nikyiso JHS, and Nduaso M/A JHS. The then Municipal Director of Education, in an interview with the Ghana News Agency at Assin Fosu said that out of the 148 candidates including 78 females who sat for the examination in the six schools, none qualified to be placed in Senior High, Technical or Vocational Schools (GNA, 2015). It is important to note that in 2017, a total of 36, 849 candidates (8%) across the country were not placed into Senior High School because they scored a Grade 9 in either English or Mathematics (Ansah, 2017). As a result of the failure, the Ministry of Education (MOE) and Ghana Education Service (GES) instituted a re-sit policy for those who fail the BECE.

Table 4– Results of the BECE in Mathematics, English and Science in 2015 for the Central Region

	Math			English			Science		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Total	45,527	23,777	21,750	45,527	23,777	21,750	45,527	23,777	21,750
% Pass	35,570	18,854	16,425	33,667	17,281	16,386	34,705	18,453	16,252
% pass	77.5%	79.3%	75.5%	73.9%	72.7%	75.3%	76.2%	77.6%	74.7%

\*\*\*A student is considered to have passed if he/she achieved grade 1-8

Source: MOE (2015)

The government, as a stakeholder, has come out with measures to uplift the performance at the BECE level such as: (a) capitation grants, (b) free compulsory universal basic education, (c) school feeding programme instituted in some basic schools, and (d) district mock examinations, among others. Yet, the situation has not changed much as some schools still get zero percent in the BECE.

It could be seen that efforts being made to improve performance of students at BECE level has not been yielding the desired results. Could it be that factors as context (urban, rural, public and private), inputs (class size, teaching and learning material, infrastructure, parental support and textbook ratio), process (instructional time, level of parental and community involvement, type of leadership and curriculum coverage) and demographic variables in the Ghanaian school system are not good enough to help performance improve at BECE level? What really is the contribution of input and process factors in enhancing efficiency and effectiveness of educational system at that level? How do the key players intend making the educational system at the basic level effective and efficient? Answers to these questions were not readily available on the Ghanaian school system.

### **Purpose of the Study**

The main purpose of the study was to evaluate the quality of junior high school education in the Central Region of Ghana using context, input, process and product (CIPP) model developed by Stufflebeam (1971). The specific research objectives were to assess the available:

1. input factors including class size, availability of teaching-learning materials, infrastructure (appropriate pieces of furniture), parental

support and adequacy of pupil-textbook ratio in public and private levels of junior high schools and in urban and rural settings in the Central Region of Ghana.

2. process factors such as teacher use of instructional time, level of parental and community involvement, type of leadership, curriculum coverage among urban, rural, public and private junior high schools in the Central Region of Ghana.
3. product factor such as performance of students in urban, rural, public and private settings.

The study also;

4. described the extent to which schools in the different contexts (urban, rural, public and private) differ in effectiveness (quality) in the provision of junior high education in the Central Region of Ghana.

### **Research Questions**

The study was guided by the three research questions and two hypotheses:

1. What is the current status of input factors in education, namely class size, teaching-learning materials, infrastructure (appropriate pieces of furniture), parental support and adequacy of pupil-textbook ratio in urban and rural, public and private Junior High schools in the Central Region of Ghana to promote effective teaching and learning?
2. How effective are process factors, namely, teacher use of instructional time, level of parental and community involvement, type of leadership, curriculum coverage being utilized among urban, rural, public and private Junior High schools in the Central Region of Ghana to enhance quality teaching and learning?

3. What is the performance (output) of urban, rural, public and private junior high schools in the BECE in the past five years (2014 – 2018)?

### **Research Hypotheses**

The following hypotheses guided the conduct of the study:

H<sub>0</sub> 1: Process factors will not significantly mediate the effect of input factors on the outcome (product) of BECE.

H<sub>1</sub> 1: Process factors will significantly mediate the effect of input factors on the outcome (product) of BECE.

H<sub>0</sub> 2: The proposed model will not significantly differ in terms of school type (public and private) and school location (urban and rural).

H<sub>1</sub> 2: The proposed model will significantly differ in terms of school type (public and private) and school location (urban and rural).

The model (Figure 1) has two exogenous constructs INPUT and CONTEXT, and two endogenous constructs which are PROCESS (endogenous 1) and OUTCOME (endogenous 2). The INPUT serves as exogenous construct and is measured by means of multiple indicators. INPUT has five measured indicator variables such as class size (CS), teaching and learning materials (TLMs), infrastructure (INFRA), parental support (PS) and textbook ratio (TBS). The PROCESS is serving as a mediating variable between the INPUT and the OUTCOME. The role of PROCESS is also to clarify or explain the relationship between INPUT and OUTCOME. The OUTCOME, on the other hand, is also measured by the proportion of students who passed in the BECE (i.e., aggregates 6-30). In the terms of the CONTEXT, it was looked at in terms of rural, urban, private and public. It is

determined by the extent to which the context affects the INPUT, PROCESS, and OUTCOME.

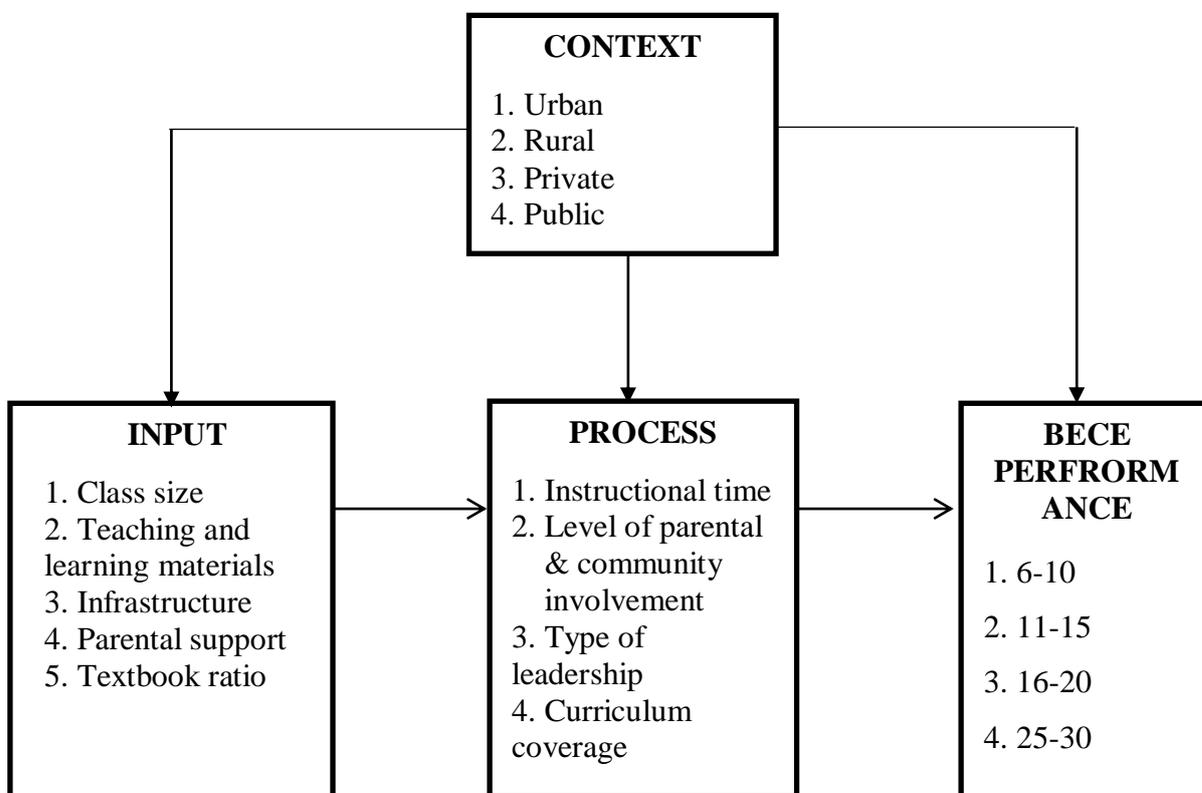


Figure 1- Path model with Input, Process and Outcome within Context

### Significance of the Study

This study tends to inform educators, policy and decision makers about the effectiveness (quality) of junior high school education system in the Central Region of Ghana which may have implications for the country as a whole in terms of inputs, process and product/outcome. Specifically, it brings to the fore the effectiveness (quality) of education at the junior high school level with respect to the adequacy of context, inputs, process factors, and outcome of students' achievements related to quality education. It also brings to light the disparity in the distribution of resources to support education in the various contexts in the Central Region of Ghana.

The results also provide data on how effective and adequate input factors are, regarding class size, infrastructure, parental support and textbook availability among urban, rural, public and private schools in the Central Region of Ghana. This helps identify the deficiencies in basic school education and also help put up measures to achieve the quality, efficient and equitable education needed in the various settings and school types in Ghana.

Another aspect of the significance of this study is that it provides a thorough picture of the process factors as is being implemented in the various settings (urban and rural) and school type (public and private) and how they contribute to the achievement of the effectiveness and quality basic school education in the Central Region of Ghana.

One of the purpose of the study is to examine and determine the effect(s) of context, input and process factors on performance at the basic level. The result inform stakeholders in basic education in Central Region, in particular and Ghana in general, to develop a policy to cater for input and process factors in the implementation of the basic education programme.

### **Delimitation**

The study was delimited to essential factors that impinge on quality education, namely context, input, process and product/outcome/output. Although, basic school education in Ghana is made up of kindergarten, primary and junior high school, the study was delimited to junior high schools. The study also focused on head teachers of the selected Junior High schools, teachers' teaching English, Mathematics and Science at the JHS three level. The study was also delimited to JHS three students. Also the BECE results for 2014–2018 for the twenty (20) MMDs in the Central Region were considered.

### **Limitations**

The main limitation of this study was that data was gathered using questionnaire. Interview and observation which could have been one of the best ways to evaluate an educational programme like this. Teachers teaching all subjects would have been in the best position to give much information but only English, Mathematics and Science teachers were used without involving other teachers. Similarly information on parental and community involvement was solicited from head teachers, teachers and students. Parents and community members would have been in the best position to provide information of such nature. It is worthy to note that the hypotheses were tested using data provided by head teachers only.

### **Operational Definition of Terms**

**Effectiveness:** For this study, effectiveness was determined by the degree to which objectives are met or desired levels of accomplishment are achieved through the provision of adequate inputs and using appropriate processes to obtain the desirable outcome.

**Evaluation:** Is the process of examining and passing a judgement on the appropriateness or level of quality or standards.

**Junior High School:** Three years of formal education after six years of primary school education.

**Context:** In this study, context is the setting in which schools are located (urban, rural) and the type of schools (public and private).

**Input:** Is an essential component /factor in education. This includes; class size, availability of teaching-learning materials, infrastructure

(appropriate pieces of furniture), parental support and adequacy of pupil-textbook ratio.

**Process:** A course of action intended to achieve a result. In this case, it is the implementation of major strategies such as teacher use of instructional time, level of parental and community involvement, type of leadership and curriculum coverage.

**Product/outcome/output:** End results of students' achievement after completing the BECE. Thus, the proportion of students obtaining from aggregates 6 to 30 in 2017 BECE.

**Infrastructure:** Pieces of furniture.

**Urban settlement:** Settlement with 5,000 or more people.

**Rural settlement:** Settlement with less than 5,000 people.

### **Organisation of the Rest of the Study**

Conceptually, literature was reviewed on CIPP Model and empirically, literature was reviewed on the effectiveness of contexts on academic performance, effectiveness of inputs factors on academic performance and effectiveness of process factors on academic performance. Lastly, the chapter reviewed literature on the effects of context, input and process factors on students' academic performance.

The chapter three dealt with the research method aspect of the study and this included the research design, population, sample and sampling procedure, data collection instruments, data collection procedure and procedure for data analysis. Chapter four presented, results and discussion of the results of the study while chapter five presented summary, conclusions and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This chapter presents a review of related literature for the evaluation of the effectiveness (quality) of JHS education in the Central Region of Ghana. The review covers the conceptual, theoretical and the empirical review relevant to the present study. The chapter ends with a summary.

### **CONCEPTUAL REVIEW**

Dictionary of education as edited by Good (1973), defined education as the aggregate of all the processes by which a person develops abilities, attitudes and other forms of behaviour of practical values in the society in which s/he lives; the social process by which people are subjected to the influence of selected and controlled environment (especially that of the school), so that they may obtain social competence and optimum individual development.

Education is an essential tool in every modern society because it has a long term impact on the way a society is built and developed. It acts as a platform for imparting skills and knowledge to the entities of the society. From a more holistic point of view, education is necessary to make human beings more rational and informed members of society. A member of a society who is educated has the potential to contribute more to the society as compared to an uneducated member. It also helps a person to contribute and participate in the developments that the society undergoes at different points in

time. Education is one of the core pillars of human society which play a major role in its progress. For a society to achieve above listed importance of education, it calls for education which is of quality to the society.

Regarding quality of education, Leu and Price-Rom (2005) contend that quality of education has become critical in many countries that are expanding enrolments and in nations with constrained resources. Success in increasing access to basic education has often led to declining quality. However, in searching for the factors that promote quality, national programmes and literature have increasingly emphasised teachers, schools, and communities as the engines of quality, with special attention to teacher quality as a primary focus.

At the World Education Forum held in Dakar, Senegal (2000) at which quality education was a priority, it was emphasised that efforts to expand enrolment must be accompanied by attempts to enhance educational quality, if learners are to be attracted to education, stay there and achieve meaningful learning outcomes. Quality is achieved through the presence, operation and interaction of certain factors some of which are: context, input, process and product.

### **Context Factors**

The context refers to the setting in which a school is located, including conditions within which the school operates which in one way or the other tend to affect the operation of the school system. In Ghana, the context can be defined as urban and rural. The different contexts vary in different ways but for this study the difference will be limited to indicators such as

- i. demographics (e.g., size of the school, school category (public and private), school location (urban/rural))
- ii. teacher characteristics

The various factors of the context factor are expanded below;

**Demographic (e.g., size of the school, school category (public and private), school location (urban/rural))**

The nature of school context such as school location and type and the composition of students in a school has an impact on child learning (Carlson & Cowen, 2015; Fischer, 2013). Schools in different context differ in terms of the resources available for learning for example, libraries, children's services, and well-educated and successful adult role models for children (Carlson & Cowen, 2015; Katz, 2014; Sastry & Pebley, 2010). Likewise, schools in Ghana, due to different locations (urban and rural) and school type (public and rural) also differ in terms of resources available for learning. As a result, children in schools have different skill levels, attitudes and behaviour, in part because they are exposed to different school environments and conditions (Downey, von Hippel, & Broh, 2004). Therefore, the context in which a school situated can be a source of motivation, aspiration and direct interactions in learning (Hanushek, Kain, Markman, & Rivkin, 2003; Burke, & Sass, 2011). According to Hanushek et al. (2003) peer group interaction is simultaneous in nature, whereby a student both affects his or her peers, and is also affected by those peers (i.e., while a single slow learner or disruptive student may hold back an entire class, a small group of high achievers might inspire others to aim high in learning). In Ghana, it can be said that, private

schools where the class size is not large excel academically although, teachers in the private schools are not qualified as those in the public schools.

School context effects on child learning outcomes have been studied by various researchers (Carlson & Cowen, 2015; Sastry & Pebley, 2010; Sirin, 2005). Sirin's (2005) meta-analysis recorded effect sizes of 0.28, 0.17 and 0.23 for suburban, rural and urban schools respectively. Also, in a study on family and school neighbourhood sources of socioeconomic inequality in child reading and mathematics achievement (Sastry & Pebley, 2010), it was found that children in the higher socioeconomic bracket scored better primarily because their mothers had better reading skills and more schooling, and also because they lived in more affluent neighbourhoods. Similarly, Carlson and Cowen (2015) investigated the relative importance of school neighbourhoods in shaping student achievement in reading and mathematics in 160 public schools spanning the period between 2007 and 2011 in the USA. It was found that a student residing in a neighbourhood in the 95th percentile of income distribution would on average, exhibit one-year test score gains of about 0.05 standard deviations greater than a student residing in the median neighbourhood in both learning outcomes.

Other researchers (Lubienski & Lubienski 2006) have also examined the effects of school context (public verses private) on learning achievement and concluded that private schools may not be as effective in delivering learning outcomes as commonly assumed. For example, Lubienski and Lubienski (2006) employed hierarchical linear models in examining public versus private performance in reading and mathematics for grades 4 and 8 students. Their data set was from the US National Assessment of Educational

Progress (NAEP) assessments for 2003. After controlling for student and school-level variables (i.e., socioeconomic status, race/ethnicity, gender, disability, limited English proficiency, and school location), they came to the conclusion that the demographic differences between students in public and private schools accounted for the relatively high raw scores of private schools. Indeed, after controlling for those differences, the private school effect disappeared, and even reversed in most cases (Lubienski & Lubienski 2006). Also, in a study done, Fehrler, Michaelowa and Wechtler (2009) found that students in private schools show higher overall performance, but this performance advantage vanished when socio-economic background and initial knowledge as measured in the pre-test scores was adequately controlled for.

### **Teacher Characteristics**

Recent studies have identified the teacher as the most important factor influencing the quality of education (Snoek, Swennen & van-der, 2010; Yates, 2007; Darling-Hammond, 2000; Darling-Hammond, 1997). UNESCO (2006) also asserts that teachers are the key agents in ensuring effective teaching and in determining the quality of education that children receive. This is why Darling-Hammond (2000) asserted that, the quality of teachers has a larger impact on the learning of pupils than the quality of the curriculum, the teaching methods, the school building or the role of parents. The importance of a teacher underscores the significance of how they are trained while still in the training institutions and the curriculum they are exposed to (Berry & Van Driel, 2013). Teacher education is so far the most important and known way of preparing change agents because success in educational reforms depends on the teachers' awareness of the new changes, their attitudes to it and

incorporation of the reforms in the daily conversation, professional values and commitment and knowledge of content (Talbert-Johnson, 2006). How teachers are prepared in terms of the courses they are exposed to pertaining to values, beliefs, attitudes for practices significantly influence how they will in turn prepare citizens who will be charged with various aspects of societal development in the Ghanaian society.

As far as teacher teaching experience is concerned, several studies have been conducted to establish the relationship between teacher teaching experience and students' academic achievement. The findings of these researches had shown either a correlation or no correlation. For instance, while Clotfelter, Helen and Jacob (2007) find strong positive effects of teacher teaching experience on students' achievement, Aaronson, Barrow and William (2007) found no significant correlation between teacher experience and student achievement.

In their study on teacher characteristics and students' performance, Greenwald, Hedges, and Laine (1996) found that there is a positive relationship between some teacher characteristics such as; education, professional development, teaching experience and outcomes. A similar study was carried out by Krueger (1999) and the results showed that there is a positive impact of having highly experienced teachers on students' achievement. Corroborating this, Hanushek, Kain and Rivkin (1998) in their study found that students taught by teachers with two years of teaching experience perform better than their counterparts taught by teachers with no experience. However they found that having more than two years of teaching experience does not affect students' performance.

As the aforementioned research findings have shown positive association of teacher experience with students' academic achievement, it is the role of educational institutions to retain experienced teachers to deliver quality education. In support of this, Owolabi (2007) emphasises that the more experienced teachers as well as the retiring teachers who still want to continue teaching should be retained so that they can improve the quality of their countries educational system through their wealth of experience. These context factors among others, affect students' in different magnitudes.

### **Inputs in Education**

An input at the schools level refers to material, financial and human resources invested into the system and in this case, education; class size, teaching-learning materials, infrastructure, parental support and pupil-textbook ratio.

### **Class Size**

The number of students in a class has the potential to affect how much is learned in many ways. It could affect how much time the teacher is able to focus on individual students and their specific needs rather than on the group as a whole. Since it is easier to focus on one individual in a smaller group, the smaller the class size, the more likely individual attention can be given. Studies all over the world indicate that a class size of more than 35 pupils or students compromises quality education (Biddle & Berliner, 2002; Finn, 2002). According to the National Association of Graduate Teachers (NAGRAT), Ghana, there is a correlation between the size of a class and the performance of its students and that an over-bloated class size hinders quality teaching and learning (Daily Graphic, 25 August, 2011).

During 2001 evaluation of the Student Achievement Guarantee in Education (SAGE), class size reduction programme by researchers at the University of Wisconsin-Milwaukee found that a five-year-old programme of class-size reduction in Wisconsin resulted in higher achievement for children living in poverty. Research from Columbia University Teachers College in New York also showed the context of class-size reduction can affect its success in improving student achievement (Ready, 2008). Smaller class size has been shown to be more beneficial for students from socioeconomically disadvantaged backgrounds (Biddle & Berliner, 2002). Evidence from the Tennessee star randomised controlled trial showed that minority students, students living in poverty, and students who were educationally disadvantaged benefitted the most from reduced class size (Finn, 2002). Further, evidence from the controlled, though not randomised, trial, the Wisconsin's Student Achievement Guarantee in Education (SAGE) programme, showed that students from minority and low-income families benefitted the most from reduced class size. Thus, rather than implementing costly universal class size reduction policies, it may be more economically efficient to target schools with high concentrations of socioeconomic disadvantaged students for class size reductions.

According to Ghana Education Service policy, an ideal class should be between twenty-five and thirty-five students. When the number of students in a class is more than thirty-five such a class is said to be large. It is interesting to note that the number of students in a class in most public Ghanaian Junior High Schools in Central Region for that matter Ghana, on average is sixty-five (Zainul-Deen, 2011).

## **Teaching and Learning Materials**

Many scholars have provided different definitions of instructional materials. For example, Isola (2010) defines instructional materials as objects or devices, which help the teacher to make a lesson much clearer to the learner. Agina-Obu (2005) refers instructional materials as concrete or physical objects which provide sound, visual or both to the sense organs during teaching. According to Maruff and Gbolagade (2011), instructional materials are those materials that are available in various classes, such as audio or aural, visual or audiovisual. Thus, audio instructional materials refer to those devices that make use of the sense of hearing only, like radio, audio tape recording, and television. They go on to say that visual instructional materials, on the other hand, are those devices that appeal to the sense of sight only such as the chalkboard, chart, slide, and filmstrip. An audio-visual instructional material, however, is a combination of devices which appeal to the sense of both hearing and seeing such as television, motion picture and the computer.

Teaching learning materials play an important role in creating a very conducive learning environment that facilitates the acquisition of new skills and thus improving school effectiveness. To support this, James (2010) asserted that teachers especially in primary education should be encouraged to use as many teaching and learning aids as possible to set an environment which is simulative and conducive to learning and in which pupils can be easily guided through the discovery of knowledge on their own. This idea has been reiterated by O'Donghue (1971) who stated that learning materials are

important because they can significantly increase student achievement by supporting student learning.

Several studies have been conducted to examine the relationship between instructional materials and academic achievement of students and their findings revealed, in some instances, a relationship between instructional materials and student academic performance. For instance, Isola (2010) conducted a research on the effects of instructional resources on students' performance in Kwara State in Nigeria. He correlated material resources with academic achievements of students in ten subjects. His findings revealed that achievements of students for the past five years were related to the resources available for teaching. He therefore concluded that material resources have a significant effect on students' achievement in each of the subjects.

In view of the literature related to provision of instructional materials, teaching learning material in this study is relevant to see how effective they are on students' performance in BECE junior schools in Ghana.

### **Infrastructure**

A good classroom should have enough furniture, desks and cup boards for the storage of books. The Ghana Education Service Head teacher's handbook (1994) provides examples of furniture as chairs, desks, benches, tables, stools, blackboards, cupboards and shelves. It further reports that students feel more happy, relax and comfortable on good desk than using poor ones. In a school system, infrastructure plays an important role. Without them learning cannot effectively take place. Akinfolarin (2008) has identified infrastructure in school as a key factor which affects academic performance in

the school system. According to him school infrastructure includes classroom furniture and recreational equipment, among others.

To emphasise the importance of the provision of the physical facilities in a school system, Hallak (1990) states that availability and adequacy of this pieces of furniture in a school enhance the performance of that school. He further emphasises that when classroom are populated or when the school buildings are not beautiful and attractive, the performance of that school is likely to be of poor quality.

According to London (1993) in many developing countries where students performance in public examinations is still poor certain important school facilities are not provided and where they are available, they are of poor quality or in critical conditions. As Oni (1992) states the internal efficiency and productivity of any schools highly depend on the availability, adequacy and relevance of infrastructure. This goes hand in hand with the current study to evaluate the effect of infrastructure as input factor in the Ghanaian school and its perceived effect on student academic achievement in the junior high schools.

### **Parental and Community Involvement**

Parental involvement as an input factor has always been an essential component of every teacher-student-school academic endeavour. Parents, who have been considered as one of the stakeholders of a school community, play tremendous roles in the child's educational and environmental transformation; thus, the intensity or extent of participation that parents have in their child's education and school, more often, have to be realised.

Many parents, whose children are currently enrolled in a particular school, are enormously concerned, more often being active to assist in their child's classroom, communicating constantly with their child's teachers, assisting with their homework, getting involved with school projects and discussing their child's individual academic strengths and weaknesses with teachers. Regrettably, there are also some, if not many, parents who are quite passive in their child's education. Some of them are not directly involved. Sadly speaking, some parents have obvious manifestations of their "I-don't-care" attitude. Neither are they visible in the school premises and get involved in the desired goals of the school where their children are getting what they need most for life. Several schools, both private and public sectors, have programmes designed at intensifying parental participation such as boys and girls scouting, school-community socio-economic projects, disaster volunteer task force, and school-community work brigade. However, increasing parental involvement remains a tough challenge among school administrators and their teachers despite clear programmes, concerted efforts, and strong motivations.

Why do parents have to get involved in their child's education? Basically, parents' involvement in their child's learning process offers many opportunities for success. Parental involvement in their children's learning not only improves a child's morale, attitude, and academic achievement across all subject areas, but it also promotes better behaviour and social adjustment. It further says that family involvement in education helps children to grow up to be productive, responsible members of the society. This means also that, if we involve the parents in educating their children, it is

tantamount to saying that the school is proactive in implementing changes or development among the students. As parent's involvement is increased, teachers and school administrators also raise the chance to realise quality reform in education.

In a research conducted by Mapp and Henderson, (2002) entitled *A New Wave of Evidence, The Impact of School, Family, and Community Connections on Student Achievement*, the authors state that most students at all levels; elementary, middle, and high school, want their families to be more knowledgeable partners about schooling and are willing to take active roles in assisting communications between home and school. The study further points out that, when parents come to school regularly, it reinforces the view in the child's mind that school and home are connected and that school is an integral part of the whole family's life.

In his article on *Parental Involvement in Education, Tips to Increase Parental Involvement in Education*, Meador (2010) supported earlier contention stating that true school reform will always begin with increased parental involvement in their children's education. It has been proven time and time again that parents who invest time and place value on their children's education will have children who are more successful in school. There are always exceptions, but teaching a child to value education brings a positive impact on their education.

The education system is a shared responsibility between government, parents, and community. Those three elements in accordance with their functions and roles should have great attempt to realise an optimal quality of education. A child will learn and grow in a family, school, and community

environment. Family is the first and the most important environment for a child because family is seen as the foundation for the child's education and the primary responsibility of actual education rests in a family (Imron, 2013). At the level of a family, the duty of parents to educate their children in a family life. Shochib (2010) argues that, the responsibility and trust of parents felt by the children will be the basis of imitation and identification to behave. School environment with its typical structure and institutional system serves as a seedbed of the nation which has the obligation to educate and train its students. The school environment is created to help the educational process that has taken place within the family, while the surrounding communities with all its dynamics and characteristics will directly or indirectly influence the development of students as members of society. This suggests the existence of a strong attachment between the schools, parents, and community. Kusmintardjo (2010, p. 195) states that "the existence of a strong link between schools, families and communities which are actively involved in supporting the educational business and development of students, then will have a positive impact on education". Therefore, the shared responsibility between parents, communities, and schools in improving the quality of education should not be ignored.

A quality school cannot be separated from the participation from students' parents. The participation or the involvement of parents in school is very important in creating a good quality school. According Winoto (2007), the involvement of students' parents at school is parents' willingness to offer help in solving problems at school. Those problems can be related to school related things such as learning, supervision, coordination, and other services at

the school. Gorton and Schneider (1991) suggest four things regarding the objectives of involving parents in school activities. These are: (1) to give better information about what students are learning in school, to give greater support to school renewal programme, to give parents a broad understanding on the various problems faced by the school; (2) to encourage parents to provide school facilities to support children's learning activities at home including the development of students' personal and social skills; (3) to give parents chances in giving input of ideas, expertise, and human resources for school reform, and (4) to realise democratic and transparent school, in the effort of realising effective school management.

The research result of Duke and Canady (1991) shows that the involvement of the school community including parents is very positive in supporting the successful implementation of a school policy. Meanwhile, Gibbon (1986) reports the results of his research conducted at public schools in Columbus, Ohio which found that one of the factors that lead to school improvement is parents and community participation in school programmes.

### **Pupil-Textbook Ratio**

Textbooks are one of the key ingredients in any education system. The importance of textbooks in a school setting has been highlighted by many scholars and the latter have linked textbooks with students' academic achievement Lockheed, Vail and Fuller (1986). They have insisted that textbooks are the only source of knowledge for both students and teachers and have, therefore, recommended that sufficient textbooks should be provided in schools to enhance quality of education. For instance, in their longitudinal study conducted in Thailand to highlight the influence of textbooks on

students' academic success, Lockheed, Vail and Fuller (1986) found that textbooks availability and adequacy affect students' academic achievement. Likewise, in his study on the impact of resources and resource utilisation on students' performance, Oni (1992) found that, recommended textbooks significantly affected students' performance in introductory technology, business studies and home management. This was later supported by the findings of White (2004) who conducted a research in Ghana to establish the relationship between textbooks and students' performance and found that improved textbook provision was a significant factor in improving students' achievement.

Provision of textbooks in schools does not only increase students' performance, but it also contributes to the effectiveness of teachers. This is because teachers use them to improve their teaching practices. In support of this, Squire (1991) emphasises the importance of textbooks for teachers' effectiveness by stating that textbooks are good sources of knowledge for teachers and they complement their role in classroom. Squire, therefore, recommends that those who want to improve the quality of education should accelerate the provision of quality textbooks and in adequate number. In the same vein, Farombi (1998) emphasises the impact of textbooks by stating that school libraries may not be effective if the books therein are not adequate and up-to-date as its impact may only be meaningful if the library could be opened to the students always for a considerable length of time in a school day.

From the literature above, it is logical to conclude that availability and adequacy of textbooks positively affect student's achievement and teachers' effectiveness.

Therefore, the current study tends to evaluate the effectiveness of this input factors in the Ghanaian junior high schools.

### **Process Factors in Education**

The process factors can be categorised in two, namely, school level and classroom level indicators. The process factors include teacher use of instructional time, level of parental and community involvement, type of leadership and curriculum coverage.

### **Teacher Use of Instructional Time**

Lavy (2015) examined international gaps in student achievement, estimating the effects of instructional time using Programme for International Student Assessment (PISA) 2006 data in Israel. The study exploited within-student and within school variation by subject (reading, mathematics and science), estimating student fixed effects. He found that instructional time has a positive and significant effect on test scores. By comparing countries, he found evidence that the effect is much lower in developing countries and that the productivity of instructional time is higher in countries with such school characteristics as accountability measures and autonomy in budgetary decisions. Lavy estimated different samples, distinguishing by school tracking policies as well. The reported effects are significantly lower for schools without any tracking than for schools that practice some type of tracking. Overall, these results are in line with Lavy's (2015) earlier finding, which estimated the effect of increasing the length of the school week and also subject-specific instructional time per week in Israel.

Building on the method used by Lavy (2015), Rivkin and Schiman (2015) ran similar regressions using the PISA 2009 data and adding controls

for school quality. They concluded that school circumstances are important determinants of the benefits of additional instruction time. Results from a study based on the international student-level database TIMSS, using a cross-country setting and controlling for standard characteristics and for institutional characteristics of different schooling systems, show that instructional time is positively related to student performance as well (Woessmann, 2003). Mandel and Suessmuth (2011) on the other hand, estimated state-fixed effects within Germany for cumulative instructional time and found positive effects on student performance.

However, there are also studies that found no significant relationship between instructional time and school outcomes. Woessmann (2010) used cross-state variation in Germany to eliminate unobserved country-specific factors but did not find an effect on student test scores significantly different from zero. In addition, some studies looking at the length of school years and their impact on later earnings (Pischke 2007) did not find statistically significant results. A study analysing the duration of the academic baccalaureate in Switzerland (Skirbekk 2006) estimated the impact of the canton-based variation of these programmes on the Trends in International Mathematics and Science Study (TIMSS) 2006 scores and did not find an effect of time spent in school on student achievement after controlling for school and student characteristics.

This relationship certainly does not constitute causality but still suggests that the effect of instructional time varies between tracks. Nonetheless, most of the research on tracking concentrates on inequality (Betts, 2011, Hanushek & Woessmann, 2006). The relationship between

instructional time and ability groups is less thoroughly examined. A study from Allensworth and Nomi (2009) estimated the efficacy of an algebra programme in Chicago Public Schools providing a doubling of lessons to students in the 9th grade whose test scores in the 8th grade were below the national median. The authors provide evidence that the lowest-skilled students benefit less from additional lessons than do higher-skilled students. This was because the students did not only receive more instruction but also more difficult coursework and improved instruction. These estimates jointly measure time and instruction quality characteristics.

In the vast majority of education systems, authorities mandate a certain quantity of yearly hours during which schools are expected to be open and pupils in attendance. This quantity of time is embodied in system-specific policies regarding the length of the school year, the school day and the class period, as well as curricular guidelines found in official weekly timetables. On the average, countries allocate about 700–750 yearly instructional hours in grades 1–3 and about 770–830 hours in grades 4–6 (Benavot, 2002) annually. While a small proportion of this official annual instructional time is devoted to non-instructional activities (e.g. recess, lunch, breaks between classes, play), the vast majority is distributed according to specified educational goals and explicit curricular subjects.

Another time construct is time-on-task (or engaged learning time). It refers to the amount of allocated instructional time during which students are actually engaged in learning. Classroom instruction is considered to be of higher quality when time-on-task is maximised. Almost all the aforementioned time-related studies are associated with, and rooted in, the analysis of school

life in more developed education systems (Lockheed & Verspoor, 1992). Huge between-school differences in the delivery of intended time are relatively rare in such systems, since reasonably effective administrative mechanisms regulate and monitor school compliance in the provision of instructional time. The main policy challenge becomes how to improve the quality of classroom time for a specified time quantity. In the Third World, by contrast, studies examining educational quality in general, and the delivery and management of instructional time in particular, are much more limited (Lockheed & Verspoor, 1992).

Initial evidence indicates that discrepancies between official policies and school realities concerning instructional time are endemic in developing countries. Thus, the disparity between official, intended instructional time and actual patterns of time implementation in local schools and classrooms, as well as the factors affecting this disparity, are fundamental issues that deserve scholarly attention (Lockheed & Verspoor, 1992).

Fuller and Clarke (1994) claim that instructional time is one of three major areas – in addition to teacher quality and textbook availability, in which consistent achievement effects obtain. Their review of fourteen less developed countries (LDC) based studies involving instructional time identified positive relationships with academic achievement in twelve of them. Many studies of education systems in developing countries underscore the aforementioned distinction between time-quantity and time-quality. In short, the optimisation of instructional time may be as important for pupil achievement in LDCs, as the quantity of available time.

I agree with Lockheed and Verspoor's (1992) assertion that, the disparity between official, intended instructional time and actual patterns of time implementation in local schools and classrooms, as well as the factors affecting this disparity, are fundamental issues that deserve scholarly attention in the junior high schools in Ghana. For that matter, the current study.

### **School Leadership**

The term leadership has been defined by Coleman and Glover (2010) as the action of leading a group of people or an organisation. According to Thomson (1992) there are a number of activities that school leaders must perform to ensure effective running of a school. According to him school leaders must understand changes as well as manage them, they must involve and motivate staff, create a positive culture, build group vision, develop quality educational programmes, provide a positive instructional environment, encourage high performance, apply evaluation processes, analyse and interpret outcomes, be accountable for results, maximise human resources utilisation, stimulate public support, and engage community leaders.

Several studies have been conducted to investigate the relationship between school leadership, especially principal leadership, and student learning and achievement and their findings have revealed a significant and positive relationship (Marks & Printy 2003; Leithwood & Mascall 2008). For instance, findings of the research by Marks and Printy (2003) revealed that in addition to classroom instructions, school leadership contributes much to student learning and performance. Similarly, Leithwood and Mascall (2008) found that the influence of collective leadership was most strongly linked to student achievement through teacher motivation. This is not far from the

findings of Duke, Tucker, Slamonowicz and Levy (2006) who found that the lack of effective leadership in schools lowers students' achievement because the absence of quality leadership often results in ill-adapted school organisation and programmes. They added that it also leads to unstable and difficult staffing, students' negative attitudes to academic work and discipline, an unhealthy school system and climate, and non-cooperation of parents and community. Finally, Carpenter, Geletkanycz and Sanders (2004) concluded that school leader's personal character and values play a role in the school's effectiveness as these influence the attitude and cooperation of the school staff and students.

### **Curriculum Coverage**

Globally, teachers are expected to play several roles singly or collectively so that the investment in education can have desired effects. Teachers define who will be taught, what will be taught, how it will be taught and the standard of evaluating what has been taught. To teach for understanding, teachers must be able to identify the big ideas of their subject and know what it is they truly want students to understand. They also must engage students in understanding performances, that is, opportunities for actively building personal understanding, and provide meaningful feedback on learning as it unfolds (Yates, 2007).

Students of different levels of preparation (or prior knowledge) have different learning needs. Given the hierarchical nature of a learning process, students need to comprehend, apply, and synthesize the basic materials before they can effectively learn more advanced ones. In other words, their human capital output from an earlier stage of learning becomes the input and

determines the learning effectiveness at a subsequent stage. As a result, well prepared students, that is, those with good prior knowledge or, equivalently, high human capital output from previous learning, can learn new topics more quickly, while less prepared students i.e., those with poor prior knowledge, need remedial work on the old materials before they can embark on the new ones, so they learn the new topics more slowly. In this sense, when the pace of learning is ideally matched to a student's preparation, her learning effectiveness will improve, leading to better learning outcomes.

A teacher falling short of time to uncover the syllabus has become a common phenomenon in most of the schools these days. The reasons could be varied and some of them include:

- i. improper or split syllabus planning,
- ii. lot of academic time being utilised for the practice of school events
- iii. teacher absenteeism or their unavailability
- iv. the difficulty in bridging the learning gap among students in the class room etc.

Whatever may be the reason, this irregularity and rush to complete the syllabus has always been found to have a profound impact on the learning outcomes for students. With no option left except to complete the syllabus at any cost before the due date, teachers might have to go to the extent of making students stay back after school hours, cancel their activities to organise classes for generating academic time and many more. .

### **Education Outcome/Result**

This BECE examination is taken at the end of JHS 3 basic education level to decide whether or not a student advances to secondary school,

technical or vocational institute. All candidates in this examination are tested in four core subjects and four to five elective subjects. The minimum of six subjects is used for the selection of all candidates for placement into various second cycle institutions (Ebow & Anokye, 2014). This comprises four core subjects and two best performing subjects of the candidate at the BECE. The Core Subjects are: Mathematics; English Language; Integrated Science; and Social Studies. The other two subjects could be any subject well performed by a candidate at the BECE. The analysis of the results over the years indicated that male candidates usually outperformed their female counterparts in the core subjects, except in English (NDPC, 2012; MoE, 2013).

The final grades achieved by pupils in the BECE therefore indicates how they compare with other students within the national cohort but does not provide any indication of what students' have achieved and what they have not achieved. A grade of 3 in a subject reveals that a student has performed better than any students with grades 4 to 9 in the same subject and poorer than all students with grades 1-2 that same year. However, as the grades are relative to the other students taking the test at the same time, comparisons cannot be drawn over different years. Therefore, it cannot be assumed that a student having graded 3 in 2010 has demonstrated a similar level of knowledge to a candidate who was graded 3 in 2009.

In contrast, criterion referenced tests compare a student's grade with an objective standard of performance rather than with the performance of a norm group. They can therefore be used to inform whether students have mastered a skill or demonstrated a minimum acceptable performance. This means that grades can be compared across years and that a grade of 3 in one year should

imply a level of performance that is equivalent to pupils who graded 3 in the same subject in a different year.

This method of grading has implications for the information that can be extracted from the data. As the BECE grades are relative to the cohort who sits the examinations, the grades do not provide any information about absolute performance and it is not possible to compare grades within schools over time. However, it does enable comparisons to be made across regions, districts and schools, within one year.

The limitations of the norm referenced grading mean that BECE results cannot provide any indication of how the level of knowledge in Ghana's JHS graduates is changing over time. At this critical juncture in Ghana's education sector, as quality becomes an increasing policy focus, it is essential that the education sector has a measure of absolute performance at the culmination of basic education at the school level.

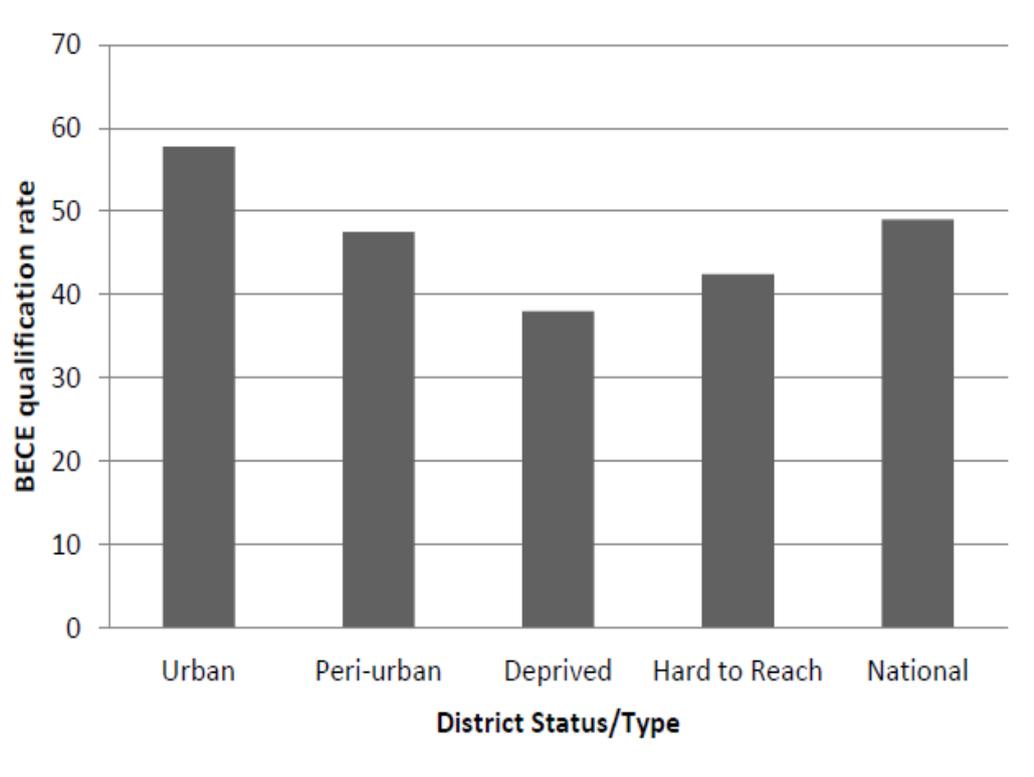
Outcome/result as a factor identifies the extent to which the goals of a programme have been achieved. It asks, "Did the project succeed?" The purpose of is to measure, interpret, and judge the end product of a programme. Its main purpose is to ascertain the extent to which the needs of all the participants were met. Some product indicators include:

This examination is taken at the end of basic education level (that is, JHS 3) to decide whether or not a student advances to secondary school, technical or vocational institute in the Ghanaian education system. All candidates in this examination are tested in four core subjects and four to five elective subjects. The West African Examination Council (WAEC) uses a minimum of six subjects for the selection of all candidates for placement into

various second cycle institutions (Ebow & Anokye, 2014). This comprises four core subjects and two best performing subjects of the candidate at the BECE. The Core Subjects are: Mathematics; English Language; Integrated Science; and Social Studies. The other two subjects could be any subject well performed by a candidate at the BECE. The analysis of the results over the years indicated that male candidates usually outperformed their female counterparts in the core subjects, except in English (MoE, 2013).

The district level qualification rates were decomposed into the different district classifications used by the Ministry of Education. All districts are categorised into one of the three classifications: urban, peri-urban or deprived or rural. The criteria that are used to identify deprived areas takes into account a number of education input and output factors including BECE pass rates. The deprived districts were defined in 2000 and the classifications have not been amended since the policy's inception despite a number of policy interventions designed to address the disparities in inputs and thus outcomes (MoE, 2011).

Therefore, although the BECE scores of these districts were low by national standards at the outset of this policy, it is hoped that the interventions would have raised educational outcomes relative to the other districts in the intervening period. The qualification rates for each district type are detailed in Figure 2.



*Figure 2: Qualification Rates for Each District Type*

Source: (MoE, 2011).

From Figure 2 it is clear that the deprived districts are still the poorest performing subgroup, amongst the three main district groupings, with a qualification rate more than 10 percent below the national rate. This is despite interventions which have aimed to increase resource allocation to this group. It is evident that the urban areas (58%) are the strongest performing subgroup with a qualification rate almost 10% above the national level. Whilst almost three in five pupils qualify for SHS in urban areas, less than two in every five pupils pass in the deprived areas. The qualification rate for peri-urban areas (48%) is broadly in line with the national rate, just under one in every two pupils (MoE, 2011).

The hard to reach and post terrain (HRPT) districts, which include both deprived and non-deprived regions, are also significantly below the national

average (42%). However, the qualification rates are significantly above the deprived districts (38%). As the HRPT districts also include peri-urban areas, it may be that the BECE scores in the peri-urban areas are skewing the HRPT results. However, decomposing the HRPT districts into deprived and peri-urban reveals that, the qualification rates are very similar across the two groups and is even slightly higher for the deprived HRPT districts (MoE, 2011).

## THEORETICAL REVIEW

### The CIPP Evaluation Model

In his work entitled, *Assumptions Underlying Evaluation Models*, Ernest House presents a history and outline of a number of major evaluation models. House notes, "The major elements in understanding the models are their ethics, their epistemology, and their political ramifications" (House, as cited in Madaus, 1978). Some of the models cited by House include:

1. Systems Analysis, whose major proponent was Rivlin, examined quantified variables and cost benefit analysis to determine if expected efforts are achieved efficiently. The major audiences for this model are economists and managers.
2. Behavioural Objectives, whose major proponents were Ralph, Tyler and Popham, examined the objectives of a programme with quantified outcome variables. Behaviours are measured by norm-referenced or criterion-referenced tests. Managers and psychologists are the major audiences of this model.
3. Decision-making, with Stufflebeam arguing that evaluation is structured by the decisions that are made. The evaluations supply information based on the

decisions using questionnaires and interview surveys. Administrators are the major audience targeted by this model. CIPP falls into this category.

4. Goal-free, with Scriven serving as the major proponent. He argues the need to reduce bias in evaluation by searching for all possible outcomes. Consumers are the major audience for this model (Madaus, 1978).

While there are many types of evaluation models from which to choose, looking for a model that is informative to decision-makers led the researcher of this study to select the CIPP model created by Daniel Stufflebeam.

As the focus of the study was to evaluate the effectiveness of junior high education choosing an effective evaluation model was critical. This study used Stufflebeam's model to examine the context, input, process, and product components of the junior high school programme within school location and school type in the Central Region of Ghana.

The CIPP model is a comprehensive approach to evaluation. Originally introduced over 40 years ago, Stufflebeam's model stresses the need for process as well as product evaluation. The definition of evaluation, which is basic to the understanding of the CIPP model, is "the process of delineating, obtaining, and providing useful information for judging decision alternatives" (Stufflebeam, 1971, p.4). Using this definition, Stufflebeam (1971) asserts that evaluation is conceived of as a systematic, continuing three-step process of delineating questions, obtaining relevant information, and providing information to decision makers.

A basic tenet of the CIPP model is that evaluation should serve as a tool for decision making. According to the CIPP model, "There are four kinds of decisions; planning, structuring, implementing, and recycling—which

respectively are served by context, input, process, and product evaluations" (Stufflebeam, 1971, p.5). In general, these four parts of evaluation respectively ask the following: What needs to be done? (context) How should it be done? (input) Is it being done? (process) Did it succeed? (product) (Stufflebeam, 2004,). The question of "Did it succeed?" is particularly important to the CIPP Evaluation Model. Stufflebeam asserts that this part of the checklist examines "Were the beneficiaries rewarded? Were their needs met? Were the gains for the beneficiaries sustained? Did the processes that produced these gains prove transportable and adaptable for effective use in other settings?" (Stufflebeam, 2004, p.1).

What made the CIPP model appealing for this study was that it provided a focused evaluation tool to review an organiser's decisions, assess a programme's history, and disseminate the effective services provided to targeted individuals. Using the CIPP model, a final synthesis report can be expected to "pull together evaluation findings to inform the full range of audiences about what was attempted, done, and accomplished, what lessons were learned, and, the bottom line, assessment of the programme" (Stufflebeam, 2004, p.9).

Stufflebeam (2004) suggests, "The CIPP model's main theme is that evaluation's most important purpose is not to prove, but to improve" (p.2). The overall structure of the CIPP model and its expressed goal of aiding in programme improvement are what made it an ideal tool to be used in this study. While most of what is written about the CIPP model is positive in the literature review, Stufflebeam's work does have some detractors. Scriven (1992) suggests that "the CIPP model was a little overgeneralised in that it

claimed all programme evaluation was orientated to decision support" (p.3). He argues the CIPP's expressed purpose regarding evaluation, to improve rather than prove, is adequate for formative evaluation, but narrows and fragments the overall concept of evaluation. He further contends that the CIPP model "seems about the most complicated and confusing way of analysing the practical procedures of evaluation and it's certainly the most complicated one I've ever seen" (Scriven, 1971, p.36). Not only does he suggest that for the CIPP model to be effective for school personnel, an intensive amount of in-service training is needed, but also he concludes that the benefit will not be commensurate with the cost of such training (Scriven, 1971).

While William Michael (1971) in his article, "Educational Evaluation and Decision Making," views the CIPP model much more favourably than Scriven, he too raises issues with some parts of the model. He notes there must be a concentrated and focused effort throughout the stages of context, input, process, and product evaluation to identify "explicit and implicit inferences regarding possible cause and effect relationships" (p.27). He also suggests that greater development of methodology for setting value systems is needed. Finally, he raises a concern that external validity issues may be more likely than internal validity issues, explaining, "Threats to external validity may be due most often to a lack of randomization or to the lack of the evaluator to assume a position of power and influence which he might assume in evaluation studies involving decisions about a multimillion dollar educational enterprise" (p.29). Michael concludes his paper by stating the CIPP model is likely the most comprehensive conceptualization of evaluation currently available.

While the CIPP model does have some detractors, others have found it an extremely useful model to evaluate a programme. Les Goodwin used Stufflebeam's CIPP model for his work entitled, *A Proposed Model for Educational Accountability*. Goodwin (1975) stated that the CIPP model not only provided a framework for "conceptualizing the decision-making which is required in an accountability programme," but also "focused attention on the associated information required for making those decisions" (p.51). Goodwin praised the CIPP model for establishing how content, input, process, and product worked together systematically and demonstrated a relationship to the decision-making process in educational accountability. The author also noted "utilization of this model also permitted focusing on only those factors which were necessary for the comprehension of the total accountability system, thus limiting the study to its most significant aspects" (Goodwin, 1975, p.51).

The choice of an appropriate evaluation model was essential to this study. The CIPP model is logically organised and provided for an opportunity to examine the history of the programme as well as assess its overall effectiveness. Finally, Stufflebeam's position that CIPP's goal is to improve rather than prove a particular point of view provided an opportunity to assist the system in this study in building a better education.

### **Educational Production Function**

This study is premised on the theory of education production function (EPF) by Bowles (1970). In education, education production function views education sector as an industry that uses a variety of inputs to maximise output (Hanushek, 2007). This consideration of education sector as a firm that is run on the basis of input-outcome allows for the application of education

production function theory to this study. The theory states that, the outcome of education is the function of some factors such as input and process which helps to maximise outcome.

The only purpose of schools/education is to take children (raw materials) and convert them into graduates with desirable skills and knowledge (final products). Applying Production Function theory, Bowles (1970) has defined Education Production Function as follows:

$A = f(X_1... X_m, X_n...X_u, X_w....X_z)$ , where

A= some measure of school output/product; e.g. performance

$X_1...X_m$  = Variables measuring the school environment. These include amount and quality of teaching services, the physical facilities of the school, and the length of time that the student is exposed to these inputs;

$X_n...X_u$  = Variables representing environmental influences on learning outside the school-e.g. the parents' educational attainment, socio-economic status of students, etc.

$X_w....X_z$  = Variables representing the students ability and the initial level of learning attained by student prior to entry into the type of schooling in question, e.g. students' prior performance.

Therefore, Education Production Function theory takes schools as enterprises in which "raw materials" (children) and other inputs (teachers, books, libraries, laboratories, etc.) are combined through a given process or technology to produce certain outputs (products) (Hanushek, 2007).

Applying Education Production Function theory as expressed by Bowles (1970) to the study of evaluation of the effectiveness (quality) of

junior high school education in the Central Region of Ghana the equation takes the following form:

$A = f(X_{1(1)} \dots X_{1(4)}, X_{2(1)} \dots X_{2(5)}, X_{3(1)} \dots X_{3(4)})$  where

A= students' academic achievement (outcome; performance in BECE)

X<sub>1</sub>= contexts (X<sub>1(1)</sub> = urban, X<sub>1(2)</sub> = rural, X<sub>1(3)</sub> = public and X<sub>1(4)</sub> = private)

X<sub>2</sub>= inputs factors (X<sub>2(1)</sub> = class size, X<sub>2(2)</sub> = availability of teaching-learning materials, X<sub>2(3)</sub> = infrastructure (appropriate pieces of furniture), X<sub>2(4)</sub> = parental support and X<sub>2(5)</sub> = adequacy of pupil-textbook ratio)

X<sub>3</sub>= process factors (i.e., X<sub>3(1)</sub> = teacher use of instructional time, X<sub>3(2)</sub> = level of parental and community involvement, X<sub>3(3)</sub> = type of leadership, X<sub>3(4)</sub> = curriculum coverage). This means that the function of the combination of various factors; inputs through education production process over a period of time (three years of JHS in Ghana). Therefore, in reviewing the theory for this study, it was assumed that education sector in Ghana is engaged in a production function where various educational inputs are put in the production process to get desired outcome.

The first factor of this study is the context factor. These are the geographical locations where the various junior high schools are located within the Central Region. Geographically, the schools are put into urban and rural schools. Also, the schools are classified into school type under the context and it is made up of public and private schools for this study.

The inputs factors are those inputs that the school has control over. In this study, they include class size, availability of teaching-learning materials, infrastructure (appropriate pieces of furniture), parental support and adequacy of pupil-textbook ratio. This study used all these inputs to establish their

relationship to educational output (student performance at the BECE level) in urban, rural, public and private junior high schools in the Central Region of Ghana.

The process factors for this study are teacher use of instructional time in the classroom, level of parental and community involvement, type of leadership, curriculum coverage in the classroom. These factors are assumed to have a certain influence on students' performance especially in the junior high school in Ghana. They were, therefore, used for this study to investigate how they affect students' performance in the BECE in the Ghanaian context.

This study attempted to evaluate the effectiveness of these factors (context, input and process) on student academic achievement/performance in junior high schools in the Central Region of Ghana.

### **EMPIRICAL REVIEW**

The right to education is not only the right to access education but also the right to receive quality education. Education must be available and accessible but also acceptable and adaptable. Systems that embrace change through data generation, use and self-assessment are more likely to offer quality education to students (Glasser, 1990) than systems which do otherwise. The purpose of this study is to evaluate the effectiveness (quality) of junior high school education in Ghana in relation to context, input, process and product factors.

Educational effectiveness research indicates that schools differ with respect to the outcomes of their students and that differences between them remain to exist (although to a lesser extent) when accounted for student background and group composition (Cervini, 2003). Bosker and Witziers

(1996) concluded from their multilevel meta-analysis of 103 studies that, on average, schools account for 18% of the achievement differences between students, and for 8% when adjusting for initial differences between students.

### **How Context Affects Effectiveness (quality) of Education**

Context issues within school effectiveness research have been discussed for over 30 years starting with Willms' research on the social class contexts of schools (Willms, 1985, 1986) and the theoretical work of Wimpelberg, Teddlie, and Stringfield (1989) and proceeding through recent reviews illustrating the continuing importance of context in education (Thrupp, Lupton, & Brown, 2007). Teddlie, Reynolds, and Sammons (2000) described five types of "context-specific" school effects: (a) socioeconomic status of student body (SES); (b) community type (e.g., urban, suburban, rural); (c) grade phase of schooling (e.g., primary, secondary); (d) school governance structure (e.g., public, private); and (e) country in which the school resides.

A review of the literature indicates that the importance of community type (e.g., rural, urban) on school effectiveness or quality processes varies across countries. For example, community type does not appear to play as significant a role in the United Kingdom (UK) as it does in the United States of America (USA) in comparisons made across several studies. Teddlie et al. (2000) attributed this to there being less variance on the community type variable in the UK than in the USA. Studying rural schools separately in the UK is probably not as important an issue as it is in the USA because rural schools in the UK are generally closer geographically and culturally to urban areas and are, therefore, not as isolated as their counterparts in the USA. Teddlie et al. argued again that the interaction between the two context

variables, community type and country, may be an important issue in future effective schools research. However, there is evidence that community type might be an important factor affecting school effectiveness processes in Ghana. According to Anamuah-Mensah (2002), rural schools in Ghana lack good infrastructure and facilities. They have low enrolment, less qualified teachers and fewer textbooks and other teaching and learning materials. Whereas urban schools are, generally, overstaffed with qualified teachers, overenrolled, better funded and monitored, have better infrastructure and adequate resources to work with.

Tang and Wu (2000) also reported that, one large-scale survey carried out by the Ministry of Education of China found that the academic achievement of pupils in urban areas was higher than that of pupils in townships, whose achievement was in turn higher than that of pupils in rural areas. Similarly, in Ghana, as reported by Ghana web on 30th November, 2009, four (4) schools within the Okere constituency in Ghana, located in the rural area, recorded zero percent (0%) pass rate in the 2008 BECE. Also, another report by Ghana web on 6th November, 2010, had it that five (5) schools in the Jomoro District, located in the urban, recorded zero percent (0%) pass in the 2010 BECE results. Another report on the Ghana Broadcasting Corporation (GBC) website indicated that 10 schools in the Agona West Municipality and Agona East District Assembly, within urban setting, also scored zero percent (0%) pass rate in the 2010 BECE. Again, on 30th October, 2010 the Ghana business news reported fifteen (15) schools also scoring zero passes in the Hohoe Municipality which is located in an urban setting and the affected schools were all public schools. These results mean

that none of the students in these schools could further their education. The quality and workload of teachers, sometimes, in Ghana, especially in the rural schools, have less qualified and experienced teachers, as the more experienced teachers find ways to move to the more urban schools. Teachers in rural schools in Ghana may also teach less than their counterparts in urban areas in terms of instructional time. Any trip away from the rural area, to visit a doctor, to collect monthly pay, to engage in in-service training, or to visit family may involve long journeys and involve missed school days. In addition, where teachers walk long distances to school, they may tend to start late and finish earlier than scheduled. As transport difficulties often make supervision visits from inspectors/circuit supervisors less frequent in deprived schools. Again, even when teachers are teaching, the quality of their work may be lower because rural teachers often have less access to support services than their urban counterparts and also fewer opportunities to attend in-service courses. In some cases they also have difficulty in accessing reading materials and teaching learning materials (Yao, 2005).

In addition, because the parents tend, in general, to be less educated in the rural settings of Ghana, they are less likely to monitor the quality of teaching or to take action, if the teaching going on within the schools is of poor quality. Furthermore, because parents' educational attainment in rural parts of Ghana often tends to have a lower level of education, compared to the urban areas, they tend to attach a lower value to schooling. The perceived lack of relevance of schooling in rural settings may be partly the result of a rigid curriculum, often designed for a context, removed from that in rural areas. Even where parents place a value on schooling, they may be less able to help their children

learning in terms of homework and project work. Parents in rural areas tend to have less financial ability to provide support for their children. Some research reports indicate that they are embarrassed to discuss school topics with their children, because of their own lack of knowledge. It has also been observed that, homes in rural areas are often ill-equipped to meet the needs of children to study and often lack facilities such as electricity in some cases (Taylor & Mulhall, 2001).

Lo (1999) also reported that in Shanghai there are differences in students' test scores between schools in urban and rural areas, with those in the urban areas scoring higher. Recent research indicates that the gap between urban and rural areas of China, with regard to income and education, persist (Yao, 2005). For instance, Yao (2005, p. 184) further explained the impact of the urban-rural gap on income inequality as follows: "if the cost of living is not taken into account, the urban-rural inequality can explain two-thirds of the total inequality in China." Furthermore, Sicular, Ximing, Gustaffson and Shi (2007) examined the urban-rural income gap and concluded that (a) the gap remains large, having increased to some extent over time; (b) residence location is still the most important variable associated with the urban-rural income gap; and (c) education is the only household characteristic that contributes significantly to the income gap.

Similarly, Chuanyou (2006, p. 40) in a study concluded about China that, "But for a long time, our public policies have been so 'city-oriented' that public resources are allocated unfairly and majority of high-quality education resources are concentrated in cities." I agree with Chuanyou that, most Ghanaian public policies are 'city-oriented' and that majority of high-quality

education resources are concentrated in the cities. I argue also that community type (rural, urban) as a context variable in my study is a very important factor in Ghana and probably has an effect on the school and teacher effectiveness (quality) practices ongoing in the schools. One of the research focuses for this study involves describing the extent to which schools in the different contexts (urban, rural, public and private) differ in the provision of effective or quality education in the Central Region of Ghana.

Several decades of educational research suggest that access to schooling affects outcomes. Students who study in academically more demanding environment learn more than students in less demanding environment (Natriello, Pallas, & Alexander, 1989), even when student's earlier achievement is taken into account.

This can be said to be true in Ghana as shown by the results of the BECE presented in the foregoing paragraphs. Most parents want to provide the best educational environment for their children. Thus, parents decide to invest their children in form of education depends on number of social, cultural and economic factors. Parents usually decide to choose the best quality schools, mostly private schools for their children when they are dissatisfied with public schools. Private schools, generally, are mostly more effective than public schools in terms of school environment, smaller size of classes and parents' involvement and education. In Ghana, it is perceived that a great majority of parents seemed dissatisfied with the public basic school due to various reasons: lack of good relationship between schools and parents, class sizes and others.

### **School Size as Context Factor**

The issue of school size is of great interest to educators and policy makers alike. As the demand for safer schools and the need to help all students reach high achievement standards, the roles of many schooling variables, including school size, have come under public scrutiny for their potential contributions to positive student outcomes (Johnston, 2009). Intuitively, school size would appear to have considerable impact on both student achievement and discipline in schools. Smaller school size seems to invite more personal attention, less anonymity for students, better attention to individual needs, and a more caring environment as can be perceived in Ghanaian private schools. Parents are sensitive about the location of schools and prefer schools with positive atmosphere as reflected in school discipline, class size, and school safety. Moreover, parents believe that private schools offer better education, additional resources, better policies and practices, and an environment more conducive to learning, Organisation for Economic Co-operation and Development (OECD, 2012). School size is, therefore, a demographic factor which affects students' academic achievement. The following paragraphs further explain the relevance of school size in student achievement focusing mainly on those that have looked at how school size influence, student achievement.

### **School Size and Achievement**

School size is one potential measure of school quality over which policymakers have some control. For example, the school consolidation movement in the United States in the middle of the 20th century was predicated on the notion that larger schools could offer more specialised

instruction, increase administrative efficiency, and reduce per-student costs by exploiting economies of scale (Duncombe & Yinger, 2007). The movement successfully eliminated about 70% of schools and increased the average school enrolment from less than 100 to about 440 between 1930 and 1970 (Berry & West, 2010).

School size has some potential to influence students' behaviour and academic performance. From empirical evidence, larger schools experience higher rates of student indiscipline (Leung & Ferris, 2008). Disorderly incidents may decrease academic achievement through some combination of diverting student attention, creating a fearful or disruptive environment, changing schools' social norms, and decreasing student attendance (Akerlof & Kranton, 2002; Gottfredson & DiPietro, 2011).

The question then is, through what mechanisms, might a change in school size affect achievement? Researchers interpret such effects as the result of changes in schools' climate (Akerlof & Kranton, 2002; Welsh, Stokes, & Greene, 2000). Specifically, the National School Climate Centre of the United States of America states that, school climate is based on patterns of students', parents' and school personnel's experience of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organisational structures (Gershenson, 2015). School size affects school climate by changing the school's stock of social capital (Coleman, 1988) and "sense of community" (Wynne & Ryan, 1997). For example, there is less frequent and less direct communication between teachers, administrators, and students in larger schools (Gottfredson & DiPietro, 2011). Akerlof and Kranton (2002) argued that students in small schools benefit by being better

able to identify with the school and with each other. Boccardo, Schwartz, Stiefel, and Wiswall (2013) provided empirical support for these claims by showing that students have better interpersonal relationships in New York City's old small schools. Furthermore, the benefits of small schools may spill over into the community, as Dee, Ha, and Jacob (2006) provide suggestive evidence that small rural schools promote parental involvement in the form of volunteering at school and participation in Parent Teacher Associations. In my view, there is little contrary evidence in the educational research literature to refute the conclusion that smaller JHS schools are associated with higher academic achievement in Ghana.

### **Public and Private Schools**

Just as school size impact on achievement level of students, one may say that the kind of school attended by an individual matters. However, the question is: What kind of characteristics makes schools effective and how are student outcomes affected by quality school characteristics? Studies about effective and non-effective schools tried to answer these kind of questions and resulted in lists of effective school characteristics and effective school correlates. Relations between variables at school level are placed into categories like orderly environment/school climate, consensus and cooperation between teachers, focus on basic skills and learning time, monitoring of student progress/evaluation, school educational leadership, policy on parental involvement and high expectations (Creemers & Reezigt, 1996). Also studies about differences between private and public schools are often an attempt to unveil the school characteristics that cause the out performance of students in

one school compared to the performance of comparable students in other schools.

Considering private and public school effectiveness and quality, educational researchers in the United States of America (USA) mostly found that private schools in general are more effective and of quality than public schools. Even when controlling for student background characteristics like parental occupation and/or pre-test scores, private and public schools differ with respect to student achievement and other criteria such as rates of graduation or college attendance, in favour of private schools (Levin, 1998; Miller & Moore, 1991). Also outside the USA, such differences between private and public schools in students' achievement are often found (Dronkers & Robert, 2003).

Several factors have been identified as hampering academic work and students' academic performance in public junior high schools in Ghana. For instance, Etsey, Amedahe and Edjah (2006) in their study of some private and public schools in Ghana revealed that academic performance is better in private schools due to more effective supervision of work.

Like other countries, the perception in Ghana is that private schools offer a better education, an environment more conducive to learning, additional resources and more parental involvement and management practices. As a result, more advantaged parents tend to send their children to privately managed schools. As the preference for private school education becomes more widespread in Ghana, the debate on the relative merits of public and private education has gained increasing relevance and importance (Akaguri, 2013). The number of private JHS schools increased by 13.9%

between 2008/2009 and 2012/2013, whereas the number of public primary schools increased by only 6% within the same period (MoE, 2013). In spite of the considerable state funding and donor support to public basic schools in Ghana, trends in academic performance indicate a low level of performance in public schools. Private schools with little or no assistance from the state performed better academically than the public schools as shown in the foregoing paragraph.

The school climate is one of the explanations researchers give for this difference in effectiveness between private and public schools. Private schools are more often characterised by both an academic and a communitarian climate (Bryk, Lee, & Holland, 1993). Lunenburg (1990) noted differences between public and private schools with respect to the pupil control ideology of teachers. Teachers in the private schools are more humanistic, which indicates that they conceive school and classroom as an educational community in which students learn through co-operative interaction and experience. The humanistic orientation is contrasted with the custodial student control ideology, which depicts a classroom atmosphere with a rigid and highly controlled setting primarily concerned with the maintenance of order. Lunenburg also found that teacher humanism in student control ideology and behaviour is associated with students' perception of classroom life as more interesting, challenging, and action packed. Miller and Moore (1991) in their study found differences in attitudes towards mathematics and in instructional coverage (favouring private schools). They also found differences in the training and job requirements for teachers.

Also, Morgan (1983) mentioned that several school and teacher characteristics like discipline, safety, peer relations, and instructional quality are rated higher in private schools than in public schools. Hannaway (1991) described differences in management practices between public and private schools and suggested that the observed management differences are due to the very “public” and “private” nature of these institutions. The results of her study also showed that the management practices among private schools vary systematically with characteristics of their clients and settings, while this is not the case for public schools.

In Ghana, teachers in private schools are mostly those without professional qualification (Alhassan, 2014) with some being secondary school leavers. He mentioned that, you hardly get a professionally trained teacher in private schools. Yet parents are satisfied with the kind of results they get there due to supervision by the management team of the schools. On the other hand, teachers in the basic public schools in Ghana are most often professionally qualified but they do not offer their best, due to poor supervision, among others.

To Reyes and Pounder (1993), the organisational orientation in public and private schools indicates that private schools exhibit a more normative value orientation, whereas public schools exhibit a more utilitarian orientation. Furthermore, they found that schools with a more normative value orientation had significantly higher teacher organisational commitment and job satisfaction than did schools with a more utilitarian value orientation.

Lee (1986) showed that cross sector differences with respect to achievement can be explained by two sets of factors:

(1) variation in the social context (social class as can be seen in the urban areas and minority status likened to rural areas) of schools;

(2) variation in the academic and disciplinary climate among schools;

and to differentiate between private and public school effectiveness and efficiency, Jensen (1986) found that students from private schools differ from public school students only in behaviour that could be directly influenced by school practice. Private school students skip school less often and spend more time on homework. He stated that academic differences between public and private school students are due to the greater discipline and more rigorous requirements in private schools. Ghanaian public education is, however, currently be devilled with many problems such as inadequate infrastructure, shortage supply of teaching and learning materials, teacher absenteeism, low student discipline, parental negligence and above all poor academic performance in standard examinations. Parents' explanations of their choice of private basic schools in Ghana over public ones for their wards include greater discipline and more rigorous requirements in private schools, better examination performance and access to higher levels of education (Rolleston & Adefeso-Olateju, 2012). According to Rothstein (2000), there are more pedagogical variations within public and private school categories.

Differences with respect to non-cognitive outcomes between public and private schools in European countries are hardly found (Dronkers, 2004). However, Dronkers mentioned that differences with respect to achievement between private and public schools in The Netherlands are somewhat more pronounced in primary than in secondary education. There are also studies of other European countries which reported no or almost no differences between

private and public schools. For example, a study by Dronkers, Baumert, and Schwippert (2001) on secondary education in Germany showed no significant differences between public and private schools in performance with respect to the students' scores on biology, mathematics, and natural sciences. Furthermore, there were indications that with respect to mathematics achievement in primary education, the socioeconomic status (i.e. low SES) of students plays a greater role in public schools than in private schools.

To help the future needs of Ghanaian students, Ghana as a country allocated a substantial portion of its national budget of 20.7% of its Gross Domestic Product (GDP) in 2017 to education according the Minister for Education. This was to help the public educational system to prepare students with knowledge, skills, and abilities that would enable them to contribute to national development. Similar substantial allocation was given to education in preceding years.

Despite the allocation of substantial portion of its national budget for education, Ghana over the years, has witnessed a persistent achievement disparity between students in public and private basic schools (Quansah, 2000) and seemingly between urban and rural settings. Academic achievement as measured by BECE and NEA showed that students in private schools exceeded that of those in public schools. Like in other countries, Ghana's public school stakeholders question whether the investment in education yields an appropriate return. Ironically, as indicated earlier in the chapter, many of Ghana's private schools employ teachers who are not professionally trained while public schools are staffed with a majority of certified professional teachers (EARC, 2003).

According MoE (2014) results from both the National Education Assessment (NEA) and the Basic Education Certificate Examination (BECE) have consistently indicated that children attending public schools, of low socio economic background or those from rural areas lag behind their peers from the relatively well-endowed families attending private schools. For example, in the NEA 2013, grade six students attending private schools achieved three times more than their public school counterparts in mathematics proficiency (i.e., 21% versus 6%). Also, the percentage-point gap between girls and boys who reached the minimum competency in mathematics and English language was 5.3 and 2.9 respectively. Many parents, therefore, continue to patronise private schools as a means of getting quality education for their wards. This invariably led to the establishment of more private schools in the country. For instance, in 2005/06 the number of private schools at the JHS level stood at 2,990 but rose by 36%, (4,068) in 2007/08.

Increasingly, Ghanaians are developing an individualistic outlook to education where looking for a good school and even paying for it is becoming common even though the Ministry of Education continues to emphasise fee-free education in public schools. Indeed, most of the officials in the Ministry send their wards to private schools rather than the public schools. Language is the most important tool in the teaching/learning process. The choice of the language of instruction used in school is of utmost importance. Initial instruction in the learner's first language improves learning outcomes. The importance of its effective use in basic education cannot, therefore, be over-emphasised.

The major differences between private and public schools are the superior English language facility of the pupils. While the public schools medium of instruction is Ghanaian language ( $L_1$ ), the private schools use English language ( $L_2$ ) that leads to the superiority of private schools. The literature on effectiveness of private and public school shows that private schools are more effective as compared to public schools (Ampiah, 2008). The following section takes a look at the effectiveness of urban and rural contexts in the basic school education.

### **Urban and Rural Schools**

Perhaps the most influential and strong critique of uneven development generated or maintained by urban-oriented policies in poor countries comes from Lipton (1977). In the introduction of his seminal book, Lipton stated that the most important class conflict in the poor countries of the world today is not between labour and capital, not between foreign and national interests, but rather, it is between the rural classes and the urban classes. The rural sector contains most of the poverty and most of the low-cost sources of potential advance while the urban sector contains most of the articulateness, organisation, and power (Lipton, 1977).

Recent educational research has examined rural and urban differences in achievement, appropriateness of rural and urban achievement measures, effects of parents and the community on the attainment of rural students, and how well rural students succeed in higher education (Edington & Koehler, 1987). However, in order to assess the rural school's impact on student outcomes, rural and urban comparisons must be made on students who are matched by background and school characteristics. Findings that, there are

little differences in the academic achievement of rural and urban students desire to attain higher education and that rural students aspire to higher education contrast with evidence that rural students have less total access to educational information. It could be argued that rural students are, therefore, in terms of their overall progress, achieving more, not less, in spite of greater obstacles (Edington & Koehler, 1987).

Many educators, researchers, legislators, and the general public believe that students from smaller and rural schools receive education that is inferior to that of students from larger urban or suburban schools. Until recently, there has been little empirical evidence to challenge that view. Now, however, a growing body of work has begun to examine how well students perform in and after graduation from rural school (Lipton, 1977).

A comparison of the performance on standardised achievement tests of students from small, usually rural schools with those from larger often urban institutions has not produced definitive results. Several studies (Monk & Haller, 1986; Ward & Murray, 1985) have not found any significant differences between the two groups. Moreover, in one New Mexico study, which looked at factors affecting performance of some selected school students, it was found out that those attending schools in rural areas performed as well as those in urban locations (Ward & Murray, 1985). But in the Ghanaian context, urban areas have the highest qualification rate of academic performance among students in the BECE (58%), whilst peri-urban districts are broadly in line with the national rate (48%), and deprived districts, in this study the rural context, are substantially below the national qualification rate (38%) (GoG, 2010).

There is some indication that what are being measured in studies of rural-urban differences are socioeconomic status and/or ethnicity. A study which held socioeconomic level and ethnicity constant revealed no urban-rural achievement gap (Edington & Martellaro, 1984). This has been reaffirmed by an Australian study of students in Years 3, 7, and 10. In this study, the socioeconomic status of the school accounted for most of the variation in student achievement in mathematics, reading and writing (Young, 1994b, 1994d). However, this research was limited, in that, the variables were collated on a post hoc basis. Schools that achieved the best results did exhibit strong teacher input, administration, community partnership and school/community agreement on educational programmes. There seems to be a direct relationship between quality education programmes and the ability of the staff to work toward an educational partnership with the community. Smaller communities tend to generate more community support for the school, with the school becoming a centre for community activity. This, in turn, theoretically, provides the students with a greater feeling of belonging to something in which they can participate and, thus enables them to develop a better self-concept (Young, 1994b, 1994d).

Rural education research has been conducted in Louisiana by Stringfield and Teddlie (1991, 1993) for ten years, and these researchers have produced some valuable findings. They found significant variations in what makes a school effective in the rural parts of the USA. Their findings confirm a study conducted by Bobbett (1990) in the rural Appalachian regions of Kentucky and Tennessee. He found out that effective schools were characterised by school climate factors including being;

- i. orderly and pleasant,
- ii. characterised by purposeful activity,
- iii. caring,
- iv. concerned about student and community involvement,
- v. cognisant of achievements of students and school and
- vi. staffed with highly committed individuals

Turning attention to Africa, poverty in Sub-Saharan Africa is concentrated in rural areas where 75% of the poor reside. Although rural areas can provide family-oriented settings, lower crime rates, fresh air, and an enhanced quality of life, many teachers refuse rural postings due to concerns about the quality of housing, classroom facilities, healthcare, school resources, and opportunities for professional development (Acheampong & Lewin as cited in Mulkeen, 2005; Armah, 2013; Hedges, 2000) and language barriers (Coultas & Lewin, 2002). The situation in Ghana is the same. In rural settings, rural schools in Ghana lack good infrastructure and facilities, they have low enrolment, less qualified teachers, and fewer textbooks, and other teaching and learning materials. Urban schools are generally overstaffed with qualified teachers, overenrolled, better funded, and monitored, tend to have better infrastructure and adequate resources to work with (Anamuah-Mensah, 2002; Siaw, 2009) compared with rural schools. The achievement gap between urban and rural schools is a pressing problem today because past approaches at closing this gap have been largely urban biased in character (Siaw, 2009).

Ghana's efforts at raising the living standards of Ghanaians and ensuring economic growth have, however, left a legacy of extreme disparities

in development in terms of the demographic and settlement patterns, distribution of social infrastructure and levels of economic activity. This has resulted in substantial differences between urban and rural settings with regard to the distribution and quality of educational facilities and manpower. Variations in teacher-student ratios, human resource capacity, provision of educational infrastructure, and other facilities have also led to rural, urban, and regional differences in educational opportunities in different parts of Ghana (Atuahene & Owusu-Ansah, 2013).

Rural schools have been historically and contemporarily inferior to urban schools. Like most socialist states, which are urban centred, the Chinese central government favours cities over counties when allocating resources (Titma & Tuma 1993). Schools in central-controlled municipalities, such as Beijing and Shanghai, followed by provincial capitals, enjoy greater resources from the central government and thus enjoy higher school quality. In contrast, most rural schools are locally funded and thus of lower school quality. The unequal resource allocation under pre-reform centralised educational policies contributed to the resource gap between rural and urban school, and this gap has been growing since the policy shifted to a liberal competitive model of education after the economic reform began in 1978 (Hannum & Xie 1994; Hannum 1999). In particular, a shift toward decentralisation of educational finance policy in the early 1980s reduced resource redistribution to rural areas (Tsang 2000). Because rural areas are poorer than urban areas, decentralisation has exacerbated the financial constraints on rural schools. This has deepened what scholars have called “educational stratification by geography” (Hannum & Wang 2006; Lee 2008). In effect, the decentralisation of education

maintains the rural-urban gaps in the school system, despite the continuous educational expansion.

### **Public/Community Attitudes to Education**

The notion of a community as it relates to the alignment of common purposes among the schools, teachers, parents, and children implies shared perceptions of the value of education as the basis of the partnership (DuFour & Eaker, 1998). In addition, Covey's (1989) rule of communication of "Seek first to understand, then to be understood" (p. 237), suggests the need to understand the dynamics of shared values and perceptions of education to encourage more effectively the development of partnerships with parents as well as to sustain them over time. The United States Department of Education (1995) concluded that "thirty years of research make it clear: parents and families are pivotal to children's learning" (p.19). Scholars concur that ample empirical evidence affirms that parents' involvement in the education of their children relates directly to their academic success. Parents and educators, however, continue to struggle in their efforts to define exactly what the role of each should be.

According to DuFour and Eaker (1998), the most useful perspective for the relationship between the school and parent are those in which each party is expected to bring knowledge and skills to the enterprise, to offer different perspectives on issues that contribute to achieving mutual goals. Wilson, Cordry, Notar and Friery (2004) concur that, teachers cannot do it alone, and for effective educational processes to occur in classrooms, parental help in partnership with educators is needed. Epstein and Salinas (2004) stated that a school learning community includes educators, students, parents and

community partners who work together to improve the school and enhance students' learning opportunities. Home, school, and community connections make school subjects more meaningful for students. In addition, to learn at high levels, all students need the guidance and support of their teachers, families and other community members. The literature now looks at the situation in Ghana.

According to Monitoring and Evaluation Unit of Ministry of Education (MoE) in Ghana, almost all stakeholders raised parental and community involvement as a major contributory factor for students' school performance (MoE 2011). Higher parental and community involvement were seen as likely to motivate children, enable them to dedicate time to homework and can also place teachers under greater supervision as parents hold them to account (MoE, 2011) This is to some extent outside the school's control as interviewees stated that parental involvement is closely linked to socioeconomic status and weak community involvement to have had a negative impact on school performance.

However, many stakeholders reported that a miscommunication of policies has meant that since the introduction of free universal basic education in the public schools in Ghana, many parents view the government as having fully taken over the responsibility of education and that parents no longer have any responsibilities in this field (MoE, 2011). Contrary, private schools in Ghana are fee-paying schools therefore; parents' full involvement is recognised.

### **How Input Affects the Effectiveness (Quality) of Education**

Stufflebeam's (2004) input evaluation element recommends that learning needs and available strategies are considered as part of initial planning. This facilitates understanding the nature of problems underlying the needs and informs judgement of what resources are available to successfully address assessed needs. Willis and Lockee (2003), in their instructional design model, claimed instructional needs should be assessed in three areas; technology context, learners and scope.

The main input variables are material resources (textbooks, classrooms, libraries, school facilities and other non-human resources) and (human resources (managers, head teachers, teachers, supervisors, and support staff) with the management of these resources as an important additional dimension.

Technologically, information and communications technology (ICT) can impact student learning when teachers are digitally literate and understand how to integrate it into the curriculum. Schools use a diverse set of ICT tools to communicate, create, disseminate, store, and manage information (Blurton, 2000). In some contexts, ICT has also become integral to the teaching-learning interaction.

When teachers are digitally literate and trained to use ICT, these approaches can lead to higher order thinking skills, provide creative and individualised options for students to express their understanding, and leave students better prepared to deal with on-going technological change in society and the workplace (Goodwin, 2012). Information Communication Technology issue planners must consider the following: Considering the total cost-benefit

equation, supplying and maintaining the requisite infrastructure, and ensuring investments are matched with teacher support and other policies aimed at effective ICT use (Enyedy, 2014).

Turning to Ghana, it can be said that in the last decade, the Government of Ghana has championed the use of ICT in education for improved educational outcomes. The Education Strategic Plan (2003-2015) and (2010-2020) of the Ghana Education Service identified the need for ICT in education to help achieve the objectives of the Education Strategic Plan, which are carved into Access, Quality, Gender and Inclusiveness, and Education Management. Consequently, the Government of Ghana developed the ICT for Accelerated Development (ICT4AD) Policy (2003), which explicitly outlined the plans and strategies in a framework of how ICTs can be used to facilitate the national goal of “transforming Ghana into an information and knowledge-driven ICT literate nation” (Government of Ghana, 2008, p.10). The ICT4AD policy has 14 cardinal pillars of which promoting ICT in education is the 2<sup>nd</sup> pillar, which emphasises “the deployment and exploitation of ICTs in education”.

On the basis of promoting ICT in education, the Ministry of Education launched the ICT in Education Policy in 2008 as a way of addressing the ICT needs in education. Similarly, the Basic School Computerisation policy was created in 2011 to introduce computers and e-learning into the entire education system. Hence, in 2012, the Ministry of Education through rLG, an ICT company in Ghana introduced the “teacher laptop and ICT project” where teachers are trained in ICT and provided with laptops to aid in research, teaching and learning across a variety of subject areas. The use of ICT for

teaching and learning is important since it guarantees unrestricted access to relevant information and development in subject areas as well as the provision of efficient and effective tools to take care of students' individual differences including people with special needs (Bede, Termit, & Fong 2015; Kwache 2007).

Again, looking at the input situation in Ghana, poor infrastructure was cited as a potential cause of low enrollment, higher absenteeism rates and lower teacher motivation (MoE, 2011). According to Ministry of Education Monitoring and Evaluation Unit 2011, the range of infrastructure witnessed in the surveyed schools varied significantly, from an underperforming school with no desks for primary one to three (P1-P3) to the performing school in which used white boards. The survey data, however, did not reveal stark contrasts between classroom furnishing when considered by performance level (MoE, 2011). Amongst the basic schools surveyed, a larger proportion of performing schools reported sufficient levels of teachers' furniture and pupil furniture; however the opposite was true for storage cupboards. In contrast to the furniture findings, it does appear to be some disparity in access to amenities at the JHS level. A greater proportion of non performing JHS lacked access to all amenities whilst at the primary level a greater proportion of underperforming schools lacked access to clean water and urinals.

Interview data suggest that poor infrastructure increases absenteeism and dropout rates, which will serve to undermine student and thus school performance (MoE, 2011). The limited findings of any disparities at the primary level weaken the evidence found at the JHS level and thus the links

that can be drawn between infrastructure and performance. The findings listed above can be said to be direct opposite of private schools in Ghana.

### **School Climate**

Another key perspective on schools' impact on student learning is school climate. While there is no universally agreed-upon definition of school climate, it includes a range of school factors that broadly shape students' school experiences (Pickeral, Evans, Hughes & Hutchison, 2009). As many provinces/states and districts focus efforts on promoting and measuring various aspects of schools, a variety of definitions and frameworks have been developed (Cohen, McCabe, Michelli, & Pickeral, 2009; National School Climate Council, 2007). Drawing on these frameworks, school climate can be broadly organised into four realms:

1. School safety (physical safety, social-emotional safety, tolerance, discipline policies);
2. Interpersonal relationships (respect for diversity, engagement, social support, school connectedness, shared decision-making, administrative support, community involvement);
3. Teaching and learning practices (opportunities for teachers to experiment and learn support for professional collaboration, instruction and assessment policies, opportunities for students' social, emotional, ethical, intellectual and civic learning); and
4. Organisational structures (rules and norms, infrastructure, resources, supplies, scheduling).

The school climate conceptualises schools as consisting of particular variables, and in many cases associates these variables with student academic

achievement through statistical analysis (Hattie, 2010). Deakin, Crick, Green, Barr, Shafi and Peng, (2013) noted that “A school’s core processes of student learning and achievement are themselves complex and dynamic and cannot be reduced to, or described by, a single variable” (p. 21).

Failing to attend to this interactivity of various school characteristics can lead to the use of a checklist of items that schools may strive to incorporate with less attention paid to the relevance of those items to their particular milieu (Mintrop & Trujillo, 2007). But the use of school checklists to drive school improvement does not generally help explain why particular results are obtained in some schools and not in others. As Talbert and McLaughlin (1999) argued, particular conditions in schools combine or interact in different ways to generate differences across schools. Finally, while the characteristics associated with school climate are often described or defined distinctly, in practice these characteristics tend to lack sharp definition (Porter, 1991). Some of the relevant characteristics are discussed in the following paragraphs.

### **Teacher Classroom Characteristics**

Classrooms are particular kinds of environments. They have distinctive features that influence their inhabitants no matter how the students or the desks are organised or what the teacher believes about education. Furthermore, classrooms are multidimensional, they are crowded with people, tasks, and time pressures; they have people with differing goals, preferences, and abilities, inhabitants must share resources, and actions can have multiple effects and influence student participation differently (Doyle as cited in Mucherah & Frazier, 2013). The social context created within the

classroom, the ways in which communication occurs, teachers' and students' roles, and how opportunities for collaboration are structured influence students' understanding and construction of knowledge, and hence affect learning and achievement Hammond, Austin, Orcutt, & Rosso as cited in Dorleku, 2013).

Several studies have found that deep content-area knowledge of the teacher appears to positively impact student achievement (Goldhaber & Brewer 1999; Harris & Sass, 2007). It has been perceived that best teachers master their subject matters, understand the learning process, and are experts in a wide range of teaching methods. Shulman (1987) asserts that effective teachers must understand the purpose, subject matter structures, and ideas within and outside the discipline and understand it in multiple ways.

Stevenson and Stigler (1992) suggest that highly qualified teachers have a cognitive command of the subject matter, structure information logically for students, consistently monitor student performance, and provide students with immediate feedback. Danielson (2006) states that good teachers have a thorough understanding of the curriculum and an understanding of what methods and materials can be used to complement essential concepts. Knowledge of content and pedagogy are appropriately different for teachers of different levels. The balance between content and pedagogy at different levels is critical. For example, the content of reading does not change but the pedagogy does; whereas in an area like science both the content and pedagogy change.

Through deep knowledge of content, the teacher knows how to transform the instructional design into a sequence of activities and exercises

that make it accessible to students. Danielson (2006) established that content includes not only factual information but all aspects of a subject, including concepts, principles, relationships, methods of inquiry, and outstanding issues. Teachers who know their subjects also know how to ask the right questions and how to handle conceptual development. A teacher's knowledge of content and pedagogy is reflected in an awareness of common student misconceptions and how these should be handled.

Research shows that students perform better academically when teachers ask focused questions, provide immediate feedback, and engage students in discussion and review of content (McCarthy, Webb, & Hancock, 1995; Sammons, Hillman, & Mortimore, 1995). Several studies have also found that effective teaching emphasises the importance of higher-order thinking skills such as inquiry and research (Snapp & Glover, 1990; Wenglinsky, 2001). A meta-analysis by Redfield and Rousseau (1981) concluded that the predominant use of higher-level questions during instruction yielded positive gains on tests of both factual recall and application of thinking skills. Hyde and Bizar (1989) indicated that teachers who value student thinking structure their classrooms to give students time to think about problems that are worthy of thinking about, and other students with whom to think.

According to Black (1997), Stemmer, Brown and Smith (1992), teachers who integrate workplace readiness skills into content area instruction and select workplace problems to illustrate how academic skills are applied in real world settings enable students to relate the learning material back to other courses or workplace applications and increase achievement. Rogers and

Freiberg (1994) mentioned that experiential learning that includes self-discovery and real life experiences enhance student achievement. Similarly, interdisciplinary/cross-curricular teaching provides a meaningful way in which students can use knowledge learned in one context as a knowledge base in other contexts in and out of school (Collins, Brown, & Newman, 1990).

The theory of multiple intelligence and concept of learning styles (Gardner as cited in Agbenatogbe, 2011) make it clear that learners vary in the way they acquire new information or skill. Thus, no single strategy or teaching method can satisfy all learners' needs (Downes, 2010). Consequently, Armstrong (2009) recommends that teachers endeavour to identify the intelligence strengths of their students so that they can teach to reinforce the students' specific strengths of intelligence and learning styles when teaching new materials to meet their students' learning needs, which can lead to higher student achievement. As learning has more to do with one's ability to organise and use ideas and skills to address a problem, teachers ought to teach what students need to know, understand, and be able to do. Nonetheless, teaching will be in vain if students are not actively involved in the learning experience (Singh & Rana, 2004).

### **Professional Learning for Teachers**

The highest quality teachers are those most capable of helping their students to learn, have deep mastery of both their subject matter and pedagogy (Darling-Hammond, 1997). The preparation that teachers receive before beginning their work in the classroom, however, varies significantly around the world and even within the least developed countries. In Cape Verde, Togo and Uganda, for example, 35 per cent to 50 per cent of students have teachers

who had no teacher training. Yet in Benin, Bhutan, Equatorial Guinea, Madagascar and Nepal, over 90 per cent of students do have teachers with some form of teacher training. In these latter countries, most teachers have, at least, lower secondary education; this contrasts sharply with Cape Verde and Tanzania where over 60 per cent of students have teachers with only a primary education (Postlewaithe, 1998). In Ghana, according to Mereku, Amedahe and Etsey (2005), majority of teachers (84%) of the basic education teachers have low teaching qualifications and 12.3% is not at all trained. This indicates that majority of the teachers' preparedness to implement the content of the curriculum in English and mathematics is low. Perhaps, as a consequence of too little preparation before entering the profession, a number of teachers in China, Guinea, India and Mexico were observed to master neither the subject matter they taught nor the pedagogical skills required for good presentation of the material (Carron & Chau, 1996). This affects educational quality since student achievement, especially beyond basic skills, depends largely on teachers' command of subject matter (Mullens, Murnance & Willett, 1996) and their ability to use that knowledge to help students learn.

Ghana as a country has a uniform teacher training approach for public school teachers. Anamuah-Mensah and Benneh (2002) stated that teacher training has a national focus although colleges of education are located in all regions of Ghana. These authors added that typical to Ghana's teacher education drives, teacher training utilises the generalist and subject-training approaches; generalist teachers for KG and Primary 1–6; specialist teachers for Junior High Schools (JHS); distance learning/sandwich modes and

traditional residential training in college of education; as well as school attachment programme or internship.

The Ministry of Education in Ghana determines the staffing requirements for junior high schools whilst the Teacher Education Division of Ghana Education Service (GES) trains the teachers for the manpower division of GES to recruit, post, transfer and promote them. Contrary to this process, from my view as a researcher, the private schools in Ghana, recruit teachers based on their financial capacity, population and location of the schools. The recruitment is mostly done by the proprietor/proprietors of the schools. They mostly go in for people who have completed senior high schools and pensioners who were once teachers. Mostly, it can be said that, most teachers teaching at the private schools are not qualified as the public school teachers in Ghana. Currently in Ghana, public school teachers are required by teacher education authorities to pursue teacher licensure as a measure to encourage them to perpetually seek ways to improve their practice and holding them to account lest they risk losing their job or promotion.

### **Teaching and Learning Resources and Performance**

Teaching and learning resources comprise basically three components: material resources, physical facilities and human resources Department for International Development (DFID, 2007). Studies done in the past with regard to availability of teaching learning material (TLR) in education reveal that TLR are not always available in schools (DFID, 2007). This inadequacy of TLR has been of serious concern to educators. According to Lyons (2012), learning is a complex activity that involves interplay of students' motivation, physical facilities, teaching resources, and skills of teaching and curriculum

demands. Availability of TLR, therefore, enhances the effectiveness of schools as they are the basic resources that bring about good academic performance in the students. The necessary resources that should be available for teaching and learning include material resources, human resources such as teachers and support staff and, physical facilities such as laboratories, libraries and classrooms.

Adequacy of teaching and learning resources (TLR) refers to satisfactory or acceptable quality and quantities of material resources, physical facilities and human resources. According to DFID (2007), adequacy of instructional materials such as textbooks which is the main instruction material is the most cost-effective input affecting student performance. Adequacy of TLR determines an educational system's efficiency, according to Padmanabhan (2001). For effective teaching and learning, textbooks and resource materials are basic tools; their absence or inadequacy makes teachers handle subjects in an abstract manner, portraying it 'dry' and non-exciting. For Adebajo (2007) instructional resources in teaching and learning make students to learn more and retain better what they have been taught and also promotes and sustains students' interest. It also allows the learners to discover for themselves their abilities.

Overcrowded classrooms and schools have consistently been linked to increased levels of aggression in students. Overcrowded classrooms are also associated with decreased levels of student engagement and, therefore, decreased levels of learning. Alternatively, classrooms with ample space are more conducive to providing appropriate learning environments for students and associated with increased student engagement and learning. Classroom

space is particularly relevant with the current emphasis on 21<sup>st</sup> century learning such as ensuring students can work in teams, solve problems, and communicate effectively (DFID, 2007). Classrooms with adequate space to reconfigure seating arrangements facilitate the use of different teaching methods that are aligned to 21<sup>st</sup> century skills. Creating private study areas as well as smaller learning centres reduces visual and auditory interruptions, and is positively related to student development and achievement. Poor infrastructure and low quality of education have been identified as important barriers for schooling and learning. Lack of facilities and infrastructure has led to overcrowded classrooms, pupils sitting on blocks and under trees to learn (DFID, 2007).

In Ghana, it is the duty of government to make available equipment and teaching and learning materials (TLMs) for learning in basic schools. But where there is none or inadequate, Mills (2009) suggests that head teachers should find the appropriate means of securing quality TLMs at the lowest cost for the school. Teaching and materials are important in education as reported by Tamakloe, Amedahe, and Atta (1996) that an instructional material makes it possible for subject matter to be presented in a logical manner because it is carefully planned and prepared. They further assert that instructional materials make teaching simple because the teacher does less verbal communication. Nsiah (2005) supported Tamakloe et al. that no qualified and efficient teacher can carry out successful teaching without instructional materials. Besides no matter how competently and carefully designed a resource material is, it takes the teacher to manage the material to bring about effective teaching and

learning but its existence and adequacy is the problem. Therefore, the study seeks to evaluate the quality of this input factor in the Ghanaian JHS.

It is also important to have appropriate personnel plan for adequate instructional materials and physical facilities, to support educational effort. Therefore, scarcity of textbooks, libraries and physical facilities will constraint educational system from responding more fully to new demands. In order to raise the quality of education, its efficiency and productivity, better teaching learning materials (TLMs), physical facilities and human resources such as teachers are needed. In Ghana, the measurement of the quality of education has focused principally on resource inputs and outcomes. Hence, the quality of education is measured against stated curriculum goals and objectives, and a range of elements including the level of student achievement, the qualification of teachers, pupil-teacher ratio, the availability of textbooks, school facilities and equipment, and cognitive achievement. Whether education provided is of good or poor quality depends on the degree to which it measures up to the goals and objectives prescribed. According to Ampiah (2011), the JHS national core textbook student ratio is 2.5:1. The fact that not all pupils have textbooks affects the effectiveness of lessons negatively since the Ghanaian basic school curricula are heavily dependent on textbooks. Lack/inadequacy of textbooks means children have to depend very heavily on what teachers write on the chalkboard/white board. Pupils, therefore, do not get the opportunity to use textbooks at home for practice.

Teaching and learning resources help improve access and educational outcomes since students are less likely to be absent from schools that provide interesting, meaningful and relevant experiences to them. Several studies have

been conducted on the impact of instructional materials on education. According to Momoh (2010), the effects of instructional resources on students' performance in external examination (West African Examination Council) were related to the resources available for teaching. He concluded that material resources have a significant effect on student's academic achievement since they facilitate the learning of abstract concepts and ideas and discourage rote-learning. When TLR are inadequate, education is compromised and this inevitably is reflected in low academic achievement, high dropout rates, problem behaviours, poor teacher motivation and un-met educational goals.

### **Teacher's Instructional Competence and School Effectiveness**

Teachers' presence in the classroom represents the starting point. Carron and Chau (1996) found that many teachers face transportation and housing obstacles that hinder them from getting to school on time and staying until school hours are over. This prevails more in Ghanaian rural areas and denies pupils of effective use of instructional time. Many teachers hold second jobs, which may detract them from the time and energy they expend in the classroom. Teachers may miss school altogether. A study in China, Guinea, India and Mexico found that nearly half of the teachers interviewed reported being absent at some point during a month (Carron & Chau, 1996), requiring other teachers to compensate for them or leaving students without instruction for the day.

Next, when teachers are present, learning occurs when teachers engage students in instructional activities, rather than attending to administrative or other non-instructional processes (Bastos, Dellagnelo, de-Matos, Fuller, Maia,

Strath, & Vieira (1999). As mentioned, the opportunity to learn and the time on task have been shown in many international studies to be critical for educational quality. Finally, some schools that have been able to organise their schedules according to children's work and family obligations have seen greater success in student persistence and achievement. In Ethiopia, for example, schools that began and ended the day earlier than usual and that scheduled breaks during harvest times found that educational quality improved. The quality of a school and the quality of teaching of the individual teacher is higher in schools that are able (and willing) to make more efficient use of the available time of its teachers and its pupils (Verwimp, 1999). Likewise, if teachers in Ghana make maximum use of available time it will enhance quality education. Thus, the current study seeks to evaluate input factors relating to teacher instructional competence and school effective in Ghanaian schools.

### **How Process Factors Affect the Effectiveness or Quality of Education**

Partially in response to the limitations of methods that can result in a "checklist" approach, researchers have proposed the development of what are called process indicators that allow tracing how schools provide educational opportunities (Porter, 1991). Oakes (1989) characterised process indicators as focusing on necessary conditions for quality teaching and learning. In the view of Kim (2012), the utilisation of process indicators are a way to understand the "what's going-on of schools". The dynamic, integrated use of a wide variety of school indicators can provide rich information on the quality of resources, people and activities that shape children's day-to-day experiences (Scheerens, 2011).

The interactivity of a range of school factors within school learning environment can be seen when one examines within-school differences across classrooms, academic subjects, and other programme distinctions. Students access to knowledge and expectations for skills development, classroom teaching quality, and general classroom learning climates can vary widely within a school (Oakes, 1985). Studies such as the teaching for understanding conducted in high schools in the 1990s (Cohen, McLaughlin & Talbert, 1993) demonstrated not only differences across classrooms in students' opportunities to learn, but even differences in learning opportunities for students of the same teacher from one class period to another.

These differences result from the interactive and dynamic nature of the school context. Contextual factors function differently for different members of the school community. For example, teachers' perceptions of school context tend to be more sensitive to classroom-level factors such as classroom management and student behavioural issues, while students tend to be more sensitive to school-level factors such as student-staff relationships and principal turnover (Mitchell, Bradshaw & Leaf, 2010). For the reasons listed in the previous paragraph, the current study has a research question which evaluates process factors in the Ghanaian education system.

### **Administrative Support and Leadership**

The quality of administrative support and leadership is another critical element in the school process, both for students and for teachers. At a more macro level, ensuring financial resources for education, especially for recurrent budgets is a necessity (Miske & Dowd, 1998). Teachers need governments who are supportive of education systems. Organisational support

for teaching and learning takes many forms, including such measures as advocating for better conditions and professional development, respecting teachers' autonomy and professionalism and developing inclusive decision-making processes. Such support has been shown to have impact on student learning. In Malawi, for example, supervisors in the schools that showed the greatest learning gains regularly evaluated teachers, contributing to professional development and improved teaching practice (Miske & Dowd, 1998).

Unfortunately, however, few head teachers and administrators in developing countries including Ghana have had any formal training in the leadership functions of schools, and promotions may not be based on leadership or management skills. Many heads of school continue to have extensive pedagogical responsibilities in addition to administrative ones as pertain in JHSs in Ghana. This leaves little time for supervision and support of staff. In spite of practical constraints, programmes designed to increase professionalism in schools through management training conducted in disadvantaged districts in Sri Lanka showed that interventions in this area can have a real impact (Perera, 1997).

### **Product/Outcome/Output Effects**

A fundamental goal of education is to equip students with knowledge and skills necessary for them to think critically, solve complex problems, and succeed in the 21st century society and economy. Measurement of such knowledge and skills is essential to tracking students' development and assessing the effectiveness and quality of educational policies and practices. Education and psychological science have examined these issues in nearly

complete separation. Education researchers have used many measures of learning, but recent research has drawn primarily on standardised achievement tests designed to assess students' mastery of state-defined content standards in core academic subjects (Borman, Hewes, Overman, & Brown, 2003; Hanushek & Rivkin, 2010). Psychological science has used measures of several cognitive concepts to assess variation in domain-independent mental skills, including processing speed (how efficiently information can be processed (Kail & Salthouse, 1994) and working memory capacity (how much information can be simultaneously processed and maintained in mind (Cowan, 2005; Gathercole, Pickering, Knight, & Stegmann, 2004).

The use of standardised testing is supported by two fundamental assumptions; (1) standardised tests are designed objectively, without bias and (2) standardised tests accurately assess a student's academic knowledge. These assumptions have convinced school officials to use test data as the main criteria in determining a student's academic ability and for creating curriculum. Because legislators also believe test data is a reliable indicator of student ability, these tests have become an integral part of the education process and are often used in drafting education policy.

### **Effect of Context, Input and Process on Student's Performance**

The nature of a curriculum with an effective system of delivering is critical in attaining higher learning outcomes. A curriculum of a school contains a country's educational goals, objectives and policy direction as well as the appropriate educational philosophies that could be adopted to address its needs (Chapman & Adams, 2002). It specifies the content, sequence, methodology, duration of a programme and pacing of what should be taught at

each grade level. It determines the quality of teachers to be trained and teaching and learning materials (TLMs) to be employed in its implementation to achieve the mission and vision of a country. It serves as a reference point of measuring the input, output and outcome of teachers, students and other stakeholders of education at a point in time (Chapman & Adams, 2002). This implies that without a curriculum, efficiency and effectiveness in school cannot be measured. Curriculum implementation is often done by teachers in Ghana. They have to translate what is in the curriculum into step by step classroom activities so that the learners can learn it and as a result, bring about a change in the learners' behaviour. In Ghana, the curriculum after its design is sent to the National Council for Curriculum and Assessment (NaCCA) for it to be translated into the various syllabuses. Each syllabus contains the topics of study, the objectives, teaching and learning activities with suggested teaching materials and then evaluation. On the initial pages of each syllabus, are the rational the profile dimension for the subject to help teachers know what the subject is about and the aim(s) for that subject (Ministry of Education (MoE), 2012).

Teaching and learning materials (TLMs), well equipped library are very important resources when it comes to quality education. According to UNESCO (2005), the achievement of teaching and learning is influenced by the availability of resources to use for the process and how these resources are regulated. This portrays that schools that have no textbooks and learning materials or well-equipped libraries cannot do effective and efficient work. Adeyemi (2010) stipulated that a well-equipped library provides different types of material resources like books, journals, governmental documents and

graphics for references. This denotes that the library is a reference source for any school and a point of individual studies in schools where relevant information from primary and secondary sources can be extracted. Adequacy of library resources and their usage by students and teachers are, therefore, associated with better educational performance.

In Ghana, the success of teaching and learning is likely to be strongly influenced by the resources made available to support the process and the direct ways in which these resources are managed. It is obvious that schools without teachers, textbooks or learning materials will not be able to do an effective job. In that sense resources are important for quality education, although how and to what extent this is so have not yet been fully determined. Inputs are enabling in that they undersign and are intrinsically interrelated to teaching and learning processes, which in turn affect the range and the type of inputs used and how effectively they are employed.

### **Summary**

The related literature reviewed looked at issues pertaining to the effectiveness (quality) education in general and in Ghana. The review covers the conceptual review which looked at factors such as context, input, process and product/outcome/output. The context factors were made up of the demographics (e.g., size of the school, school category (public and private), school location (urban/rural) and teacher teaching experience. Input factors looked at were; class size, teaching and learning materials, infrastructure, parental support and pupil-textbook ratio in the junior high schools. The process factors were also made up of teacher use of instructional time, level of parental and community involvement, type of leadership, curriculum coverage

among urban, rural, public. Lastly on the indicators, the product aspect was looked at. Some of the indicators considered were; knowledge and abilities acquired by the students (results emerging at the end of programme examinations, BECE) and level of education and scholastic achievement reached (proportion of students who graduate successfully).

The theory underpinning the study was education production function. The theory views education sector as an industry that uses a variety of inputs to maximise output (Hanushek, 2007). This consideration of education sector as a firm, that is run on the basis of input-output allows for the application of education production function theory to this study.

Lastly, the empirical review of the study looked at the dimensions of education system quality relating to quality learning, context (learning environment), input, process and product which viewed how assessment systems in Ghanaian schools were done. Also reviewed was the effect of context, input and process on student's academic performance.

## **CHAPTER THREE**

### **RESEARCH METHODS**

The chapter presents the methods that were used to carry out the study and focuses on the research design, population, sample and sampling procedure, data collection instruments, procedure and data analysis. This study sought to evaluate the quality of Junior High School (JHS) education in urban, rural, public and private schools in the Central Region of Ghana.

#### **Research Design**

Descriptive survey design was used to carry out the study. According to Aggarwal (2008), descriptive design is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation. This type of research method is not simply amassing and tabulating facts but includes proper analyses, interpretation, comparisons, identification of trends and relationships.

It is concerned not only with the characteristics of individuals but with the characteristics of the whole sample thereof. It provides information useful to the solutions of local issues (problems), among others. Survey may be qualitative (verbal narrative) or quantitative (numerical) in form of expression; such studies are factual and hence supply practical information. The survey design employs application of scientific method by critically analysing and examining data, interpreting data, and arriving at conclusions. Since the present study is undertaken to evaluate the effectiveness of junior secondary

school education in the Central Region of Ghana, hence the descriptive survey research design was deemed the most appropriate.

There are different types of research design, however, the choice of a particular design mainly depends on the nature of the research problem to be addressed, the research questions and/or hypotheses involved, and the study group among, others. In line with this study's aim of evaluating the effectiveness of Junior High School education in the Central Region of Ghana, the descriptive research design was deemed as appropriate to carry out this investigation.

This descriptive design was appropriate for this study since this study sought to gather information from public and private JHS students, students and head teachers and describe them as it were, without any form of manipulation. Descriptive design allows participants to be observed in a natural and unchanged environment. Descriptive studies may be pre-cursors to future research because they can be helpful in identifying variables that can be tested. The finding of a descriptive study may point the researcher to specific variables that may warrant further study. Again, descriptive studies result in rich data, that is, collected in large amounts from large populations.

In spite of the strengths of descriptive design, I really acknowledge the challenges associated with its use. They are susceptible to distortions through the introduction of biases in the measuring instruments (Amedahe & Asamoah-Gyimah, 2015). For example, errors due to the use of questionnaires might distort a research finding. Descriptive studies do not determine cause and effect relationships. Despite descriptive survey's wide scope of coverage, the data that are produced are likely to be deficient with respect to the detail or

depth on the problem investigated. Moreover, the prominence on wide coverage limits the degree to which the researcher can check on accuracy and honesty of responses. Counterbalancing the pros and cons associated with the use of descriptive survey design, I realised that the pros outweighed the cons. I, therefore, used the descriptive survey design to conduct the study.

Additionally, this study adopted the positivist paradigm. This paradigm is based on the assumption that social authenticity is singular and objective and is not affected by the act of examining it. In this approach, the research involves using a deductive process in order to provide explanatory theories to understand social phenomena. This epistemology holds that the researcher is likely to carry out the research in a similar manner to that of a natural scientist treating the data collected in an objective way where it is less open to bias (Collis & Hussey, 2009).

### Study Area

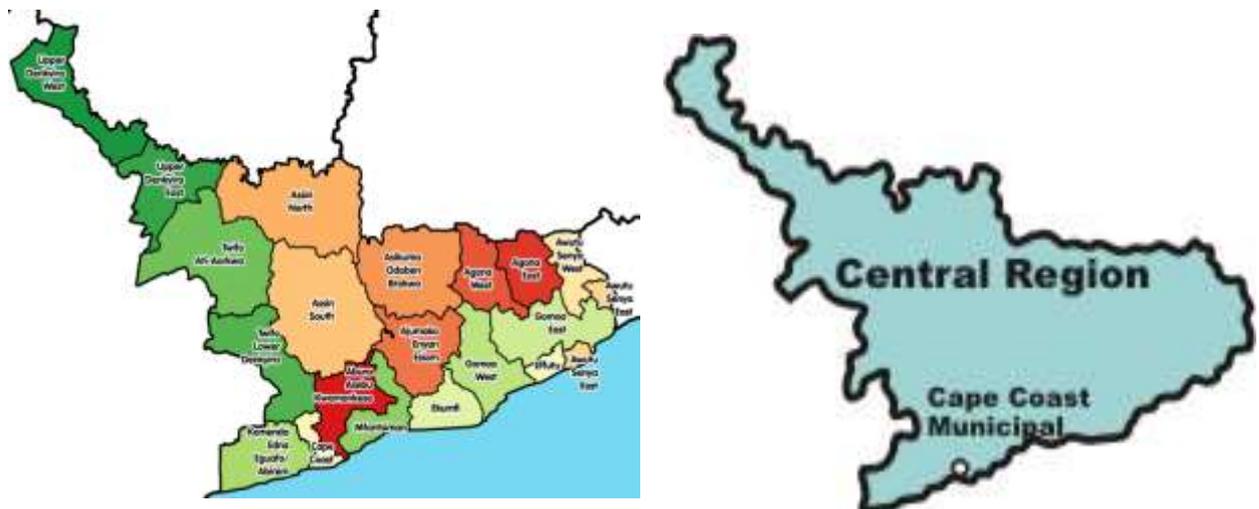


Figure 3- Map of Central Region of Ghana.

Source: (Ghana Statistical Service, 2013)

The Central Region is one of the sixteen administrative regions in Ghana. It is bordered by the Ashanti and Eastern Regions to the north,

Western Region to the west, Greater Accra region to the east, and on the south is the 168-kilometre length Atlantic Ocean (Gulf of Guinea) coastline. It occupies an area of 9,826 square kilometres or 4.1 per cent of Ghana's land area, making it the third smallest in area after Greater Accra and Upper East regions (Ghana Statistical Service, 2013).

The region was the first area in the country to receive European explorers. Its capital, Cape Coast, was also the capital of the Gold Coast until 1877, when the capital was moved to Accra. It was in the Cape Coast Castle that the historic Bond of 1844 was signed between the British and the Fante Confederation. The region is made up of one Metropolis, six (6) Municipalities and 13 Districts. In all, there are twenty (20) Metropolitan, Municipal, and Districts in the Central Region. Also, there are about 32 major festivals in the region. Notable among these are the Aboakyer at Winneba, Oguaa Fetu Afahye at Cape Coast and Bakatue at Elmina.

### **Population**

The target population for this study was made up of public and private JHSs in all the 20 Metropolitan/Municipal/District Assemblies in the Central Region. The various Metropolitan/Municipal/Districts (MMDs) Assemblies in the Central Region and the number of public JHS and private JHS schools are presented in Table 5. The Table shows that there are 1,871 junior high schools in the 20 Metropolitan, Municipal and Districts in Central Region made up of 1,190 (63.60%) public and 681(36.40%) private schools (EMIS, 2016).

The accessible population was made up 6 districts (30%) out of the 20 districts in Central Region. Two (2) of the districts were selected from the top, middle and bottom purposively making the six districts for the accessible

population. In selecting the two districts each, I arranged the 20 districts according to their academic achievement level in the 2015/2016 BECE core subjects (mathematics, English and science) by the Ghana Education Service.

Table 6 presents details of the ranking of the MMDs and those selected.

Table 5 - MMDs in the Central Region with the number of Public and Private Schools

MMDs in the Central Region	Public JHS	Private JHS	Total
1. Abura/Asebu/Kwamankese District	83	25	108
2. Agona East District	59	27	86
3. Agona West Municipal District	71	45	116
4. Ajumako/Enyan/Essiam District	85	16	101
5. Asikuma/Odoben/Brakwa District	83	31	114
6. Assin North Municipal District	81	44	125
7. Assin South District	70	22	92
8. Awutu-Senya District	56	35	91
9. Awutu Senya East District	23	115	138
10. Cape Coast Metropolis	61	38	99
11. Effutu Municipal District	22	25	47
12. Ekumfi District	40	7	47
13. Gomoa East District	49	71	120
14. Gomoa West District	70	21	91
15. Komenda/Edina/Eguafo/Abirem Municipal	64	41	105
16. Mfantsiman Municipal	71	42	113
17. Twifo-Ati Mokwa District	62	30	92
18. Twifo/Heman/Lower Denkyira District	44	27	71
19. Upper Denkyira East Municipal	55	13	68
20. Upper Denkyira West District	41	6	47
Total	1,190	681	1,871

Source: GES (2016)

Table 6-Districts in the Central Region with the BECE 2015/2016 Results for Mathematics, English and Science

S/ N	MMDAs	Passing Rate in Percentage (%)			
		Mathematics %	Englis h %	Scienc e %	Averag e %
1.	Upper Denkyira West	96.6	87.4	96.3	93.3 **
2.	Upper Denkyira East	97.5	87.2	92.9	92.5 **
3.	Awutu Senya East District	94.6	92.0	88.9	91.8
4.	Assin South District	92.5	82.0	87.8	87.4
5.	Asikuma/Odoben/Brakwa	91.0	70.7	89.8	83.8
6.	Twifo-Ati Mokwa District	86.2	73.2	87.8	82.4
7.	Ekumfi District	89.8	64.1	83.9	79.3
8.	Gomoa East District	78.4	77.5	80.5	78.8
9.	Ajumako/Enyan/Essiam	81.1	72.9	79.5	77.8
10.	Twifo/Heman/Lower Denkyira District	80.8	64.1	83.9	76.3**
11.	Awutu-Senya District	76.9	74.1	74.4	75.1**
12.	Assin North Municipal	75.1	65.1	83.0	74.4
13.	Mfantiman Municipal	69.7	71.6	70.0	70.4
14.	Agona West Municipal	68.5	70.0	64.1	67.5
15.	Cape Coast Metropolitan	56.1	77.1	63.8	65.7
16.	Abura/Asebu/Kwamankese	64.3	63.2	67.3	64.9
17.	Komenda/Edina/Eguafo/Abi rem Municipal	67.8	68.3	55.6	63.9
18.	Gomoa West District	65.8	60.5	59.4	61.9
19.	Effutu Municipal District	52.9	70.6	60.6	61.4**
20.	Agona East District	57.3	55.8	54.6	55.9**

Source: GES (2016). Schools Selected are with asterisks (\*\*)

Table 6 shows the performance of BECE 2015/2016 results for Mathematics, English and Science for the 20 districts within the Central Region, according to Ghana Education Service report by EMIS in 2016. Based

on the results given, six districts with a total of 420 JHSs were selected. The details of number of JHSs in each of the six selected districts are as follows:

1. Upper Denkyira West District - 47;
2. Upper Denkyira East Municipal – 68;
3. Ajumako/Enyan/Essiam District – 101;
4. Twifo/Heman/Lower Denkyira District - 71;
5. Effutu Municipal District – 47; and
6. Agona East District – 86.

### **Sampling Procedures**

The general rule in quantitative research, according to Gall, Gall and Borg (2007), is to use the largest sample possible. The larger the sample the more likely the research participants' scores on the measured variables will be representative of population scores. They continued to say that, researchers have to develop rules of thumb for determining the minimum number of participants needed for different research methods. In this study, the sampling units were the schools which were represented by the head teachers, teachers and students. Since it is practically impossible to collect data from all the head teachers, teachers and students within the accessible population of 420 JHSs, there was the need to sample a number of the JHSs from each of the districts selected. The schools within the districts were made up of private and public schools and were located within the urban and rural settlements, with most schools located in the rural settlements. The 2010 population census defined rural settlements as settlements with less than 5000 people while urban settlements were defined as settlements with 5,000 or more people (Ghana Statistical Service, 2013).

To determine the sample size in terms of schools for the study, I used proportionate stratified random sampling to ensure that the proportion of each stratification variable (private urban, private rural, public urban and public rural) in the sample reflects their proportion in the wider population. To determine the number of schools in the study, 30% of the total number of schools of 420 was taken which was 126 to make up the sample.

#### **Selection of schools from the MMDs**

To select the schools for the study, I used two main stratification variables, namely type of location (i.e., urban and rural) and type of school (public and private). The schools selected for the study are presented in Table 7.

Table 7- *Total number of Schools Selected for the Study*

S/N	District	Total Number of Public Schools	Total Number of Private Schools	Total Number of schools	Number of Schools Selected for the Study
1	Upper Denkyira West District	41	6	47	14
2	Upper Denkyira East Municipal	55	13	68	21
3	Ajumako/Enyan/Essiam District	85	16	101	30
4	Twifo/Heman/Lower Denkyira District	44	27	71	21
5	Effutu Municipal District	22	25	47	14
6	Agona East District	59	27	86	26
	<b>Total</b>	<b>306</b>	<b>114</b>	<b>420</b>	<b>126</b>

Table 8 depicts the final distribution for the study sample size by school type and location from which data were gathered. From Table 8, 62 of the in the urban centres, while, 64 were from the rural centres.

Table 8– *Sample Distribution for the Study by School Type and Location*

S/N	District			School Type	School Location		Total
					Urban	Rural	
1	Upper West	Upper Denkyira	Denkyira	Public	5	7	14
				Private	1	1	
2	Upper Denkyira East			Public	5	12	21
				Private	3	1	
3	Ajumako/Enyan/Essiam			Public	15	10	30
				Private	3	2	
4	Twifo/Heman/Lower Denkyira			Public	3	10	21
				Private	4	4	
5	Effutu Municipal			Public	4	3	14
				Private	5	2	
6	Agona East			Public	9	9	26
				Private	5	3	
Total					62	64	126

Respondents for the study were made up of 126 head teachers, 378 JHS three (3) teachers (thus, those who were teaching English language, mathematics and science) and 756 JHS 3 students, six (6) students were randomly selected per school. In all, the participants for the study were 1260.

### Data Collection Instruments

Data were collect from two sources, the primary source and the secondary source. The primary data for the study were collected using three questionnaires. The three questionnaires are (a) head teachers’ questionnaire, (b) teachers’ questionnaire, and (c) students’ questionnaire. The secondary data were the performances of students in BECE (2014-2018). With reference

to the primary data, I constructed the questionnaires based on the review of literature. The questionnaires were divided into sections based on the specific research questions and the hypotheses formulated. The details are as follows:

#### 1. Head Teacher's Questionnaire

The head-teachers' questionnaire was made up of three sections. Section A covered demographic data such as gender, age, highest academic qualification, and experience as an administrator and school type, among others. The Section B gathered information on the essential input factors in the schools; that is, student-textbook ratio, instructional materials, infrastructure, parental support and adequacy of pupil-textbook ratio. The Section C focused on process factors that are relevant in promoting quality education in the schools including use of instructional time, level of parental and community involvement and school leadership. Head teachers responded to thirty-six items in all (See Appendix C).

#### 2. Teachers' Questionnaire

The teachers' questionnaire was made up of three sections. Section A, similar to that of the head teachers' questionnaire dealt with the demographic characteristics of the teachers. These are gender, age, highest academic qualification, and the subjects they taught, the school type and how they commuted to school. Section B gathered information on the essential input factors in the schools; for example, student-textbook ratio, instructional materials, infrastructure, parental support, space in the classroom and power supply facilities. Section C gathered information on the process factors that are relevant in promoting quality education in the schools including, instructional time, level of parental and community involvement, type of leadership style,

curriculum coverage, and medium of instruction, among others. In all, the teachers responded to thirty-seven items (See Appendix D).

### 3. Students' Questionnaire

The students' questionnaire consisted of three sections. Section A covered demographic data such as Grade level (form), gender, age, how they commute to school, those they stay with and whether they have a library in the school, among others. Section B gathered information on the input factors in the schools; for example, whether they have textbooks on English, mathematics and science subjects, whether they were taught with instructional materials and how adequate the materials were, whether they have enough tables and chairs or desks in the classroom, parental support, available space in the classroom and lighting facilities, among others. Section C was concerned with process factors that are relevant in promoting quality education in the schools including, parental and community involvement in the affairs of the school, the attitude of the teachers toward them, and curriculum coverage, among others. In all, the students responded to thirty-three (33) items (See Appendix E).

Based on the research objectives, both primary and secondary data were collected. The secondary data were the performance of students in BECE (2014 – 2018). With this, the proportion of students who passed successfully in the BECE was obtained. This was used as a measure of output/outcome. The passing rate was determined using grades 1 to 5. This, therefore, implies that students obtaining at least a Grade 5 in six subjects including English Language and Mathematics were considered to have passed the BECE successfully. This actually translates into aggregates 6 to 30 for a pass.

### **Pilot Testing**

The draft instrument was pilot tested. The primary purpose of field testing the instruments was to help refine the instruments. The pilot testing was done in some schools in the Cape Coast Metropolis. This is because the schools in the Metropolis had the same characteristics as the schools sampled for the study. Secondly, the schools were not part of the sample. Cape Coast Metropolis has 99 junior high schools (61 public and 38 private schools) according to EMIS, 2016 data. The schools were ranked according to 2015/2016 BECE achievement results in the Metropolis. Fifteen (15) percent of the 99 schools made up of 15 schools and were selected including the top five (5) schools, 5 from the middle, and 5 at the bottom. The draft instrument was administered to the 15 head teachers, 150 teachers teaching English, Mathematics and Science and 90 students. In all, 255 respondents were used for pilot testing the instrument.

### **Validity of the Instrument**

A confirmatory factor analysis was performed using the Structural Equation Modeling. Specifically, Analysis of Moment Structures (AMOS) was used. This was done to confirm the individual items measuring the various constructs in this study. Generally, in factor analysis, the number of factors is considerably smaller than the number of measures and, consequently, the factors succinctly represent a set of measures (Green & Salkind, 2014). The results of this analysis were used to determine what items or scales should be included and excluded from a measure of the various constructs such as input factors and process factors. From the results of the factor analysis, items with factor loadings of .512 and above were considered

appropriate and maintained as recommended by Mayers (2013). This means the items accounted for a minimum of 26% variance in the factor.

Evidence on the construct validity was determined by estimating the convergent and discriminant validity. The variances of the items were estimated and the average variance extracted (AVE) also computed. The AVE was used to determine the convergent validity. An AVE coefficient of .50 or above was used as the cut-off. A coefficient within this range confirms convergent validity (Fornell & Larcker, 1981). In order to determine discriminant validity, the square root of the AVE value of each construct was computed. Values larger than the inter-dimensional correlation value were considered to be evidence of discriminant validity (Fornell & Larcker, 1981).

### Reliability of the Instrument

To determine the reliability of the items on the questionnaires, Cronbach Alpha ( $\alpha$ ) was used to estimate the internal consistency of the sub-sections of the instruments. An alpha value of .70 or above was considered appropriate (Karagoz, 2016). Details of the reliability coefficients are presented in Tables 9 and 10.

Table 9- *Reliability Co-efficient of Piloted Instrument*

Name of Scale	No. of Items			Cronbach's Alpha		
	S	T	H	S	T	H
<b>Input Factors</b>						
Availability of text books	3	4	3	.73	.76	.73
Other input factors	9	11	11	.70	.71	.72
<b>Process Factors</b>						
School related process factors	8	9	12	.72	.70	.75
Parents/guardians-related process factors	4	5	4	.71	.73	.72

S-Students, T- Teachers, H- Head teachers

From Table 9, the reliability coefficients of the scales of the instrument after the pilot testing ranged from .70 to .73 for students, from .70 to .76 for teachers, and from .72 to .75 for head teachers. Generally, these coefficients are good indicators of internal consistency, since they were not below .70.

Table 10- *Reliability Co-efficient of Final Instrument*

Name of Scale	No. of Items			Cronbach's Alpha		
	S	T	H	S	T	H
<b>Input Factors</b>						
Availability of text books	3	4	3	.85	.77	.89
Other input factors	9	11	11	.73	.72	.75
<b>Process Factors</b>						
School related process factors	8	9	12	.77	.71	.79
Parents/guardians-related process factors	4	5	4	.76	.72	.72

S-Students, T- Teachers, H- Head teachers

At the end of the final data collection, the reliability coefficients for students ranged from .73 to .85, that of teachers ranged from .71 to .77, and that of head teachers ranged from .72 to .89; an indication of good reliability.

### Data Collection Procedures

An introductory letter was collected from the Department of Education and Psychology (See Appendix A) to grant me access to the selected districts within the Central Region. The introductory letter was taken to the Regional Educational Directorate for permission to collect data in the various districts and schools (See Appendix B). In order to deal with ethical issues, I applied for ethical clearance from Institutional Review Board, University of Cape Coast (See appendix F). The questionnaires were delivered by hand to the respondents in the sampled schools and data on student performance were also gathered from the head teachers on the effectiveness (quality) of context,

input, and process factors on students' performance. Two working weeks interval were given for the completion of the questionnaires. Five (5) M.Phil (Measurement and Evaluation) students assisted in the data collection.

### **Data Processing and Analysis**

The data collected with the questionnaires were coded and inputted using the Statistical Package for Service Solutions (SPSS) software version 25.0. The responses to all the items on the questionnaire were numerically coded. The inputted data were then cleaned to identify errors and miskeyed responses.

Data gathered on Research Questions 1 and 2 were answered using frequencies, percentages, means and standard deviations. These research questions sought to find out whether available input factors (class size, teaching learning materials, infrastructure, parental support and textbook availability) are adequate within the schools based on location (urban and rural), and school type (private and public); as well as process indicators (teachers instructional time, level of parental and community involvement, type of leadership, curriculum coverage) among the urban, rural, public and private schools in promoting junior high school education in Ghana. Similarly, data gathered on Research Question 3 which sought to find the performance (output) of urban, rural, public and private junior high schools in the BECE in the past five years (2014 – 2018) was analysed using frequencies and percentages.

Hypotheses 1 and 2 were tested using structural equation modelling (PLS-SEM). Structural equation modelling is a statistical method used to test the relationships between observed and latent variables. Observed variables

are the measured variables in the data collection process and latent variables are the variables measured by connecting to the observed variables because they cannot be directly measured. SEM uses regression in determining the relationships among variables. Although the structural equation modelling method is similar to linear regression analysis, it has many advantages over linear regression. Çelik and Yılmaz (2013) identified some of the features that distinguish structural equation modelling from other linear modelling approaches. First, it reveals the relationship among hidden structures that are not directly measured. Also, it takes into consideration possible mistakes in the measurements of the observed variables. Further, it is a very useful method to analyse highly complex multiple variable models and to reveal direct and indirect relationships between variables. For the purpose of this study, Hypothesis 1 sought to determine an indirect effect of input factors (exogenous construct) on outcome – BECE performance (endogenous 2) through a third variable, process factors (endogenous 1). The process factors in this case served as a mediator in the relationship between the input factors and outcome. In traditional regression analysis, only direct effects could be detected. However, in the method of structural equation modelling, direct and indirect effects are determined simultaneously. The results of this study were delineated in terms of unstandardized and standardized coefficients for the direct and indirect effects as well as their confidence intervals.

In the case of Hypotheses 2, it aimed at determining whether or not the predictions in the path model (Figure 1) are heterogeneous and the evaluations of variables in the model yielding significant different predictions in terms of school type (public and private) and school location (urban and rural). The

SEM-multi group analysis was used to compare parameters (path coefficients) between groups of data. In such an instance, Hair, Hult, Ringle, and Sarstedt (2014) assumed that there are categorical moderator variable (school type and school location) that influences the relationships in the path model. This implies that variations in the predictions are as a result of the moderator variables, and this might affect the strength or even direction of specific path relationships. Failure to consider heterogeneity can be a threat to the validity of SEM results since it can lead to incorrect conclusions (Hair et al., 2014). Specifically, when conducting a multi group analysis, the interest is to test the null hypotheses  $H_0$  that the path coefficients are not significantly different (i.e.,  $P^1 = P^2$ ). Thus, the path coefficients ( $P^1$ ) for group one, say, public school is equal to the path coefficients ( $P^2$ ) of group two, private school.

Specifically, Hypotheses 1 and 2 were tested using the Partial Least Square (PLS) approach to SEM. The parameter estimation efficiency of PLS-SEM delivers high levels of statistical power compared with covariance-based SEM (CB-SEM). Consequently, PLS-SEM better identifies population relationships and is better suited for exploratory research purposes – a feature that is further supported by the method’s less restrictive requirements in terms of model setups, model complexity, and data characteristics (Hair et al., 2014).

## CHAPTER FOUR

### RESULTS AND DISCUSSION

The purpose of the study is to evaluate the quality of Junior High School education in the Central Region of Ghana using context, input, process and product (CIPP) model. The study collected data from 1260 participants in three sub-sample groups: teachers, head teachers and pupils. On the part of teachers, 325 out of 378 JHS teachers participated with a response rate of 86%. One hundred and eleven (111) representing 88.1% out of the 126 head teachers participated. In terms of students, 674 out of 756 participated, and this represents a return rate of 89.2%. The overall return rate is 88.1%. This chapter presents the results of the data collected from the field and discusses the results.

#### **Demographic Characteristics**

This section presents the demographic characteristics of the respondents. The demographic information covered include gender, age, how pupils commute to school, among others. The demographic characteristics results for pupils are presented in Table 11.

Table 11- *Demographic Characteristics of Pupils*

Variables	Frequency	Percentage (%)
<b>Gender</b>		
Male	334	49.6
Female	340	50.4
Total	674	100
<b>How do you commute to school?</b>		
On foot	592	87.8
Public transport	53	7.9
Private transport	29	4.3
Total	674	100
<b>Category of school</b>		
Private	177	26.3
Public	497	73.7
Total	674	100

Source: Field survey (2019)

Table 11 shows that out of a sample of 674 pupils, 334 of them were males (49.6%) whereas 340 were females (50.4%). Majority of the students 592 (87.8%) commuted to school on foot, 53 (7.9%) travelled to school by public transport while 29 (4.3%) of the students journeyed to school by means of private transport. This suggests that most of the students in the junior high schools walked to school on foot on a daily basis. The results in Table 11 further indicates that students spent an average time of 22 minutes commuting to school ( $M = 21.9$ ;  $SD = 19.05$ ). Table 12 shows the demographic characteristics of teachers and head teachers.

Table 12- *Demographic Characteristics of Teachers (n = 325) and Head teachers (n = 111)*

Variables	Teachers		Head-teachers	
	Freq.	%	Freq.	%
<b>Gender</b>				
Male	249	76.6	88	79.3
Female	76	23.4	23	20.7
Total	325	100.0	111	100.0
<b>Highest Level of Education</b>				
Master of Philosophy (M.Phil.)	2	0.6	6	5.4
Master of Education (M. Ed.)	8	2.5	10	9.0
Master of Art (MA)/ Master of Science (MSc)	6	1.8	1	0.9
Bachelor of Education (B.Ed.)	136	41.8	72	64.9
Bachelor of Art/Sci/Mgt	28	8.6	-	
Higher National Diploma (HND)	24	7.4	8	7.2
Diploma in Basic Education	91	28.0	4	3.6
Senior High School (SHS)	26	8.0	7	6.3
Others	3	0.9	2	1.8
N/A	1	0.3	1	0.9
Total	325	100.0	111	100.0
<b>Professional training</b>				
Trained	284	87.4	100	90.1
Untrained	39	12.0	11	9.99
N/A	2	0.6	-	-
Total	325	100	111	100
<b>Current subject taught</b>				
English Language	111	34.2		
Mathematics	102	31.4		
Science	109	33.5		
N/A	3	0.9		
Total	325	100	-	-
<b>Category of school</b>				
Private	93	28.6	27	24.3
Public	232	71.4	84	75.7
Total	325	100	111	100

Source: Field survey (2019)

The results in Table 12 show that out of a sample of 325 teachers, 249 of the teachers were males (76.6%) whereas 76 were females (23.4%). This suggests that the responses were dominated by male teachers since they were approximately two-thirds of the sampled respondents. On the part of head teachers, the data in Table 12 indicated that out of a sample of 111 head teachers, 88 of the head teachers were males (79.3%) while 23 were females (20.3%). This implies that there were more male head teachers as compared to the female head teachers.

Regarding the highest level of education of respondents, majority of the teachers 136 (41.8%) had bachelor in education, 91 (28.0%) had diploma in education, 28 (8.6%) had bachelor of arts/science/management, 26 (8.0%) had senior high school education, 24 (7.4%) had higher national diploma, while only 8 (2.5%), 6 (1.8%) and 2 (.6%) of the teachers had education levels of M.Ed., MSc. and M.Phil., respectively. The results suggest that only few of the teachers had a master's degree. Most of the teachers, however, had a first degree in their various field of specialization. Interestingly enough, almost all the head teachers 100 (90.1%) were professionally trained; only 11 (10 %) of the head teachers were untrained.

As shown in Table 12, the highest level of education attained on the part of the head teachers also indicate that most of the head teachers 72 (64.9%) had bachelor of education, 10 (9.0%) had M.Ed., 8 (7.2%) had HND, 7 (6.3%) had SHS education, 6 (5.4%) had M.Phil. while only 4 of the head teachers (3.6%) had diploma in basic education. Inferring from the highest level of education attained by respondents, the data in Table 12 show that the number of teachers who attained master's degree outweighed that of the head

teachers. It is also evident in the data that more teachers attained a first degree compared to the head teacher. The possible reason could be that more teachers were sampled for the study as compared to the head teachers.

Furthermore, on the issue of professional training, a little above two-third of the teachers 284 (87.4%) were professionally trained teachers whereas only 39 (12.0%) of the teachers were untrained. The results in Table 12 further show that most of the teachers 111 (34.2%) taught English Language, 109 of the teachers (33.5%) taught science while 102 of the teachers (31.4%) taught mathematics. This implies that more teachers taught English and Science as compared to teachers who taught Mathematics. It is also evident in Table 12 that more of the teachers taught in public schools 232 (71.4%) as compared to private schools 93 (28.6%). In the same vein, most of the head teachers 84 (75.7%) were heads of public schools while quite few of the head teachers 27 (24.3%) were heads of private schools.

Regarding the issue of whether teachers had ever attended an in-service training, most of the respondents, 263 (80.9%) indicated that they had ever attended an in-service training. Quite a number of the teachers 60 (18.5%) reported that they had never attended an in-service training. This implies that the number of teachers who had ever attended an in-service training out-numbered the teachers who had never attended an in-service training.

### **Results on Input Factors: Research Question 1**

What is the current status of input factors in education, namely class size, teaching-learning materials, infrastructure (appropriate pieces of furniture), parental support and adequacy of pupil-textbook ratio in urban and

rural, public and private junior high schools in the Central Region of Ghana to promote effective teaching and learning?

The research question sought to evaluate the input factors available in the junior high schools in the Central Region of Ghana. Respondents were asked to indicate the (a) availability and (b) quality of some materials and facilities, and their responses are presented in Tables 13, 14 and 15. Table 13 shows the current status of the class size in rural, urban, private and public schools.

Table 13- *Class Size (Head teachers)*

Range	All		Location				School Type			
			Rural		Urban		Private		Public	
	F	%	F	%	F	%	F	%	F	%
1 – 35	88	79.3	57	90.5	31	64.6	22	81.5	66	78.6
36 – 70	20	18.0	6	9.5	14	29.2	5	18.5	15	17.9
71 – 105	1	.9	-	-	1	2.1	-	-	1	1.2
N/A	2	1.8	-	-	2	4.2	-	-	2	2.4
Total	111	100.0	63	100.0	48	100.0	27	100.0	84	100.0

Source: Field survey (2019); N//A – No response, F= Frequency, % = Percentage

From Table 13, 90.5% and 64.6% of the schools in the rural and urban settings respectively had class sizes ranging from 1 to 35. While 9.5% of schools in rural settings had class sizes ranging from 36 to 70, 29.2% of schools in urban settings had class sizes ranging from 36 to 70. In terms of school type, 81.5% of private and 78.6% of public schools had class sizes ranging from 1 to 35. A greater portion (18.5%) of private schools than public schools (17.9) had class sizes ranging from 36 to 70. Generally, it can be said that urban schools had class sizes larger than the recommended class size by

GES, Ghana. In a similar vein, private schools had larger class sizes than the public schools.

Table 14 presents results on the availability of textbooks. Regarding the availability of English textbooks, less than half of the students 243 (36.1%) reported that two people shared one English textbook, 214 (31.8%) had one English textbook for themselves, 114 (16.9%) of the students indicated that three people shared one English textbook, 62 (9.2%) reported that five or more people shared one English textbook while only 33 (4.9%) of the students reported that four people shared one English textbook (see Table 14). This suggests that there were not enough English textbooks for all the students in their respective classes. Concerning the availability of Mathematics textbooks, the results showed that less than half of the students 272 (40.4%) had one Mathematics next book each for themselves, 182 (27.0%) of the students reported that two people shared one Mathematics textbook.

Table 14- Availability of Textbooks (Pupils)

Books	All		Location				School Type			
			Rural		Urban		Private		Public	
	F	%	F	%	F	%	F	%	F	%
<b>English Language</b>										
I have one book for myself	214	31.8	72	21.4	142	42.1	122	68.9	92	18.5
Two people share one book	243	36.1	143	42.4	100	29.7	41	23.2	202	40.6
Three people share one book	114	16.9	55	16.3	59	17.5	6	3.4	108	21.7
Four people share one book	33	4.9	21	6.2	12	3.6	3	1.7	30	6.0
Five or more people share one book	62	9.2	38	11.3	24	7.1	3	1.7	59	11.9
N/A	8	1.2	8	2.4			2	1.1	6	1.2
<b>Mathematics</b>										
I have one book for myself	272	40.4	115	34.1	157	46.6	136	76.8	136	27.4
Two people share one book	182	27.0	111	32.9	71	21.1	23	13.0	159	32.0
Three people share one book	44	6.5	30	8.9	14	4.2	6	3.4	38	7.6
Four people share one book	19	2.8	12	3.6	7	2.1	1	.6	18	3.6
Five or more people share one book	140	20.8	61	18.1	79	23.4	6	3.4	134	27.0
N/A	17	2.5	8	2.4	9	2.7	5	2.8	12	2.4
<b>Integrated Science</b>										
I have one book for myself	274	40.7	108	32.0	166	49.3	145	81.9	129	26.0
Two people share one book	148	22.0	99	29.4	49	14.5	19	10.7	129	26.0
Three people share one book	60	8.9	36	10.7	24	7.1	3	1.7	57	11.5
Four people share one book	28	4.2	16	4.7	12	3.6	3	1.7	25	5.0
Five or more people share one book	146	21.7	69	20.5	77	22.8	4	2.3	142	28.6
N/A	18	2.7	9	2.7	9	2.7	3	1.7	15	3.0

Source: Field survey (2019); N//A – No response, F= Frequency, % = Percentage

In addition, 140 (20.8%) of the students indicated that five or more people shared one Mathematics textbook, 44 (6.5 %) of the students reported that three people shared one mathematics textbook. This implies that there were not enough mathematics textbooks for all the students in their respective schools. The data in Table 14 further revealed that less than half of the students 274 (40.7%) had one integrated science textbook for themselves, 148 (22.0%) of the students indicated that two people shared one integrated science textbook, 146 (21.7%) of the students reported that five or more people shared one integrated science textbook, 60 (8.9%) of the students reported that three people shared one integrated textbook, while only 28 (4.2%) of the students indicated that four people shared one integrated science textbook.

Reports from the students' perspective regarding the availability of English, Mathematics and Integrated Science textbooks indicated that although all the students did not get individual textbooks for the aforementioned subjects, some of the students had the opportunity to share a single textbook with their friends. This could affect the academic performance of students to some extent since such materials are needed to enhance teaching and learning in the classroom. Based on the findings of this study, it can be said that, the quality of education at the junior high school level in the Central Region of Ghana is not at the ultimate level expected.

Regarding the availability of English textbooks, 21.4% of students in the rural schools reported that one student had one English textbook for himself/herself, 11.3 % of students in the rural schools reported that five or more students shared one English textbook. In the case of the urban schools,

42.1% of students reported that each student had an English textbook for himself/herself, 7.1% of the students indicated five or more students shared English textbooks in the urban schools. It could be inferred the reports of the students in urban schools had access to more English texts compared to students in the rural schools. The results in Table 14 shows that 68.9% of students in private schools had one English textbook each for themselves, 1.7% of the students in the private school reported that five or more people shared one English textbook. In the case of public schools, 18.5% of the students reported that each student had one English textbook for himself/herself, 11.9% of the students indicated that five or more students shared one textbook in the public schools. This suggests that availability of English textbooks in the private schools outweighs the English textbooks in the public schools.

Concerning the availability of mathematics textbooks, 34.1% of students in the rural schools had one mathematics textbook for themselves, 18.1 % of students in the rural schools shared one mathematics textbook among five or more people. In the case of urban schools, the results in Table 13 shows that 46.6% of students in urban schools had one mathematics textbook for themselves, 23.4% of students in urban schools shared one mathematics book among five or more pupils. This implies that students in urban schools have adequate access to mathematics textbook compared to students in rural schools. With reference to school types, 76.8% of students in private schools had one mathematics textbook for themselves while 3.4 % of students in private schools shared one mathematics textbook among five students. Results in Table 14 further shows that 27.4 % of students in public

schools had one mathematics textbook for themselves whereas 27.0% of students in public schools shared one mathematics textbook among five or more students. This implies that students in private schools had sufficient access to mathematics textbooks compared to their counterparts in public schools.

Concerning the availability of science textbooks, 32% of students in the rural schools reported that they had one science textbook each for themselves, 20.5% students in the rural schools indicated that students shared one science textbook with five or more people. In the case of urban schools however, 49.3% of students in the urban schools indicated they had one science textbook each for themselves, 22.8% of the urban school students indicated that one science textbook was shared by five or more students. This is a clear indication that students in the urban schools had sufficient access to integrated science textbook compared to their counterparts in the rural schools. Similarly, 81.9% of students in private schools had one science textbook each for themselves, 2.3% of the students in the private schools reported that they shared one science textbook with five or more students. In the case of the public schools, 26% of students in public schools had one science textbook each for themselves, 28.6 of students in the public school shared one science textbook among five or more students. This indicates the inadequacy of science textbooks in the public schools compared to the private schools.

Table 15- Responses from Head teachers on Availability of Textbooks- (n = 111)

Books	ALL		Location				Sch. Type			
			Rural		Urban		Private		Public	
	F	%	F	%	F	%	F	%	F	%
<b>English</b>										
1:1	22	19.8	11	17.5	11	22.9	13	48.1	9	10.7
1:2	34	30.6	20	31.7	14	29.2	7	25.9	27	32.1
1:3	27	24.3	14	22.2	13	27.1	6	22.2	21	25.0
1:4	7	6.3	5	7.9	2	4.2	1	3.7	6	7.1
1:5	18	16.2	12	19.0	6	12.5	-	-	18	21.4
N/A	3	2.7	1	1.6	2	4.2	-	-	3	3.6
<b>Total</b>	<b>111</b>	<b>100.0</b>	<b>63</b>	<b>100.0</b>	<b>48</b>	<b>100.0</b>	<b>27</b>	<b>100.0</b>	<b>84</b>	<b>100.0</b>
<b>Mathematics</b>										
1:1	23	20.7	12	19.0	11	22.9	13	48.1	10	11.9
1:2	40	36.0	26	41.3	14	29.2	9	33.3	31	36.9
1:3	16	14.4	9	14.3	7	14.6	3	11.1	13	15.5
1:4	7	6.3	4	6.3	3	6.3	2	7.4	5	6.0
1:5	22	19.8	11	17.5	11	22.9	-	-	22	26.2
N/A	3	2.7	1	1.6	2	4.2	-	-	3	3.6
<b>Total</b>	<b>111</b>	<b>100.0</b>	<b>63</b>	<b>100.0</b>	<b>48</b>	<b>100.0</b>	<b>27</b>	<b>100.0</b>	<b>84</b>	<b>100.0</b>

Table 15, Continued

Books	ALL		Location				Sch. Type			
			Rural		Urban		Private		Public	
Science	F	%	F	%	F	%	F	%	F	%
1:1	18	16.2	8	12.7	10	20.8	11	40.7	7	8.3
1:2	32	28.8	18	28.6	14	29.2	8	29.6	24	28.6
1:3	26	23.4	17	27.0	9	18.8	5	18.5	21	25.0
1:4	8	7.2	5	7.9	3	6.3	2	7.4	6	7.1
1:5	25	22.5	14	22.2	11	22.9	1	3.7	24	28.6
N/A	2	1.8	1	1.6	1	2.1	-	-	-	-
<b>Total</b>	<b>111</b>	<b>100.0</b>	<b>63</b>	<b>100.0</b>	<b>48</b>	<b>100.0</b>	<b>27</b>	<b>100.0</b>	<b>84</b>	<b>100.0</b>

Source: Field survey (2019); N//A – No response

From Table 15, 17.5% of head teachers in the rural schools reported an English textbook ratio of one book to one student (1:1), 19.0% of the head teachers reported an English textbook ratio of one book to five students (1:5). In the case of the urban schools, 22.9% of the head teachers in the urban schools reported an English textbook ratio of one book to one student (1:1) while 12.5% reported an English textbook ratio of one book to five students (1:5). The head teachers' report with reference to school location indicates that there are more English textbooks in the urban schools compared to the rural schools. Concerning the school types, 48.1% of the head teachers in the private schools reported an English textbook ratio of one book to one student (1:1). In the case of public schools, 10.7% of the head teachers reported an English textbook ratio of one book to one student (1), 21.4% of the head teachers reported a text book ratio of one book to five students (1:5). This suggests that there were more English textbooks in private schools compared to the public schools.

Concerning the availability of Mathematics textbooks, 19% of head teachers in the rural schools reported a textbook ratio of one book to one person, 17.5% reported a ratio of one book to five students. In the case of urban schools, 22.9% of head teachers in the urban schools reported a text book ratio of one book to one person, 22.9% also reported a ratio of one book to five students. With reference to the school types, 48.1% of head teachers in the private schools reported a textbook ratio of one book to one student, none of the head teachers reported on the textbook ratio of one book to five student. In the case of the public schools, 11.9% of the head teachers in the public schools reported a text book ratio of one book to one student while 26.2%

reported a textbook ratio of one book to five students. The results shows that there were enough mathematics textbooks in the urban schools compared to the rural schools. In the same vein, there were enough mathematics textbook in the private schools compared to the public schools.

Regarding the availability of Science textbooks, 12.7% of head teachers in the rural schools reported a textbook ratio of one book to one student, 22.2% reported a ratio of one book to five students. In the case of urban schools, 20.8% of head teachers in the urban schools reported text book ratio of one book to one person, 22.9% reported a ratio of one book to five students. With reference to the school types, 40.7% of head teachers in the private schools reported a textbook ratio of one book to one student, 3.7% head teachers reported on a textbook ratio of one book to five student. In the case of the public schools however, 8.3% of the head teachers in the public schools reported a text book ratio of one book to one student while 28.6% reported a textbook ratio of one book to five students. This presents a clear evidence that the Science textbooks at the urban schools were more than the textbooks at the rural schools. Similarly, the Science textbooks at the private schools were more than those at the public schools.

Aside the availability of textbooks, other inputs were considered. Respondents were asked to indicate the availability of other input factors such as access to: library, table and chairs, electricity, science laboratory among others. The inputs were measured using a semantic differential scale that ranged from 1-5; where 1 = “no extent” and 5 = “greater extent.” No extent depicts situation where the input factor is non-existent and greater extent depicts situation where the input factor exists, is adequate and is of high

quality. Mean scores were computed. Mean scores of 3 depicts a situation where the input factor is fairly efficient and adequate. A mean score greater than 3 depicts a situation where the input factor exists, adequate and is of high quality. Mean score less than 3 depict the otherwise. The responses are presented in Tables 16-17.

As shown in Table 16, most of the students reported that spaces within the classroom allows free movement during lesson delivery ( $M = 4.11$ ,  $SD = 1.21$ ), most of the students also reported that they had access to a table and chair/desk/mono desk in the classroom ( $M = 3.97$ ,  $SD = 1.35$ ), the students further reported that their parents provided the needed material such as books, pencils and pens for my learning at school ( $M = 3.81$ ,  $SD = 1.32$ ).

The results in Table 16 further revealed that some of the students reported there was non-availability and accessibility to some other books such as story books in the school ( $M = 2.69$ ,  $SD = 1.58$ ), while others reported that they did not have access to library in the school ( $M = 2.18$ ,  $SD = 1.61$ ). Students further reported was not equipped with materials and equipment ( $M = 1.34$ ,  $SD = .94$ ). They also reported that the school had no science laboratory. ( $M = 1.23$ ,  $SD = .79$ ).

Table 16- *Other Inputs Available (Pupils)*

Factors	All		Location				School Type			
	<i>M</i>	<i>SD</i>	Rural		Urban		Private		Public	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
There are some other books such as story books in the school for students to access.	2.69	1.58	2.43	1.45	2.96	1.64	2.94	1.56	2.61	1.58
I have access to a library in the school/classroom	2.18	1.61	1.78	1.40	2.57	1.70	2.48	1.60	2.07	1.60
I have access to a table and chair/desk/mono desk in the classroom.	3.97	1.35	3.83	1.309	4.11	1.37	4.06	1.35	3.94	1.35
The school has access to electricity.	3.56	1.611	3.18	1.65	3.94	1.48	3.80	1.50	3.48	1.64
The school has a science laboratory.	1.23	.79	1.16	.71	1.30	.85	1.49	1.13	1.12	.60
The science laboratory is equipped with materials and equipment.	1.34	.94	1.30	.93	1.37	.96	1.50	1.01	1.28	.906
Spaces within the classrooms allow free movement during lesson delivery.	4.11	1.21	4.11	1.17	4.13	1.25	4.0	1.21	4.17	1.20
My parents provide the needed material (books, pencils, pens for, etc) for my learning at school	3.81	1.32	3.56	1.31	4.05	1.28	4.07	1.13	3.71	1.37
My parents often visit the school to appraise my academic achievement level with the teacher	2.5	1.47	2.15	1.32	2.85	1.52	2.93	1.45	2.35	1.44

Source: Field survey (2019)

Inferring from the reports of students on the availability of other input factors, one can conclude that on the average most of the other inputs were available to some extent. For instance, it was observed from the report of the students that spaces within the classroom allows free movement during lesson delivery. This input, for instance, was in high existence and adequate.

As presented in Table 16, students indicated that there were more spaces within the classrooms of schools in the urban settings ( $M = 4.13$ ,  $SD = 1.25$ ) as compared to schools in the rural settings ( $M = 4.11$ ,  $SD = 1.17$ ). Thus, there was free movement during lessons in urban setting schools compared to rural setting school. In terms of school types, students reported that parents who had their wards in private schools provided the needed materials for their children learning ( $M = 4.07$ ,  $SD = 1.13$ ) compared to parents who had their wards in the public schools ( $M = 3.17$ ,  $SD = 1.37$ ).

As shown in Table 17, most teachers indicated that students had access to a table and a chair/dual or dual/mono desk in the classroom ( $M = 3.89$ ,  $SD = 1.25$ ), while others reported that spaces within the classrooms allowed for free movement during lesson delivery ( $M = 3.85$ ,  $SD = 1.12$ ). Teachers further reported that they used teaching and learning materials to illustrate concepts in their classrooms ( $M = 3.58$ ,  $SD = 1.03$ ). They also indicated that their schools had regular access to electricity ( $M = 3.48$ ,  $SD = 1.66$ ).

Table 17- *Other Inputs Available (Teachers)*

Factors	ALL		Location				Sch. Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
There are supplementary books in my subject area for students to access.	2.21	1.34	1.97	1.18	2.45	1.46	2.60	1.50	2.04	1.24
Students have access to library in the school/classroom.	2.02	1.33	1.71	1.20	2.35	1.40	2.72	1.48	1.74	1.16
I use teaching-learning materials to illustrate concepts in my classroom(s).	3.58	1.03	3.40	1.11	3.77	.908	3.60	1.05	3.57	1.02
There are instructional materials for teaching and learning process in my subject area.	3.24	1.23	3.08	1.25	3.40	1.18	3.57	1.28	3.10	1.18
Students have access to a table and chair/dual, dual/mono desk in the classroom.	3.89	1.25	3.88	1.24	3.90	1.26	4.08	1.40	3.82	1.17
The school has access to electricity.	3.48	1.66	3.21	1.66	3.76	1.60	3.70	1.69	3.39	1.64
The school has a science laboratory.	1.35	.88	1.30	.82	1.40	.95	1.55	1.07	1.27	.78
The science laboratory is equipped with materials and equipment.	1.54	1.13	1.41	.99	1.68	1.25	1.90	1.34	1.39	1.00

Table 17, continued

Factors	ALL		Location				Sch. Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Spaces within the classrooms allow free movement during lesson delivery.	3.85	1.12	3.82	1.18	3.88	1.06	3.91	1.16	3.83	1.11
Parents provide the needed material (books, pens, pencils, etc.) for their children learning at school.	3.04	1.27	2.93	1.16	3.15	1.37	3.73	1.33	2.75	1.13
Parents visit the school to appraise the achievement level of their children at least two times in term.	2.25	1.28	2.10	1.20	2.41	1.35	3.01	1.43	1.94	1.08

Source: Field survey (2019)

It was further evident in Table 17 that teachers indicated that instructional materials for teaching and learning in the subject area of Mathematics, English and Science were in adequate numbers ( $M = 3.24$ ,  $SD = 1.23$ ). They, however, reported that parents failed to provide the needed materials such as books, pens and pencils for their children learning at school. The teachers also indicated that parents did not visit the school to appraise the achievement level of their children at least two times in term ( $M = 2.25$ ,  $SD = 1.28$ ). They further reported that there were inadequate supplementary books in their subject areas for students to access ( $M = 2.21$ ,  $SD = 1.34$ ), and that students did not have access to library in the school/classroom ( $M = 2.02$ ,  $SD = 1.33$ ). The teachers also reported that the science laboratory was not equipped with materials and equipment ( $M = 1.54$ ,  $SD = 1.13$ ), and thus, their schools did not have a science laboratory ( $M = 1.35$ ,  $SD = .88$ ).

As presented in Table 17, teachers indicated that students in the urban settings had enough access to table and chair/dual, dual/mono desk in the classroom ( $M = 3.90$ ,  $SD = 1.26$ ) as compared to students in the rural settings ( $M = 3.88$ ,  $SD = 1.24$ ). Similarly, in terms of school types, teachers reported that students in the private schools had enough access to table and chair/dual, dual/mono desk in the classroom ( $M = 4.08$ ,  $SD = 1.40$ ) compared to their counterparts in the public schools ( $M = 3.82$ ,  $SD = 1.17$ ).

Table 18- *Other Input Available (Head-teachers) (n = 111)*

Factors	ALL		Location				School Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
There are supplementary books in my subject area for students to access.	2.63	1.20	2.59	1.23	2.68	1.16	3.00	1.33	2.51	1.13
I students have access to library in the school/classroom.	1.99	1.30	1.87	1.34	2.15	1.25	2.63	1.57	1.78	1.14
I use teaching-learning materials to illustrate concepts in my classroom(s).	2.14	1.33	2.10	1.42	2.19	1.21	2.56	1.48	2.00	1.26
There are instructional materials for teaching and learning process in my subject area.	3.43	.96	3.43	1.01	3.43	.903	3.74	.94	3.32	.95
Students have access to a table and chair/dual, dual/mono desk in the classroom.	3.68	1.39	3.68	1.34	3.68	1.46	4.00	1.52	3.58	1.34
The school has access to electricity.	3.37	1.71	3.16	1.71	3.66	1.70	3.56	1.78	3.3133	1.70
The school has a science laboratory.	1.25	.76	1.13	.46	1.43	1.02	1.37	1.01	1.22	.66
The science laboratory is equipped with materials and equipment.	1.42	1.02	1.59	1.17	1.20	.72	1.42	.90	1.42	1.07

Table 18, Continued

Factors	ALL		Location				School Type			
			Rural		Urban		Private	Public		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Spaces within the classrooms allow free movement during lesson delivery.	3.77	1.27	3.6508	1.25	3.94	1.29	3.63	1.40	3.82	1.23
Parents provide the needed material (books, pens, pencils, etc.) for their children learning at school.	3.28	1.14	3.18	1.03	3.40	1.26	3.81	1.04	3.10	1.12
Parents visit the school to appraise the achievement level of their children at least two times in term.	2.49	1.22	2.48	1.19	2.51	1.27	3.15	1.29	2.28	1.12

Source: Field survey (2019)

Table 18 indicated that most of the head teachers reported that spaces within the classrooms allowed free movement during lesson delivery ( $M = 3.77$ ,  $SD = 1.27$ ), and that students had access to a table and chair/dual or dual/mono desk in the classroom ( $M = 3.68$ ,  $SD = 1.39$ ). The head teachers also reported that there were instructional materials for teaching and learning in their various subject areas ( $M = 3.43$ ,  $SD = .96$ ), while others revealed that their school had access to electricity ( $M = 3.37$ ,  $SD = 1.71$ ). It is further revealed in Table 18 per the reports of head teachers that parents provided the needed material such as books, pens and pencils for their children's learning at school ( $M = 3.28$ ,  $SD = 1.14$ ).

The head teachers also indicated that there were no supplementary textbooks for their respective subject areas for students to use ( $M = 2.63$ ,  $SD = 1.20$ ). It was also clear in the responses of head teachers that parents did not visit the school to appraise the achievement level of their children at least two times in term ( $M = 2.49$ ,  $SD = 1.22$ ). The head teachers further reported that students did not have access to library in the school/classroom ( $M = 1.99$ ,  $SD = 1.30$ ), and also the science laboratories were not equipped with materials and equipment ( $M = 1.42$ ,  $SD = 1.02$ ).

As presented in Table 18, head teachers indicated that students in the urban settings had equal access to table and chair/dual, dual/mono desk in the classroom ( $M = 3.68$ ,  $SD = 1.34$ ) as their counterparts in the rural settings ( $M = 3.68$ ,  $SD = 1.46$ ). In terms of school types, the head teachers reported that students in the private schools had enough access to table and chair/dual, dual/mono desk in the classroom ( $M = 4.00$ ,  $SD = 1.52$ ) compared to students in the public schools ( $M = 3.58$ ,  $SD = 1.34$ ).

In sum it appears from the results of the current study that textbook pupil ratio was better in urban schools and private schools as well for English, Mathematics and Integrated Science. In addition, other input factors were present in urban schools to a greater extent; these factors were poor for rural schools for teaching of core-subjects. Private schools reported the availability of other process factors than public schools. Regarding schools' class size, it can be said that urban schools had class sizes larger than the recommended class size by GES, Ghana. In a similar vein, private schools had larger class sizes than the public schools.

### **Results on Process Factors: Research Question 2**

How effective are process factors, namely, teacher use of instructional time, level of parental and community involvement, type of leadership, curriculum coverage being utilized among urban, rural, public and private junior high schools in the Central Region of Ghana to enhance quality teaching and learning? This research question sought to examine the process factors available, and also to determine how effective these factors are.

The mean scores for the responses were used for the analysis. The overall mean of all the responses (2.5) was computed by summing up all the responses and dividing by 4 (i.e.  $[1+2+3+4]/4$ ). Items with mean scores 2.5 or above depict that respondents agreed, whereas items with mean scores below 2.5 depict disagreement. The responses of the respondents based on the research question are presented in Tables 19 and 20.

Table 19- *Distribution of Teachers' Responses on School-related Process Factors (Teachers)*

Factors	All		Location				Sch. Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
My students are regular to school.	3.04	.64	2.98	.614	3.11	.65	3.24	.65	2.96	.615
My students are punctual to school.	2.84	.69	2.83	.61	2.85	.76	2.97	.76	2.79	.65
I find it difficult to complete the syllabus on time for the Form 3 students in my subject area.	2.08	.88	2.19	.90	1.97	.83	2.05	.96	2.10	.84
I am able to complete the syllabus on time for the Form 3 students in my subject area.	3.15	.79	3.01	.82	3.30	.74	3.33	.81	3.08	.78
I find it easy to approach the head-teacher.	3.41	.82	3.34	.85	3.48	.78	3.39	.85	3.42	.81
I have a good relationship with other staff, students, parents/guardians, and community members/leaders.	3.45	.63	3.48	.57	3.42	.70	3.49	.60	3.43	.65
On school issues, decision making is done by committees.	3.02	.79	3.01	.77	3.03	.81	3.26	.69	2.92	.80
My head-teacher delegates management responsibilities to staff members.	3.21	.74	3.34	.65	3.06	.80	3.15	.78	3.23	.72
My head-teacher responds to expressed feelings by staff and students.	3.29	.68	3.38	.66	3.20	.70	3.29	.67	3.29	.69

Source: Field survey (2019)

The data in Table 19 reveal that most of the teachers reported that they had a good relationship with other staff, students, parents/guardians, and community members/leaders ( $M = 3.45, SD = .63$ ), the teachers also indicated that they found it easy to approach their head teacher ( $M = 3.41, SD = .82$ ) and that their head-teacher responded to expressed feelings by staff and students ( $M = 3.29, SD = .68$ ). They also indicated that their head teacher delegated management responsibilities to staff members ( $M = 3.21, SD = .74$ ). They further agreed that they were able to complete the syllabus on time for the Form 3 students in their subject areas ( $M = 3.15, SD = .79$ ). It was, however, evident in Table 20 that the teachers did not agree to all the items regarding availability of school-related process factors and how effective these factors were. For instance, teachers disagreed to the fact that they found it difficult to complete the syllabus on time for the Form 3 students in my subject area ( $M = 2.08, SD = .88$ ).

As presented in Table 19, teachers indicated that head teachers in the urban settings ( $M = 3.48, SD = .78$ ) were more approachable than head teachers in the rural settings ( $M = 3.34, SD = .85$ ). On school issues, schools from the urban settings ( $M = 3.03, SD = .81$ ) engages committees better than schools from the rural settings ( $M = 3.01, SD = .77$ ). In terms of school type, the relationship among staff, students, parents/guardians, and community members/leaders in private schools ( $M = 3.49, SD = .60$ ) was better than in public schools ( $M = 3.43, SD = .65$ ). Again, students in private schools were punctual ( $M = 2.97, SD = .76$ ) to school than students in public schools ( $M = 2.79, SD = .65$ ). Similarly, students in the private school were regular to

school ( $M = 3.24$ ,  $SD = .65$ ) than students in the public schools ( $M = 2.96$ ,  $SD = .62$ ).

Regarding the results in Table 20, the head teachers agreed to all the statements pertaining to the availability of school-related process factors and how effective these factors were. They reported that teachers were regular to school ( $M = 3.38$ ,  $SD = .61$ ), expressed feelings by staff and students ( $M = 3.37$ ,  $SD = .76$ ), indicated that they delegated management responsibilities to staff members ( $M = 3.32$ ,  $SD = .79$ ), and agreed to the statement that decision making on school issues were done by committees ( $M = 3.21$ ,  $SD = .79$ ). As shown in Table 20, the head teachers also agreed to the following statements with reference to school-related process factors and how effective these factors were: teachers were punctual to school ( $M = 3.25$ ,  $SD = .75$ ), students were regular to school ( $M = 3.14$ ,  $SD = .68$ ), students were punctual to school ( $M = 3.07$ ,  $SD = .59$ ), teachers found it difficult to complete the respective syllabi on time for Mathematics ( $M = 2.96$ ,  $SD = .60$ ), teachers found it difficult to complete the respective syllabi on time for English Language ( $M = 2.87$ ,  $SD = .65$ ) and teachers found it difficult to complete the respective syllabi on time for Integrated Science ( $M = 2.86$ ,  $SD = .72$ ).

Table 20- Distribution of *Head teachers' Responses on School-related Process Factors (Head teachers)*

Factors	All		Location				Sch. Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Students are regular to school.	3.14	.68	3.02	.63	3.29	.71	3.33	.73	3.08	.65
Students are punctual to school.	3.07	.59	2.95	.63	3.23	.52	3.19	.48	3.04	.63
Teachers are regular to school.	3.38	.61	3.31	.65	3.48	.55	3.41	.69	3.38	.58
Teachers are punctual to school.	3.25	.75	3.17	.75	3.34	.80	3.42	.81	3.19	.73
Teachers find it difficult to complete the syllabus for final year students in general.	2.37	.76	2.32	.80	2.44	.71	2.44	.80	2.35	.75
Teachers find it difficult to complete the respective syllabi on time for English Language.	2.87	.65	2.85	.72	2.90	.56	2.89	.80	2.87	.60
Teachers find it difficult to complete the respective syllabi on time for Mathematics.	2.96	.60	2.94	.62	3.00	.58	3.04	.76	2.94	.55
Teachers find it difficult to complete the respective syllabi on time for Integrated Science.	2.86	.72	2.83	.73	2.92	.71	2.93	.78	2.85	.70

Table 20, Continued

Factors	All		Location				Sch. Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Teachers find it easy to approach me as the head-teacher.	3.20	.97	3.27	.92	3.10	1.04	3.30	.91	3.17	.99
On school issues, decision making is done by committees.	3.21	.79	3.10	.86	3.38	.67	3.26	1.02	3.20	.71
As a head-teacher, I delegate management responsibilities to my staff members.	3.32	.79	3.22	.75	3.44	.82	3.22	.89	3.35	.75
As a head-teacher, I respond to expressed feelings by staff and students.	3.37	.76	3.44	.67	3.27	.87	3.22	.85	3.42	.73

Source: Field survey (2019)

In terms of school types, head teachers reported that teachers in the private school ( $M = 3.42, SD = .81$ ) were punctual at school compared to their counterparts in the public schools ( $M = 3.19, SD = .73$ ). Head teachers further indicated that teachers in the rural settings ( $M = 3.27, SD = .92$ ) found it easier to approach their head teachers as compared to teachers in the urban settings ( $M = 3.10, SD = 1.04$ ). Head teachers however reported that teachers in the private school ( $M = 3.30, SD = .91$ ) found it easier to approach their head teachers than their fellow teachers in the public school ( $M = 3.17, SD = .99$ ).

Aside the aforementioned school-related process factors, respondents (teachers and head teachers) also responded to process factors relating to the percentage of syllabus coverage in form 3. The responses of the respondents are presented in Tables 21 and 22.

Table 21- *Teachers' Responses on the Rate of Syllabi Coverage in English Language*

Percentage coverage	Location				Sch. Type			
	Rural		Urban		Private		Public	
	F	%	F	%	F	%	F	%
Below 50%	-	-	-	-	-	-	-	-
Between 50 – 60%	3	4.8	1	2.1	3	11.1	1	1.2
Between 70 – 80%	38	60.3	25	52.1	13	48.1	50	59.5
Above 90%	19	30.2	21	43.8	10	37.0	30	35.7
N/A	3	4.8	1	2.1	1	1.2	3	3.6
Total	63	100	48	100.0	27	100.0	84	100.0

Source: Field survey (2019); N//A – No response, F= Frequency, % = Percentage

As shown in Table 21, more teachers in rural settings (4.8%) than urban settings (2.1%) covered 50 – 60% of the English language syllabus. Similarly, 60.3% of teachers from rural settings and 52.1% of teachers from

urban settings covered 70 – 80% of the English language syllabus. However, more teachers in urban settings (43.8%) than the rural settings (30.2%) covered above 90% of the English language syllabus. In all it can be said that teachers in the urban settings covered more of the syllabus than the teachers from the rural settings. In terms of school type, while 59.5% of teachers in the public schools covered 70 – 80% of the English language syllabus, 48.1% of teachers in private schools covered an equal amount of the English language syllabus. Table 22 presents teachers’ response on core mathematics coverage.

Table 22- *Teachers’ Responses on the Rate of Syllabi Coverage in Core Mathematics*

Percentage coverage	Location				Sch. Type			
	Rural		Urban		Private		Public	
	F	%	F	%	F	%	F	%
Below 50%	13	21.3	-	-	-	-	12	14.8
Between 50 – 60%	16	26.2	3	7.3	1	4.7	21	25.9
Between 70 – 80%	19	31.1	9	22.0	2	9.5	37	45.7
Above 90%	13	21.3	29	70.7	18	85.7	11	13.6
Total	61	100	41	100.0	21	100.0	81	100.0

Source: Field survey (2019); N//A – No response  
F= Frequency, % = Percentage

From Table 22, a vast majority (70.7%) of teachers in the urban settings covered more than 90% of the core mathematics syllabus compared to 21.3% of teachers in the rural settings. In addition, 85.7% of teachers in private schools covered more than 90% of the core mathematics syllabus. On the contrary, 13.6% of teachers in the public schools covered above 90% of the syllabus. In all, it can be said that teachers in urban schools and those from private schools covered a greater portion of the core mathematics syllabus.

Table 23- *Teachers’ Responses on the Rate of Syllabi Coverage in Science*

Percentage coverage	Location				Sch. Type			
	Rural		Urban		Private		Public	
	F	%	F	%	F	%	F	%
Below 50%	9	14.3	-	-	1	3.7	14	16.5
Between 50 – 60%	17	27.0	6	12.2	2	7.4	22	25.9
Between 70 – 80%	27	42.9	13	26.5	5	18.5	36	42.4
Above 90%	10	15.9	30	61.2	19	70.4	13	15.3
Total	63	100	49	100.0	27	100.0	85	100.0

Source: Field survey (2019); N//A – No response

F= Frequency, % = Percentage

As shown in Table 23, comparatively, 61.2% and 15.9% of teachers in the urban and rural settings respectively covered above 90% of the science syllabus. In a similar vein, 70.4% of teachers in private schools whereas 15.3% of teachers in public schools completed more than 90% of the science syllabus. In all, the results saw more teachers in urban than rural settings; and private than public schools completing a greater chunk of the syllabi for English language, core mathematics, and science.

Parent/guardians-related process factors were measured using a semantic differential scale that ranged from 1-4; where 1 = “Not at all” and 4 = “Very much.” “Not at all” depicts situation where stakeholders do not involve themselves in school activities and “very much” depicts situation where stakeholders involve themselves in school activities and contribute to school developmental projects.

Mean scores were computed. Mean scores of 2.5 depict a situation where stakeholders fairly involved themselves in school activities. A mean score greater than 2.5 depicts situation where stakeholders involved

themselves in school activities and contributed to school developmental projects. Respondents (head teachers) were asked to respond to series of questions pertaining to parent/guardians-related process factors and their responses are presented in Table 24.

Regarding the results in Table 25, the head teachers indicated that a good working relationship existed between the staff and parents/guardians of students ( $M = 3.20$ ,  $SD = .82$ ). The head teachers also reported that on the issue of instilling discipline in students, parents/guardians and community members engaged with the school to come out with rules bounded the conduct of students ( $M = 2.73$ ,  $SD = .87$ ). The head teacher, however, reported that apart from school fees, parents/guardians and community members and leaders did not contribute financially to support school extra expenses ( $M = 2.3$ ,  $SD = .94$ ). It was also evident in the reports of the head teachers that parents/guardians and community members did not contribute their quota in building classrooms to assist the schools ( $M = 2.27$ ,  $SD = .91$ ).

Table 24- *Parents/guardians-related Process Factors (Head teachers)*

Factors	ALL		Location				Sch. Type			
			Rural		Urban		Private		Public	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Parents/guardians and community members are involved in building classrooms to assist the school	2.27	.91	2.44	.88	2.04	.92	2.22	.85	2.29	.94
In my school, there is good staff, parents/guardians (PTA) working relationship	3.20	.82	3.24	.80	3.15	.85	3.19	1.04	3.20	.74
Parents/guardians and community members involved in instilling discipline by engaging with the school to come out with rules that bind the conduct of students	2.73	.87	2.76	.86	2.69	.90	2.78	.97	2.71	.84
Apart from school fees, parents/guardians and community members and leaders contribute financially for school extra expenses	2.36	.94	2.56	.91	2.10	.93	2.19	1.00	2.42	.92

Source: Field survey (2019)

In sum it was found in the present study that process factors were better in urban schools as well as private schools. For rural schools and public schools, the input factors were poor. For example, it was discovered that the percentage of syllabus coverage was high in schools in urban schools and private schools. Similar trends were found for English, Mathematics and Integrated Science.

### **Results on Output: Research Question 3**

What is the performance (output) of urban, rural, public and private junior high schools in the BECE in the past five years (2014 – 2018)?

This research question sought to explore the performance of urban, rural, public and private junior high schools in the BECE in the past five years (2014 – 2018). The research question, particularly, sought to establish the trends in performance of pupils in BECE over a 5-year period. The description of the performance trends were done with respect to gender (male/female), school location (rural/urban) and school type (private/public). The descriptions were done in this fashion because of the fact that the unit of analysis in this study include school location, and school type. The data focused on pupils who passed and those who failed as well. The criteria for pass, according to Ghana Education Service, was grade 36 or better (i.e., grade 6 in 6 courses). Pupils who obtained grades worse than 36 were classified as those who have failed the examination.

### General Performance Trends from 2014 to 2018

The general performance trends from 2014 to 2018 are presented in Table 25 and Figure 4.

Table 25- *Students' General performance in BECE from 2014 to 2018*

Year	N	Passed (%)	Failed (%)
2014	2,583	1,936(71.49)	647(28.51)
2015	2,652	1,812(61.17)	840(38.83)
2016	2,594	1,676(62.44)	914(37.56)
2017	2,561	1,784(67.50)	777(32.50)
2018	2,655	1,966(70.49)	689(29.51)

Source: Field Survey (2019)

n= Number of people who sat for the examination

The data in Table 25 reveals that the number of pupils who sat for BECE from 2014 to 2018 range from 2,561 to 2,655. It appears that the number of pupils who passed in each year were more than those who failed. In 2014 for instance, 1,936 pupils out of 2,583 passed the examination. Similarly, 1,812 pupils out of 2,652 in 2015 passed, and 1,676 out of 2,594 passed in 2016. This trend follows the same pattern from 2017 to 2018.

Figure 4 presents the trends of performance based on the proportions of pupils who passed from 2014 to 2018.

For the five years under study, 2014 recorded the highest percentage of pupils who passed the BECE (71.49%). No clear pattern of performance was found. The year 2015 saw a decrease in performance from the previous year (2014) from 71.49% to 61.17%. There was a slight increase to 62.44% in 2016 and further increased to 67.5% in 2017. The percentage of pupils who passed increased again to 70.49% in 2018.

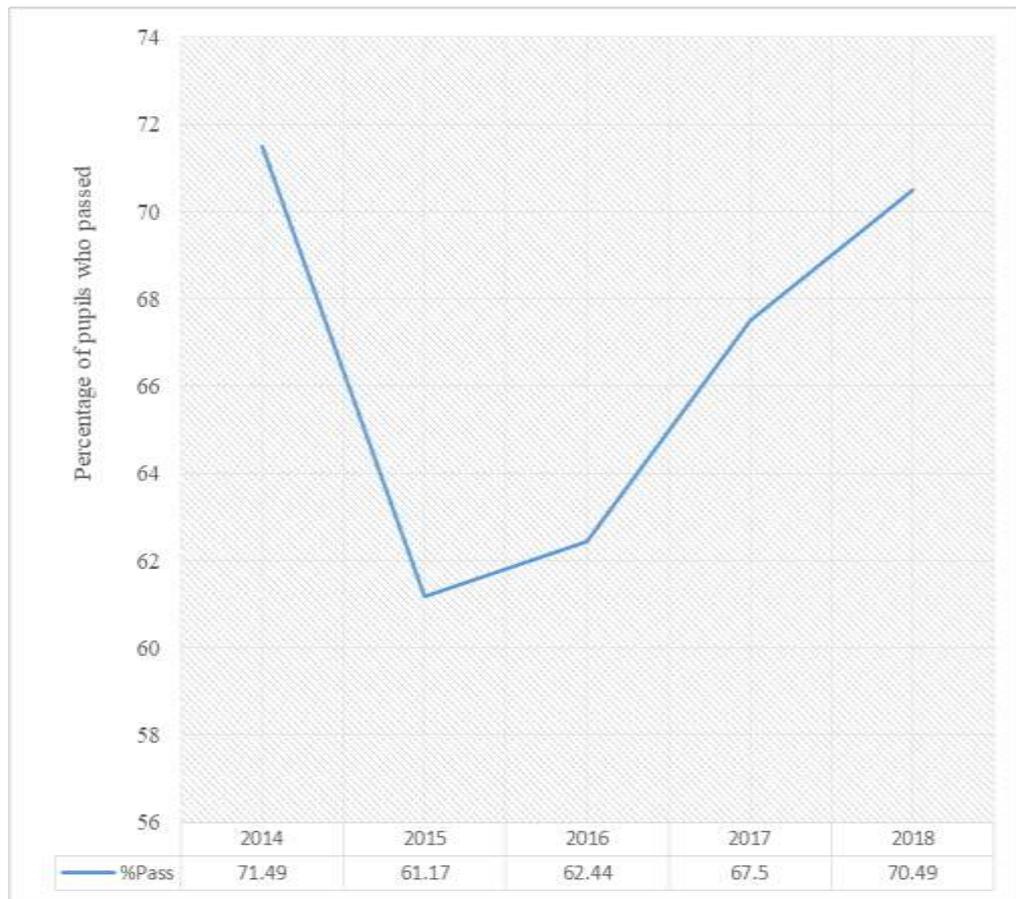


Figure 4- General performance trends in BECE from 2014-2018

### School Distribution Based on Location

The distributions of BECE performance based on the school location (rural/urban) are shown in Table 26 and Figure 5.

Table 26- Students' Performance in BECE based on School Location

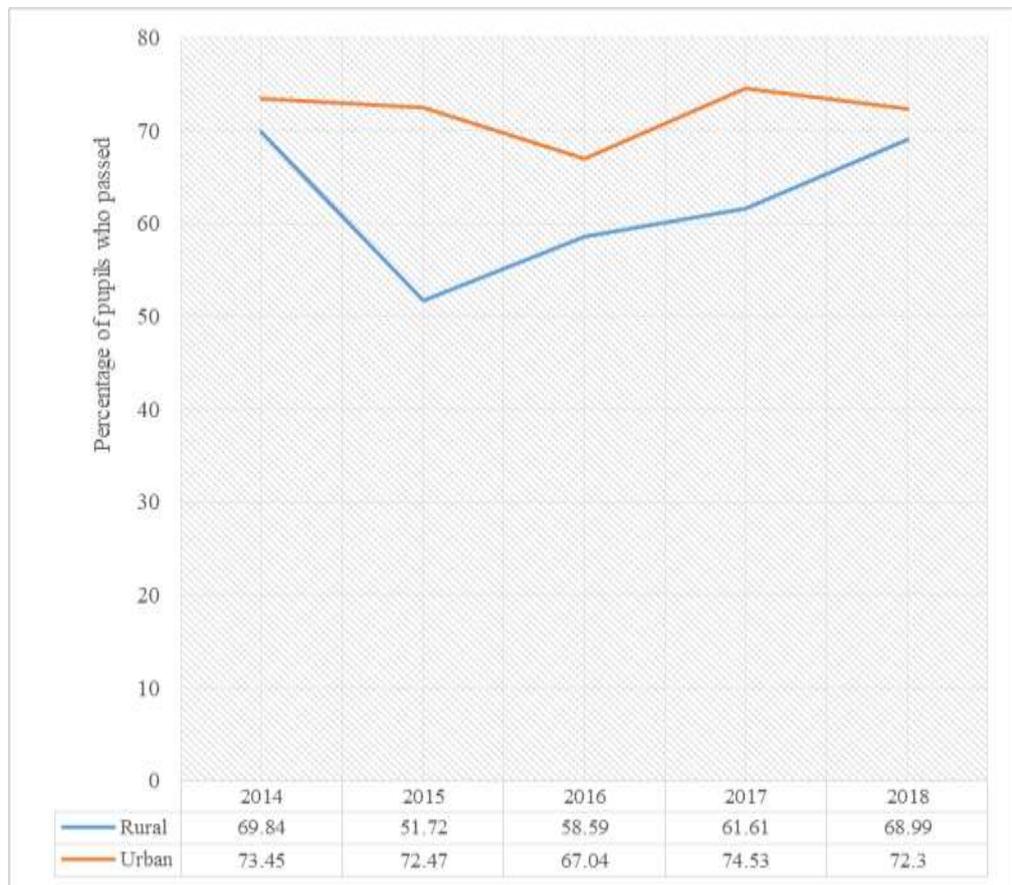
Year	Rural			Urban		
	n	Passed %	Failed %	n	Passed %	Failed %
2014	1,139	826(69.84)	313(30.16)	1,444	826(73.45)	618(26.55)
2015	1,287	768(51.72)	519(48.28)	1,365	1,044(72.47)	321(27.53)
2016	1,204	685(58.59)	519(41.41)	1,390	991(67.04)	399(32.96)
2017	1,239	775(61.61)	464(38.39)	1,322	1,009(74.53)	313(25.47)
2018	1,211	875(68.99)	336(31.01)	1,444	1,091(72.3)	353(27.7)

Source: Field Survey (2019), Percentage in ( ).  
 n= Number of people who sat for the examination

Table 26 presents BECE performance of pupils in rural and urban schools. From 2014 to 2018, pupils who sat for BECE in the selected rural schools ranged from 1,204 to 1,287, and those in the urban schools ranged from 1,322 to 1,444. In general, the data suggest that more pupils in the urban schools than rural schools sat for BECE from 2014-2018. This translated into the proportion of pupils who passed the examination. Apart from the year 2014 where equal number of pupils from rural and urban schools passed the examination, more pupils in urban schools than in rural schools passed the examination. In 2015, for instance, 1,044 out of 1,365 pupils in urban schools passed BECE as opposed to 768 out 1,287 pupils from rural schools who sat for the examination. Similar distribution of performance was found in 2016, 2017, and 2018. With the exception of the year 2014 which saw more pupils from urban schools failing the examination, this was otherwise with the subsequent years (2015-2018). Whereas 519 pupils (out of 1,287) in rural schools failed the BECE, 321 pupils (out of 1,365) in urban schools failed in 2015.

Figure 5 further presents the trend analysis of the performance based on the school location. The graph displayed the proportion of pupils who passed the examination in both rural and urban schools. It is constructive to note that the trends in the BECE performance for pupils in rural schools appear to be difference from pupils in urban schools. The results, as shown in Figure 6, suggest that for all the 5 years under investigation (2014-2018), the proportion of pupils who passed in rural schools were less than those who in urban schools. In 2014, the proportion was 69.84% for rural schools, and

73.45% in urban schools. Equally, rural schools in 2015 recorded 51.72% pass rate whereas urban schools recorded 72.47% pass rate.



*Figure 5-* Trend analysis of BECE performance based on school location from 2014-2018

It appears no definitive trend was found for BECE pass rate of pupils in rural schools and those in urban schools. For rural schools, the proportion of pupils who passed for the 5 consecutive years (2014-2018) were 69.84%, 51.72%, 58.59%, 61.61%, and 68.99%. In 2015, the rural schools recorded a sharp decrease in the pass rate from 69.84% to 51.72%. The year 2016 also saw an increase in pass rate from 51.72% to 58.59%, and to 61.61% in 2017 and 68.99% in 2018. Except for the decrease in pass rate from 2014 to 2015, the percentage of pupils who passed in rural schools progressively increased from 2015 to 2018.

For pupils in urban schools, the proportion of pupils who passed increased in some years and decreased in other years. The percentage of pupils who passed marginally decreased from 73.45% in 2014 to 72.47% in 2015. The year 2016 saw a decrease in pass rate from 72.47% in 2015 to 67.04%. The pass rate in 2017, however, increased to 74.53% in 2017 and later decreased to 72.3% in 2018.

### **BECE Performance based on School Type (Private & Public)**

The study also presented the performance of students in BECE based on school type. The details are shown in Table 27 and Figure 6.

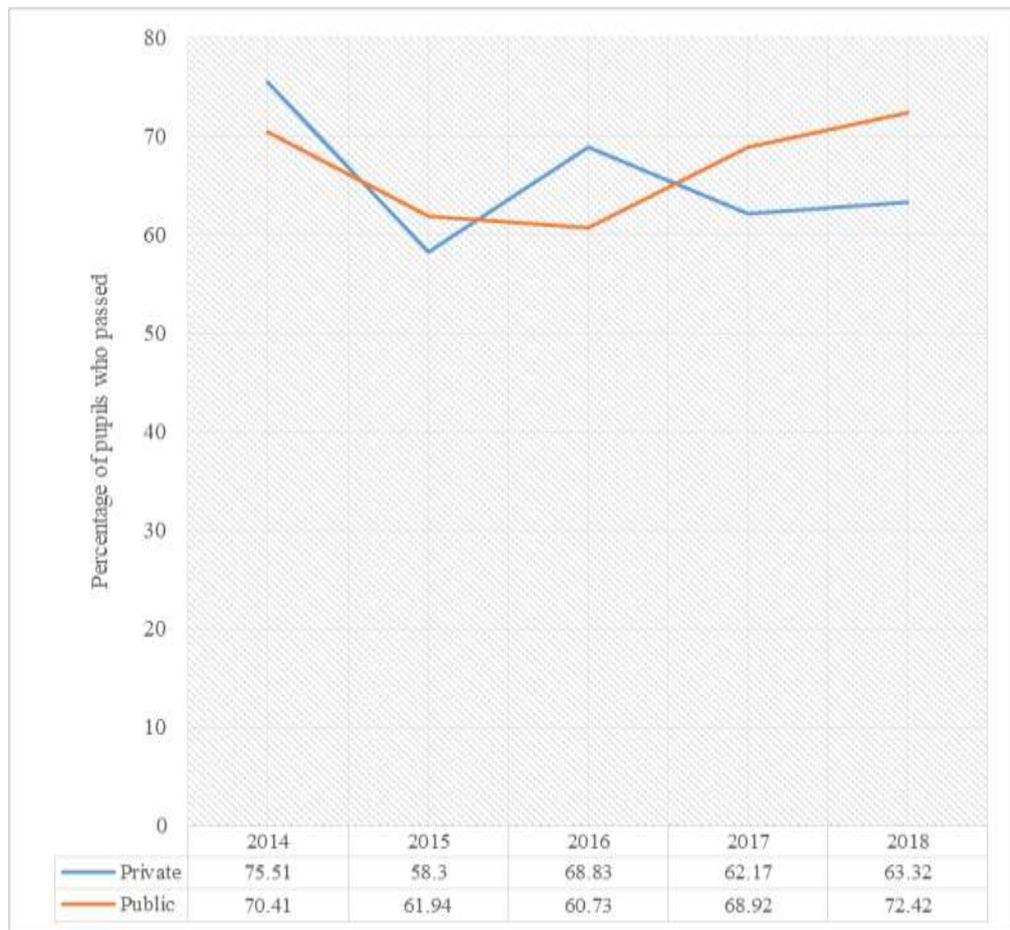
Table 27- *Trends in BECE Performance based on School Type*

Year	Private Schools			Public Schools		
	n	Pass %	Fail %	n	Pass %	Fail %
2014	540	410(75.51)	130(24.49)	2,043	1,526(70.41)	517(29.59)
2015	514	364(58.3)	150(41.7)	2,138	1,448(61.94)	690(38.06)
2016	524	364(68.83)	160(31.17)	2,070	1,312(60.73)	758(39.27)
2017	524	340(62.17)	184(37.83)	2,037	1,444(68.92)	593(31.08)
2018	483	320(63.32)	163(36.68)	2,172	1,646(72.42)	526(27.58)

Source: Field Survey (2019), Percentage in ( ).  
n= Number of people who sat for the examination

The results in Table 27 depict that more than thrice the number of pupils who sat for BECE from 2014 to 2018 are from public schools. In 2014, for example, 1,526 pupils from public schools sat for the examination. In the same year, 540 pupils from private schools sat for the examination. For 2015, 514 pupils who sat for BECE were from private schools whereas 2,138 of them were from public schools. The trend of performance was not so different for 2016, 2017, and 2018. Obviously, more pupils from public schools than private schools passed BECE.

Figure 6 further provides more details of the trends in performance based on school type (private/public).



*Figure 6-* Trend analysis of BECE performance based on school type from 2014-2018

Figure 6 shows no clear trend in the BECE performance of pupils based on school type. For private schools, the proportion of pupils who passed in 2014 was 75.51%; this decreased to 58.3% in 2015. This pass rate increased to 68.83% in 2016, decreased to 62.17% in 2017, and increased to 63.32% in 2018. For pupils in public schools, the pass rate in 2014 was 70.41%. This decreased to 61.94% and to 60.73% in 2015 and 2016 respectively. The year 2017 saw a slight increase in the pass rate to 62.17 and further increased to 72.42% in 2018. In some of the years, the pass rate was higher for pupils in

private schools as compared to those from public schools. This was otherwise for some other years. In 2014 and 2016, for instance, the more pupils from private schools than public schools passed the examination. This, however, was not the case in 2015, 2017, and 2018.

All in all, regarding the performance (output) of urban, rural, public and private junior high schools in the BECE in the past five years (2014 – 2018), the findings of this study indicated that apart from the year 2014 where equal number of pupils from rural and urban schools passed the examination, more pupils in urban schools than in rural schools passed the examination. For all the 5 years under investigation (2014-2018), the proportion of pupils who passed in rural schools were less than those who passed in urban schools. It appears no definitive trend was found for the BECE pass rate of pupils in rural schools and those in urban schools. It was found that more pupils from public schools than private schools passed BECE. No clear pattern of performance was however found.

### **Hypotheses Testing**

In addition, to the three research questions, the study tested two hypotheses. This section presents results on the hypotheses.

#### **Hypothesis 1**

H<sub>0</sub> 1: Process factors will not significantly mediate the effect of input factors on the outcome (product) of BECE.

H<sub>1</sub> 1: Process factors will significantly mediate the effect of input factors on the outcome (product) of BECE.

The aim of this hypothesis was to determine the effect of input factors on output/outcome through a third variable, process factors – mediator. This

hypothesis was tested using Structural Equation Model (SEM) through the use of SmartPLS software, which is a variance-based approach to examining relationships among variables. Specifically, the bootstrap approach was used with 500 bootstrap samples with bias corrected and accelerated bootstrap. The exogenous variable was input factors. The endogenous variables were process factors (mediator variable) and outcome/output. The Variance Inflation Factor (VIFs) of each of the three variables was equal to 1, which is less than 5.0. This indicates there was no multicollinearity. Details of the results are presented in Tables 28, 29, and Figure 7.

From Table 28, input factor was a significant predictor of output,  $\beta = .58$ , *Boot95%CI* (.47, .67), with large effect size ( $f^2 = 1.23$ ). Hence, input factor positively predicted output. This implies that for any one standard deviation unit increase in input factor, output/outcome would increase by .58. This means that as input factors improve, performance – thus, the percentage pass of pupils would also increase. It was also found that input factor (such as class size, teaching learning materials, infrastructure, parental support and adequacy of pupil-textbook ratio) was a significant positive predictor of process factor,  $\beta = .80$ , *Boot95%CI* (0.66, 0.89).

Table 28- Path Coefficients for Input and Process on Output

Exogenous		Endogenous	$\beta$	Std. err	<i>t-value</i>	Confidence Interval		$R^2$	<i>Adj. R^2</i>	$f^2$	$Q^2$
						LL	UL				
Input factors	--->	Process factors	0.802*	0.06	14.35	0.659	0.886	0.643	0.639	1.8	0.61
Process factors	--->	Output	0.415*	0.05	8.22	0.318	0.516	0.901	0.899	0.62	
Input factors	--->	Output	0.584*	0.05	11.56	0.473	0.669			1.23	0.87

\*Significant,  $p < .05$

Input factor explained 64% of the variance in process factor (such as teacher use of instructional time, level of parental and community involvement, type of leadership and curriculum coverage), and the effect was large ( $f^2 = 1.8$ ). Again, process factor significantly predicted output/outcome,  $\beta = .42$ , *Boot95%CI* (0.32, 0.52), with large effect size ( $f^2 = 0.62$ ). Process and input factors jointly explained 90% of the variations in outcome/output. Interestingly, all the paths were significant, and they contributed to high variances of the endogenous variables. The  $Q^2_s$  of 0.61 and 0.87 imply that the model has predictive relevance for both endogenous variables (process and output), since the  $Q^2_s$  are greater than 0. It can be said that the model has small prediction errors. The path coefficients and p-values (in parenthesis) for the model are presented in Figure 7.

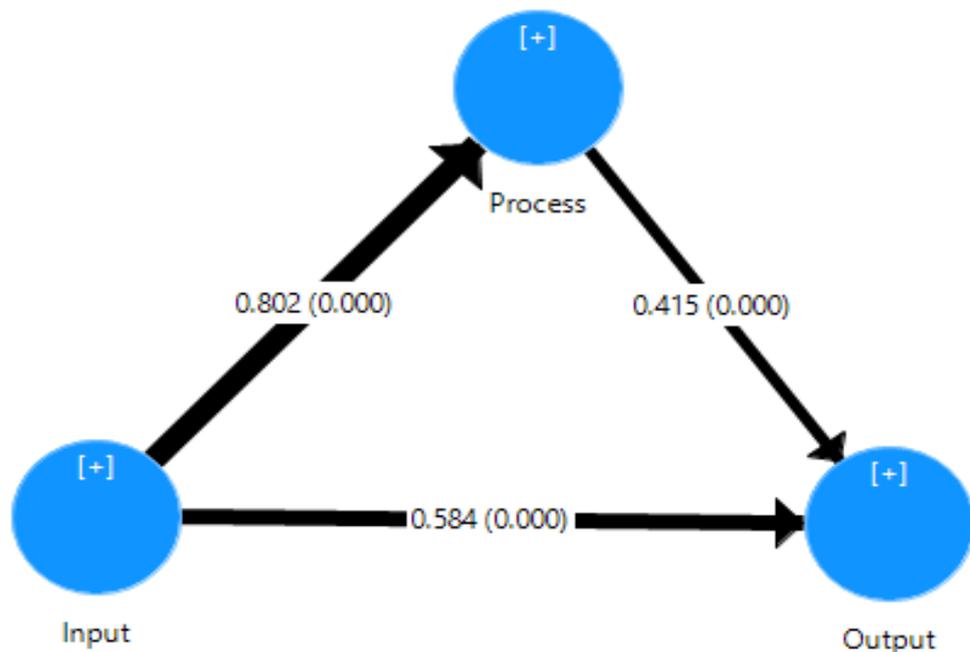


Figure 7- Path for input, process, and output factors

The actual mediation test, which comprises the indirect effect, total effect, and direct effect is presented in Table 29.

Table 29- Mediation Test Results

	$\beta$	SE	<i>t-value</i>	<i>p-value</i>	Confidence Interval	
					Lower Limit	Upper Limit
Total effect of X on Y	0.92*	0.02	44.02	<0.01	0.87	0.95
Direct effect of X on Y	0.58*	0.05	11.56	<0.01	0.49	0.68
Indirect effect of X on Y	$\beta$	SE	<i>LLCI</i>		<i>ULCI</i>	
Process (M)	0.33*	0.05	0.24		0.42	

X- Input factors; Y- Output; M – Process factors.

\*Significant,  $p < .05$

As shown in Table 29, there is a significant indirect effect of input factors on output/outcome through process factors,  $\beta = 0.33$ , *Boot95%CI* (0.24, 0.42). Comparing the indirect effect with the direct effect, there is a reduction in the effect of input on outcome from 0.58 to 0.33 when the process factor was introduced. This implies the mediation was competitive, thus, the presence of mediator variable rather competes and decreases the effect of input on output. This result, generally, could be that the process factors were not that efficient. For example, it was found that majority of the head teachers (56.8%) indicated that between 50 – 60% of the syllabus is taught by the end of the year in Form 3. This is inadequate to achieve better performance of pupils. In addition, it was reported by head teachers that the parents/guardians-related process factors were not so much. Thus, parents/guardians do not involve themselves so much in school activities, and they do not contribute much to school development.

In sum, following the result of this study, the researcher, therefore, rejected the null hypothesis which states that: “Process factors will not significantly mediate effect of input factors on the outcome (product) BECE”. This result has implications for stakeholders in education and management of the various schools used in the study. From the results, it can be said that activities that go into process factors should be held in high esteem as far as academic performance of pupils are concerned. When process factors are not in good shape, irrespective of how strong and efficient the input factor may be, it will thwart its (input factor) relationship with the outcome, and this can adversely affect pupils’ performance in the end.

### **Hypothesis 2**

H<sub>0</sub> 2: The proposed model will not significantly differ in terms of school type (public and private) and school location (urban and rural).

H<sub>1</sub> 2: The proposed model will significantly differ in terms of school type (public and private) and school location (urban and rural).

This hypothesis sought to determine the effect of input factors on output/outcome through the process factors when varied with respect to context, such as school type (public and private) and school location (urban and rural). The SEM-multi group analysis was used to compare parameters (path coefficients) with respect to the various contexts. This hypothesis was tested using PLS-SEM multi group analysis, with SmartPLS with 500 bootstrap samples with bias corrected and accelerated bootstrap. The exogenous variable was input factors. The endogenous variables were process factors (mediator variable) and outcome/output. The grouping variables were location: rural and urban, and school type: private and public. There was no

multicollinearity among the variables, as the VIFs of each of the three variables was equal to 1, which is less than 5.0. Tables 30, 31, and Figures 8 and 9 present results based on location.

As presented in Table 30, input factor was a significant predictor of output for schools in both rural,  $\beta = 0.65$ , *Boot95%CI* (0.55, 0.74), and urban areas,  $\beta = 0.48$ , *Boot95%CI* (0.37, 0.61), with large effect size ( $f^2 = 1.41$ ). In addition, the process factor significantly predicted output in both rural,  $\beta = 0.34$ , *Boot95%CI* (0.23, 0.43), and urban areas,  $\beta = 0.53$ , *Boot95%CI* (0.39, 0.63), with large effect size ( $f^2 = 1.41$ ). Input and process factors jointly explained 93% and 88% of the variances in output for schools in urban and rural areas respectively. Similarly, input factor was a significant predictor of process factor for schools in both rural,  $\beta = 0.77$ , *Boot95%CI* (0.48, 0.90), and urban areas,  $\beta = .81$ , *Boot95%CI* (0.55, 0.89), with large effect size ( $f^2 = 1.67$ ). The variances in process factor explained 65% and 59% of input factor for urban and rural areas respectively. All the predictions were relevant, since the  $Q^2_s$  for both endogenous variables (process and output) within rural and urban schools were greater than 0. Figures 8 and 9 show the path models for rural and urban areas with their significance figures in parentheses. The thickness of the path shows the quantum of the effect (the size of the regression coefficient).

Table 30- Path Coefficients for Input and Process on Output based on Location

Path/Location	$\beta$		Std. err		$t$		Confidence Interval				$R^2$	$Adj. R^2$	$f^2$	$Q^2$				
	R	U	R	U	R	U	Lower		Upper		R	U	R	U	R	U		
							R	U	R	U								
Input ---> Process	.770*	.806*	0.110	.078	7.00	10.39	.477	.545	.902	.891	.592	.650	.584	.641	1.45	1.86	.52	.63
Process ---> Output	.335*	.534*	.059	.066	5.71	8.12	.225	.390	.431	.632	.876	.931	.871	.927	.37	1.44		
Input ---> Output	.653*	.481*	.054	.064	12.15	7.47	.545	.369	.737	.614					1.41	1.67	.83	.89

R- Rural; U – Urban; \*Significant,  $p < .05$

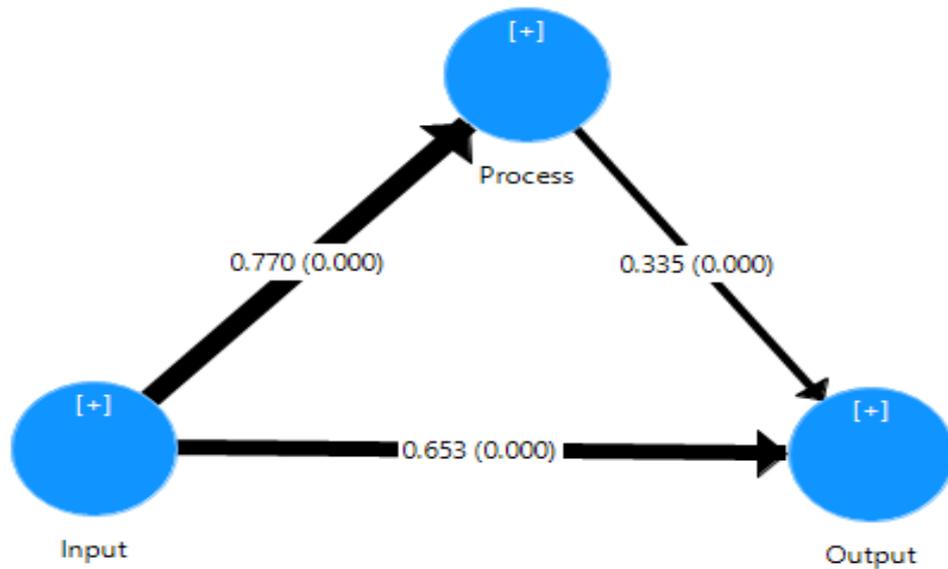


Figure 8- Path for input, process, and output factors for rural settings

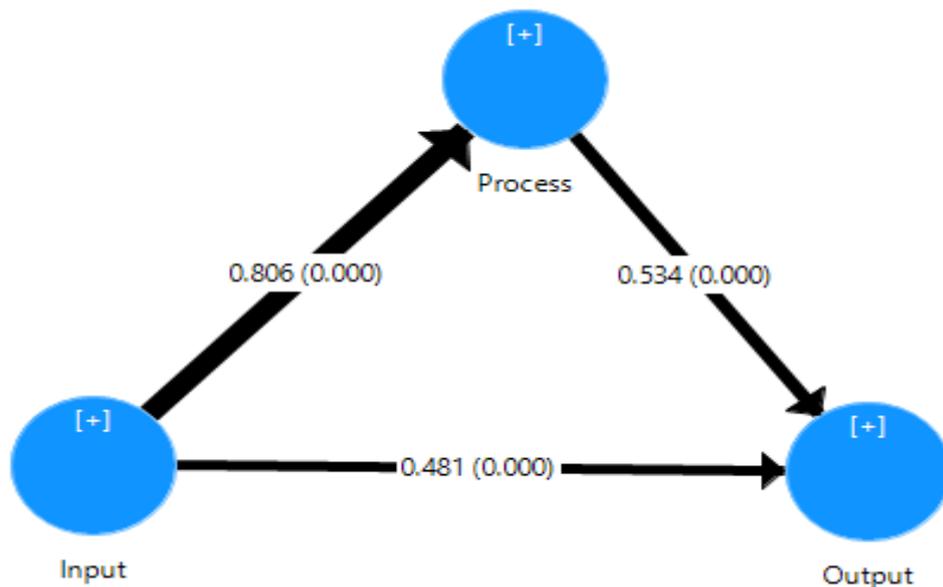


Figure 9- Path for input, process, and output factors for urban settings

Details of the direct, indirect, and total effect for rural and urban as well as the multi group analysis are presented in Table 31.

As presented in Table 31, there was significant indirect effect of input factor on output/outcome through process factor for both rural,  $\beta = 0.26$ , *Boot95%CI* (0.17, 0.39) and urban areas,  $\beta = 0.43$ , *Boot95%CI* (0.31, .55). Clearly, the indirect effect of input on output through process factor for urban

was greater than the rural. The effect of input on outcome reduced from 0.65 to 0.26 for rural, with the introduction of process factor. Comparatively, the effect of input on outcome reduced from 0.48 to 0.43 for urban, with the introduction of process factor. The multi group analysis revealed that the difference between the indirect effect for the urban and rural setting,  $(U - R) = 0.17$ , and this is statistically significant, *Boot95%CI* (0.17, 0.18). This result implies that even though generally process factor reduced the effect of input on output, it was better for schools in the urban areas than in the rural areas.

Table 31- Mediation Test Results

	Effect ( $\beta$ )		SE		<i>t-value</i>		<i>p-value</i>		Confidence Interval			
									Lower		Upper	
	R	U	R	U	R	U	R	U	R	U	R	U
Total effect of X on Y	.911*	.912*	.036	.032	25.49	28.1	<0.01	<0.01	.810	.829	.947	.954
Direct effect of X on Y	.653*	.481*	.054	.064	12.15	7.47	<0.01	<0.01	.545	.369	.737	.614
Indirect effect of X on Y	Effect ( $\beta$ )		SE		LLCI		ULCI					
	R	U	R	U	R	U	R	U	R	U	R	U
Process (M)	.258*	.431*	.060	.062	.168		.309		.394		.545	
Multi-group result (U – R)	Effect ( $\beta$ )				<i>t-value</i>		<i>p-value</i>		Confidence Interval			
									Lower		Upper	
Difference in indirect effect	.173*				2.116		.037		.166		.176	
Difference in direct effect (X on Y)	.172*				2.177		.032		.154		.179	
Difference in direct effect (X on M)	.036				.251		.802		-.124		.059	
Difference in direct effect (M on Y)	.199*				2.384		.019		.163		.201	

X- Input factors; Y- Output; M – Process factors; R- Rural; U - Urban

\*Significant,  $p < .05$

The study further examined whether the effect of input factor on output/outcome would differ based on the school type, thus, private and public. Details of the results are shown in Tables 32, 33, and Figures 10 and 11.

From Table 32, input factor was a significant predictor of output factor in both public,  $\beta = 0.64$ , *Boot95%CI* (0.44, 0.93), and private schools,  $\beta = 0.56$ , *Boot95%CI* (0.44, 0.66), with large effect size ( $f^2 = 1.04$ ). Also, process factor significantly predicted output in both public,  $\beta = 0.34$ , *Boot95%CI* (0.01, .53), and private schools,  $\beta = 0.44$ , *Boot95%CI* (0.34, 0.56), with moderate effect size,  $f^2 = 0.29$  and  $0.72$  for public and private schools respectively. Input and process factors jointly explained 88% and 90% of the variances in output for public and private schools respectively. Further, input factor was a significant predictor of process factor for respondents in both public,  $\beta = .85$ , *Boot95%CI* (0.59, 0.95), and private schools,  $\beta = 0.80$ , *Boot95%CI* (0.64, 0.90), with large effect size,  $f^2 = 2.56$  and  $1.77$  for public and private schools respectively. The variances in process factor was explained 72% and 64% of input factor for public and private schools respectively. All the predictions were relevant, since the  $Q^2_s$  for both endogenous variables (process and output) for both public and private schools were greater than 0.

Table 32- Path Coefficients for Input and Process on Output based on School Type

Path/School type	β		Std. err		t		Confidence Interval				R <sup>2</sup>	Adj. R <sup>2</sup>	f <sup>2</sup>	Q <sup>2</sup>				
	PU	PR	PU	PR	PU	PR	Lower		Upper									
							PU	PR	PU	PR								
Input ---> Process	.848*	.799*	.149	.063	5.68	12.62	.59	.64	.95	.90	.72	.64	.70	.63	2.56	1.77	.66	.59
Process ---> Output	.338*	.439*	.149	.056	2.26	7.86	.01	.34	.53	.56	.89	.90	.88	.90	.29	.72		
Input ---> Output	.639*	.562*	.132	.059	4.85	9.49	.458	.44	.93	.66					1.04	1.18	.84	.86

\*Significant,  $p < .05$   
 PU- Public; PR- Private

Figures 10 and 11 show the path models for public and private schools with their significance figures in parentheses. The thickness of the path shows the quantum of the effect (the size of the regression co-efficient).

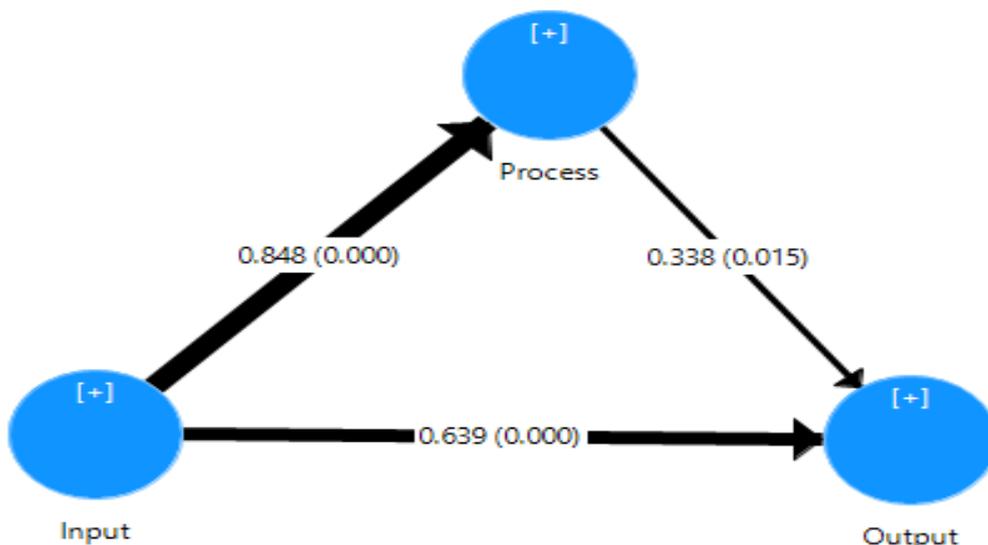


Figure 10- Path for input, process, and output factors for public school

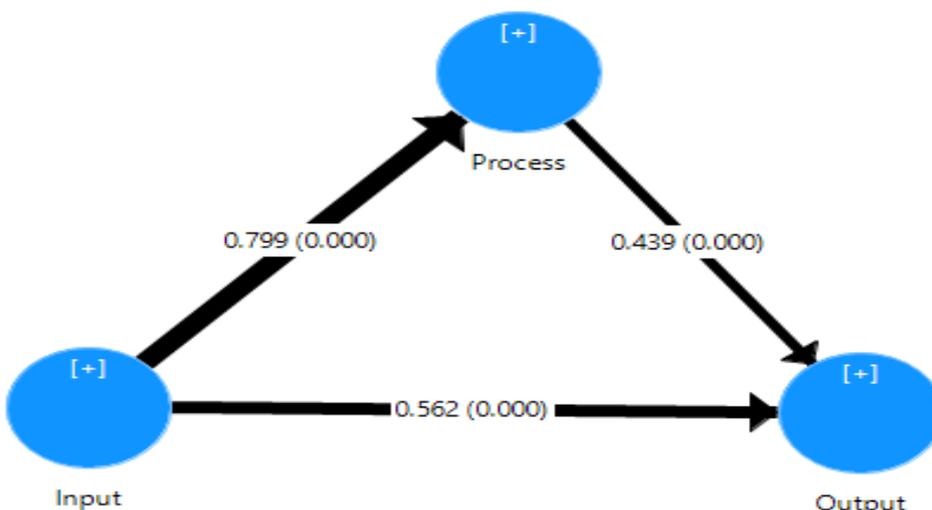


Figure 11- Path for input, process, and output factors for private school

Table 33 presents details on the direct indirect effect, direct effect, total effect, and multi group test.

As shown in Table 33, there was significant indirect effect of input factor on output/outcome through process factor for both public,  $\beta = .29$ ,

*Boot95%CI* (0.04, .49) and private schools,  $\beta = .35$ , *Boot95%CI* (0.26, 0.48). From the results, the indirect effect of input on output through process factor for private school was greater than the public school. The effect of input on outcome reduced from 0.64 to 0.29 for public school, with the introduction of process factor. Likewise, the effect of input on outcome reduced from 0.56 to 0.35 for private school, with the introduction of process factor. The multi group analysis revealed that the difference between the indirect effect for the private and the public schools, (PR - PU) = 0.06, and this was not statistically significant, *Boot95%CI* (-0.05, 0.20). This result implies that even though generally process factor reduced the effect of input on output, there was no difference in its reduction for both public and private schools.

In sum, from the results, the path model based on school location was significantly different in terms of rural and urban areas. However, in terms of school type (private and public), there was no difference in the path models. Based on this result, the null hypothesis that “The proposed model will not significantly differ in terms of school type (public and private) and school location (urban and rural)” was rejected in favour of its alternative hypothesis, that “The proposed model will significantly differ in terms of school type (public and private) and school location (urban and rural)”. Based on this, it can be said that context has influence on the relationship between input and output factors.

Table 33- Total Effect, Direct Effect, and Indirect Effect in terms of School Type

	Effect ( $\beta$ )		SE		<i>t-value</i>		<i>p-value</i>		Confidence Interval			
									Lower Limit		Upper Limit	
	PU	PR	PU	PR	PU	PR	PU	PR	PU	PR	PU	PR
Total effect of X on Y	.926*	.913*	.050	.026	18.52	35.63	<0.01	<0.01	.823	.853	.969	.947
Direct effect of X on Y	.639*	.562*	.116	.057	5.51	9.79	<0.01	<0.01	.458	.44	.93	.66
Indirect effect of X on Y	Effect ( $\beta$ )		SE		LLCI				ULCI			
	PU	PR	PU	PR	PU	PR	PU	PR	PU	PR	PU	PR
Process (M)	.287*	.351*	.117	.056	.042		.263		.490		.484	
Multi-group result (PR – PU)	Effect ( $\beta$ )				<i>t-value</i>		<i>p-value</i>		Confidence Interval			
									Lower		Upper	
Difference in indirect effect	.064				.558		.578		-.05		.20	
Difference in direct effect (X on Y)	-.077				.646		.520		-.098		.132	
Difference in direct effect (X on M)	-.049				.340		.735		-.122		.115	
Difference in direct effect (M on Y)	-.101				.828		.410		-.176		.129	

X- Input factors; Y- Output; PU- Public; PR- Private.

\*Significant,  $p < .0$

## **Discussion**

This section discusses the results of the study. The results are discussed in the order of the research questions and hypotheses.

### **Current Status of Input Factors in Education (Research Question 1)**

This research question sought to evaluate the input factors in urban, rural, public and private junior high schools in the central region of Ghana. This study examined inputs such as class size, teaching learning materials, infrastructure, parental support and adequacy of pupil-textbook ratio.

The results of the current study shows that urban schools had class sizes larger than the recommended class size by GES, Ghana. In a similar vein, private schools had larger class sizes than the public schools. This result has implication on teachers' responsibility in the classroom, in that, a teacher who has a large class size may find it difficult controlling and managing the behaviours of students in the classroom. A large class size could also pose a severe challenge to the teacher in that, the teacher may not be able to attend to the academic as well as the social needs of each and every student in the classroom. It is also possible that, a large class size could increase the work load of the teacher which could in turn affect effective teaching and learning in the classroom. The findings of the current study was not in harmony with the findings of a number of authors (Biddle & Berliner, 2000; Finn, 2002; Ready, 2008; Biddle & Berliner, 2002). Finn (2002) emphasised that when a class size is more than 35, the quality of education is compromised. Similarly, Ready (2008) ascertained that the content of class size reduction can affect the success in improving achievement. In furtherance, Biddle and Berliner (2002)

in their study found that a smaller class has been shown to be more beneficial for students from socio-economically disadvantaged backgrounds.

It also appears from the results of the current study that textbook pupil ratio was better in urban schools and private schools as well for English, Mathematics and Integrated Science. In addition, other input factors were present in urban schools to a greater extent; these factors were poor for rural schools for teaching of core-subjects. Private schools reported the availability of other process factors than public schools. The findings of this study suggests that pupils in urban and private schools are more likely to perform better than their counterparts in the rural and public schools. This is because pupils in urban and private schools will have access to sufficient text books to read both at school and at home. Since practice makes perfect, such students are more likely to develop good vocabulary compared to their counterparts who lack textbooks in the rural and public schools. The findings of this study is consistent with the findings of Stufflebeam's (2004) who asserted that input evaluation element recommends that learning needs and available strategies are considered as part of initial planning process in the classroom.

**Effectiveness of process factors in enhancing quality teaching and learning among Junior High schools in the Central Region of Ghana (Research Question 2)**

The purpose of this research question was to evaluate how effective process factors were being utilised among urban, rural, public and private junior high schools in the Central Region of Ghana. This study examined process factors such as teacher use of instructional time, level of parental and community involvement, type of leadership and curriculum coverage by

urban, rural, public and private schools. The findings of this study shows that process factors were better in urban schools as well as private schools. For rural schools and public schools, the input factors were poor. For example, it was discovered that the percentage of syllabus coverage was high in schools in urban schools and private schools. Similar trends were found for English, Mathematics and Integrated Science. Considering the use of instructional time as a process factor, it appears that supervision are more effective in urban and private schools as against supervision in public and rural schools. Similarly, the findings of the study could suggest that parents' involvement in their ward's education is more effective in private and urban schools compared to rural and public schools. The findings of this study agrees with the findings of Kim (2012) who stated that the utilisation of process indicators are a way to understand the "what's going-on in schools". The dynamic, integrated use of a wide variety of school indicators can provide rich information on the quality of resources, people and activities that shape children's day-to-day experiences (Scheerens, 2011).

### **Effect of Input factors and Process factors on Output (Hypothesis 1)**

This hypothesis tested the effect of input factors on output/outcome through a third variable, process factors – mediator. Results of the study revealed that input factor was a significant predictor of output factor,  $\beta = .58$ , *Boot95%CI* (.47, .67), with large effect size ( $f^2 = 1.23$ ). That is to say, input factor positively predicted output/ outcome. This means that as input factors improve, performance – thus, the percentage pass of pupils would also increase. It was also found that input factor was a significant positive predictor

of process factor,  $\beta = .80$ , *Boot95%CI* (.66, .89). Again, process factor significantly predicted output/outcome.

The findings of this study are consistent with the assertion made by the Department for International Development (DFID, 2007). According to the Department for International Development, adequacy of instructional materials such as textbooks which is the main instruction material is the most cost-effective input affecting student performance. This assertion was also re-echoed by Padmanabhan (2001) who emphasised that adequacy of TLR determines an educational system's efficiency. This implies that, for effective teaching and learning to take place, the presence of basic input tools such as textbooks and resource materials are very important; their absence or inadequacy makes teachers handle subjects in an abstract manner, portraying it 'dry' and non-exciting. This could in turn affect students' performance (output).

The findings of this study also agreed with the assertion of Ampiah (2011) who found the JHS national core textbook student ratio to be 2.5:1. Ampiah stressed that the fact that not all pupils have textbooks affects the effectiveness of lessons negatively since the Ghanaian basic school curricula are heavily dependent on textbooks. This suggests that input factors such as text books are significant predictors of output factors (Students' performance). In other words, input factors positively predict output factors. Thus, lack/inadequacy of textbooks means children have to depend very heavily on what teachers write on the chalkboard/white board. Pupils, therefore, do not get the opportunity to use textbooks at home for practice.

The findings of the current study was also in line with the findings of Carron and Chau (1996) who found that many teachers face transportation and housing obstacles that hinder them from getting to school on time and staying until school hours are over. This prevails more in Ghanaian rural areas and denies pupils of effective use of instructional time. Additionally, many teachers hold second jobs, which may detract them from the time and energy they expend in the classroom; in some cases teachers may miss school altogether. This suggests that the unavailability of some basic input factors such as transport system that will aid teachers to arrive in school on time could to some extent affect students' performance. That is to say, the unavailability of transport system, for instance, could delay the early arrival of both teachers and students on campus which could will in turn affect the time spent for lessons in the classroom; hence affecting students' performance (output factors).

Similarly, the findings of this study was consistent with the assertion of UNESCO (2005). In the view of UNESCO, teaching and learning materials (TLM), well equipped library are very important resources when it comes to quality education. According to UNESCO (2005), the achievement of teaching and learning is influenced by the availability of resources to use for the process and how these resources are regulated. This portrays that schools that have no textbooks and learning materials or well-equipped library cannot do effective and efficient work. Adeyemi (2010) also stipulated that a well-equipped library provides different types of material resources like books, journals, governmental documents and graphics for references. This denotes that the library is a reference source for any school and a point of individual

studies in schools where relevant information from primary and secondary sources can be extracted. Adequacy of library resources and their usage by students and teachers are therefore, associated with better educational performance.

### **Differences in the Proposed Model with Regards to School Type (public and private) and School Location (urban and rural) (Hypothesis 2)**

This hypothesis was tested to see if the effect of input factors on output/outcome through the process factors will vary with respect to context, such as school type (public and private) and school location (urban and rural).

The findings of the study revealed that the path model based on school location was significantly different in terms of rural and urban areas. However, in terms of school type (private and public), there was no difference in the path models. Based on this, it can be said that context have influence on the relationship between input and output factors.

The finding of the present study was at par with the findings of Tang and Wu (2000) who reported on one large-scale survey carried out by the Ministry of Education of China. The authors found out that the academic achievement of pupils in urban areas was higher than that of pupils in townships, whose achievement was in turn higher than that of pupils in rural areas. This implies that the context within which a particular school is located could influence the input and output factors. Similarly, the findings of this study agreed with the findings of Lo (1999) who reported that in Shanghai there are differences in students' test scores between schools in urban and rural areas, with those in the urban areas scoring higher.

In his view, (Lipton, 1977) also emphasised that many educators, researchers, legislators, and the general public believe that students from smaller and rural schools receive education that is inferior to that of students from larger urban or suburban schools. The assertion of Lipton was consistent with the findings of this study. The findings of the current study also agreed with the findings of a number of authors (e.g. Anamuah-Mensah, 2002; Siaw, 2009) who postulated that urban schools are generally overstaffed with qualified teachers, overenrolled, better funded, and monitored. Urban schools tend to have better infrastructure and adequate resources to work with compared with rural schools. This provides enough evidence to support the fact that the context within which a particular school is located is of much concern since the context could have an influence on the relationship between input and output factors.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the overview of the study as well as the summary of key findings. The chapter further presents the conclusions and recommendations based on the findings of the study.

#### Overview of the Study

In spite of the numerous reforms in the Ghanaian educational system to improve the quality of education at the basic level, several challenges have hindered this quality. The study evaluated the quality of junior high school education in the Central Region of Ghana using context, input, process and product (CIPP) model developed by Stufflebeam (1971). Aside evaluating the current state of input factors, process factors, and the output, the investigator hypothesized that: (a) process factors will significantly mediate the effect of the input factors and outcome of BECE; and (b) process model will significantly differ in terms of school type (public and private) and school location (urban and rural).

The descriptive survey design was employed in the conduct of the study. The target population for this study was made up of public and private JHSs in all the 20 Metropolitan/Municipal/District Assemblies in the Central Region. There were 1,871 Junior High schools in the 20 districts in Central Region made up of 1,190 (63.60%) public and 681(36.40%) private schools (EMIS, 2016).

The accessible population was made up 6 districts (30%) out of the 20 districts in Central Region. Two (2) of the districts each were selected from the top, middle and bottom purposively making the six districts for the accessible population. In selecting the two districts each, the 20 districts were arranged according to their academic achievement level in the 2015/2016 BECE core subjects (mathematics, English and integrated science) by the Ghana Education Service. The proportionate stratified random sampling was employed using private urban, private rural, public urban and public rural as strata. To determine the number of schools in the study, 30% of the total number of schools of 420 was taken which was 126 to make up the sample of schools. Respondents for the study were made up of 126 head-teachers of the selected schools, 378 JHS three teachers (thus, those who teach English language, mathematics and science). Six JHS three students were selected randomly within the selected schools from the various districts making 756 students for the study. In all, the participants for the study were made up of 1260.

Questionnaire and performance data sheet were used for data gathering. The study used three forms of questionnaire for students, teachers and head teachers. Pilot testing was conducted to refine the instruments. All ethical issues were considered during the data collection. Data gathered on Research Questions 1 and 2 were analysed using frequencies, percentages, means and standard deviations. For research question three, trend analysis was used to analyse the data. Hypotheses 1 and 2 were tested using PLS structural equation modelling (SEM). Structural Equation Modelling is a statistical method used to test the relationships between observed and latent variables.

## Summary of Findings

The following were the findings of the study:

### **The current state of input factors in Basic Schools in Central Region**

It was found that urban schools had class sizes larger than the recommended class size by GES, Ghana. Similarly, private schools had larger class sizes than the public schools. Also, textbook pupil ratio was better in urban schools and private schools as well for English, Mathematics and Integrated Science. In addition, other input factors were present in urban schools to a greater extent; these factors were poor for rural schools for teaching of core-subjects. Private schools reported the availability of other process factors than public schools. Mediation analysis revealed that process factors significantly mediated the relationship between input factors and output factors

Regarding the availability of English textbooks, the students reported that two people shared one English text book. The students had one Mathematics as well as Integrated Science textbook each for themselves. On the issue of English textbook-student ratio, the teachers reported a ratio of one book to one student. In the same vein, the head teachers reported a ratio of one textbook to two pupils. The teachers reported a ratio of one book to five or more pupils for Mathematics and Integrated Science. The head teachers reported a ratio of one Mathematics textbook to two students. The teachers reported a ratio of one Integrated Science textbook to five or more students.

For the pupils' perspective, parents provided needed materials, their schools had electricity access, and parents often visited the school to appraise their academic level with their teachers. However, availability and access to

some other books, tables and chair, science laboratory resources were not present. The teachers were of the view that: parents did not visit the school to appraise their children's performance; supplementary materials were not accessible; library was also not accessible; and non-availability of materials in science laboratory.

Both teachers and head teachers reported that: there were spaces within the classrooms which allowed free movement during lessons; students had access to table and chair; instructional materials were available; the school had access to electricity; and parents provided needed materials for their children.

Just like the teachers, the head teachers also reiterated that: parents did not visit the school to appraise the achievement of their wards regularly; library facilities were non-existent; and science laboratory materials were not available. Generally, it was discovered that the input factors in urban areas were better than those in the rural areas. Even in cases where the input factors were present in both rural and urban school, the rate of accessibility or availability in urban schools were better in rural schools. Similarly, private schools were found to have better input factors as compared to public schools.

### **The current state of process factors in Basic Schools in Central Region**

It was found that process factors were better in urban schools as well as private schools. For rural schools and public schools, the input factors were poor. For example, it was discovered that the percentage of syllabus coverage was high in schools in urban schools and private schools. Similar trends were found for English, Mathematics and Integrated Science. The students, teachers and head teachers reported that teachers were regular and punctual to school. Whereas the students reported that they completed the respective syllabi on

time for English Language, Mathematics and Integrated Science, the teachers and head teachers acknowledged that it is difficult to complete the syllabus on time for the Form 3 pupils in their subject area.

It was generally found that head teachers praised both teachers and students for work done in the name of the school, and as well responded to express feeling of staff and students. The students and teachers also reported that they found it easy to approach their head teacher. The students and teachers reported that parents/guardians and community members contributed their quota to building classrooms to assist the school. The head teachers, however, stated that parents/guardians and community members did not contribute their quota in building classrooms to assist the school. However, parents/guardians and community members generally did not involve themselves in instilling discipline in students by engaging with the school to come out with rules that bind the conduct of students.

It was found that the head teachers responded to expressed feelings by staff and students and that they delegated management responsibilities to staff members. The teachers reported that they had a good relationship with other staff, students, parents/guardians, and community members/leaders, the students and head teachers reported the otherwise.

### **The state of academic performance for the last 5-year period**

It was revealed that more than half of the pupils (both male and female) who sat for the examination within the 5-year period passed. Comparatively, male pupils consistently had higher passing rate than their female counterpart. For instance, 75.06% of males and 67.92% of females who sat for the examination passed the examination in 2014. In 2015, 63.61%

of males as opposed to 58.73% females of those who sat for BECE passed. In 2016, very little difference was found between the number of males and females who passed the examination; 62.71% of males and 62.17 females passed. Similar performance trends were found in 2017 and 2018. The trends in BECE performance was, nevertheless, similar for both male and female pupils. In general, no definitive trend was revealed for both male and female students.

Apart from the year 2014 where equal number of pupils from rural and urban schools passed the examination, more pupils in urban schools than in rural schools passed the examination. It was discovered that the trends in the BECE performance for pupils in rural schools appear to be difference from pupils in urban schools. For all the 5 years under investigation (2014-2018), the proportion of pupils who passed in rural schools were less than those who passed in urban schools. It appears no definitive trend was found for the BECE pass rate of pupils in rural schools and those in urban schools.

It was found that more pupils from public schools than private schools passed BECE. For private schools, the proportion of pupils who passed in 2014 was 75.51%; this decreased to 58.3% in 2015. This pass rate increased to 68.83% in 2016, decreased to 62.17% in 2017, and increased to 63.32% in 2018. For pupils in public schools, the pass rate in 2014 was 70.41%. This decreased to 61.94% and to 60.73% in 2015 and 2016 respectively. The year 2017 saw a slight increase in the pass rate to 62.17 and further increased to 72.42% in 2018. In some of the years, the pass rate was higher for pupils in private schools as compared to those from public schools. This was otherwise for some of the years. In 2014 and 2016, for instance, the more pupils from

private schools than public schools passed the examination. This, however, was not the case in 2015, 2017, and 2018.

For the five years under study, 2014 recorded the highest percentage of pupils who passed the BECE (71.49%). No clear pattern of performance was found however. The year 2015 saw a decrease in performance from the previous year (2014) from 71.49% to 61.17%. There was a slight increase to 62.44% in 2014 and further increased to 67.5% in 2017. The percentage of pupils who passed increased again to 70.49% in 2018.

### **The mediating role of process in the effect of input factors on output**

Input factor was a significant predictor of output, with large effect size. Input factors positively predicted the output. It was also found that input factor was a significant positive predictor of process factor. Input factor explained 64% of the variance in process factor, and the effect was large. Process factor significantly predicted output/outcome, with large effect size. Process and input factors jointly explained 90% of the variations in outcome/output. Interestingly, all the paths were significant, and they contributed so high to the variances of the endogenous variables. The results revealed that there is a significant indirect effect of input factors on output/outcome through process factors, indicating that process factors significantly mediated the relationship between input factors and output. The mediation was competitive, thus, the presence of mediator variable rather competes and decreases the effect of input on output.

### **Differences in the proposed model with regard to school type and school location**

Input factor was a significant predictor of output for schools in both rural, and urban areas, with large effect size. In addition, process factor significantly predicted output in both rural, and urban areas, with large effect size. Input and process factors jointly explained 93% and 88% of the variances in output for schools in urban and rural areas respectively. There was a significant indirect effect of input factor on output/outcome through process factor for both rural and urban schools. Further analysis revealed an indirect effect of input on output through process factor for urban was greater than the rural. Comparatively, the effect of input on outcome reduced from .48 to .43 for urban, with the introduction of process factor. The multi group analysis revealed a statistically difference between the indirect effect for the urban and rural schools. Even though, generally process factor reduced the effect of input factors on output, it was better for urban schools than rural schools.

Input factor was a significant predictor of output factor in both public and private schools, with large effect size. Also, process factor significantly predicted output in both public and private schools, with moderate effect size. Input and process factors jointly explained 88% and 90% of the variances in output for public and private schools respectively. Further, input factor was a significant predictor of process factor in both public and private schools with large effect size for public and private schools respectively. The study revealed a significant indirect effect of input factor on output/outcome through process factor for both public and private schools. Although, the indirect effect

of input on output through process factor for private school was greater than the public school. This difference was not statistically significant.

### **Conclusions**

It can be concluded that junior high schools in Central Region lack textbooks in Integrated Science, Mathematics and English Language. This resulted in more pupils using few textbooks. Aside the textbooks, other essential facilities were absent. Parents were also found to play little role in monitoring the activities of their children in school. In a general view, some input factors were present while others were absent. This speaks to the fact that some major stakeholders have been redundant in playing their role in improving quality of education. Due to the challenges with the absence of some input factors, there appears to be challenges in improving the process factors. The completion of syllabi, for example, depends on the availability of teaching and learning materials, availability of laboratory and library facilities, and adequate textbooks. Again, if parents do not provide the needed materials for their wards, it becomes difficult for the child to learn.

Obviously, the input factors to a greater extent influence the process factors which also affects the output. The study concluded that just the existence of input factors is not enough to improve academic achievement of pupils. However, the process factors are also significant. That is, process factors explains the relationship between input factors and academic performance. From the foregoing, if input and process factors are not adequate, performance of pupils suffer. In a case where urban schools were found to have better input and process factors, pupils in such schools will definitely perform well than pupils in rural schools. Therefore, the poor

performance of pupils in rural schools can be attributed to the fact that input and process factors in these schools are not adequate and accessible in some cases. Generally, the government should not only be interested in providing input factors but also make sure that process factors exist, since adequate input factors will need sufficient process factors to improve academic performance. Irrespective of the availability and adequacy of input factors, performance will continue to be poor if process factors are inadequate.

### **Recommendations for Policy and Practice**

Based on the findings of the study and the conclusions drawn, the following recommendations were made:

1. Head teachers should liaise with Ghana Education Service to provide adequate textbooks in Integrated Science, English language and Mathematics to reduce the gap in students to textbook ratio.
2. Ghana Education Service should provide sufficient infrastructure for the basic schools in the Central Region of Ghana. The infrastructure should centre on library facilities, science laboratory resources, and teaching and learning materials.
3. Parents of pupils in junior high schools in the Central Region of Ghana are, by the findings of this study, encouraged to involve themselves in their wards education. Head teachers and teachers should develop policies which will force parents to regularly visit the school to find out how their wards are doing in school.
4. Head teachers should put in place strategies to ensure that teachers complete the syllabi on time. This can be done by regular supervision of the activities of the teachers.

5. During Parents Teachers Association meetings, parents/guardians should be sensitise on the need to play a part in instilling discipline among pupils.
6. Ghana Education Service and heads of school should not only focus on providing input factors but also process factors in schools to improve academic performance. This is because even when input factors are present without adequate process factors, output is low.
7. The Ministry of Education should give special attention to rural schools when providing input and process factors to schools. This is because the effect of the absence of input and process factors on output is large for rural schools.

### **Contribution to Knowledge**

1. The use of SEM which is a more powerful and robust statistical technique brings to bear and also provides a better estimate for the contribution of input and process factors to the output.
2. The testing of the mediation effect provides clarity empirically on the role and essence of the direct effect of process factors on output.
3. My study has shown empirically that irrespective of how efficient the input factors are, when the process factors are not carefully managed or implemented, the effect of input on output will be thwarted.

### **Recommendations for Further Studies**

Notwithstanding the findings of the study, it is recommended that further studies should focus on replicating the study in other administrative regions since the calibre of basic schools in every region differ. Future researchers could also increase the sample size to improve generalisation of

the findings. It is also recommended that future studies should modify the measurement of the input and process factors in the schools not as in the case of this study. Observation and intense documentary analysis could be done to obtain an accurate measure of the input and process factors. Again, it is recommended that, the subjects which were not covered in this study should be looked at. The primary education level should be evaluated since this study only evaluated the junior high schools.

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## APPENDICES

APPENDIX A

INTRODUCTORY LETTER 1

UNIVERSITY OF CAPE COAST  
COLLEGE OF EDUCATION STUDIES  
FACULTY OF EDUCATIONAL FOUNDATIONS  
**DEPARTMENT OF EDUCATION AND PSYCHOLOGY**

Telephone: 233-3321-32440/4 & 32480/3  
Direct: 033 20 91697  
Fax: 03321-30184  
Telex: 2552, UCC, GH.  
Telegram & Cables: University, Cape Coast  
Email: [edufound@ucc.edu.gh](mailto:edufound@ucc.edu.gh)



UNIVERSITY POST OFFICE  
CAPE COAST, GHANA

13<sup>th</sup> February, 2019

Our Ref:

Your Ref:

**To Whom It May Concern**

Dear Sir/Madam,

**LETTER OF INTRODUCTION  
MS. REGINA MAWUSI NUGBA**

We introduce to you Ms. Regina Mawusi Nugba, a PH.D student from the Department of Education and Psychology, University of Cape Coast. She is pursuing PH.D degree programme in Measurement and Evaluation and is currently at the thesis stage.

Ms. Nugba is researching on the topic:

*"Evaluating the Effectiveness (Quality) of Junior High School Education in the Central Region of Ghana".*

As part of the programme requirement, she is expected to collect data for her work and have opted to make the study at your institution/establishment for her project.

We would be most grateful if you could provide her the opportunity for the study. Any information provided would be treated as strictly confidential.

Thank you.

  
Gloria Sagoe  
Chief Administrative Assistant  
For: HEAD

## APPENDIX B

### INTRODUCTORY LETTER 2

# GHANA EDUCATION SERVICE

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



*Republic of Ghana*

*Tel.: 03321-32333  
Fax: 03321-32333  
Email: [gescentraleduc@gmail.com](mailto:gescentraleduc@gmail.com)  
My Ref. No. GES/CR/49/TJ/10*

Regional Education Office  
P.O. Box 111  
Cape Coast.

26<sup>th</sup> March, 2018.

Your Ref. No.....

#### LETTER OF INTRODUCTION

MS. REGINA MAWUSI NUGBA

We introduce to you Ms. Regina Mawusi Nugba, a PH.D student from the Department of Education and Psychology, University of Cape Coast. She is pursuing PH.D degree program in Measurement and Evaluation and is currently at the thesis stage.

Ms. Nugba is researching on the topic:

**"Evaluating the Effectiveness and Quality of Junior High School Education in the Central Region of Ghana"**

As part of the programme requirement, she is expected to collect data for her work and has opted to make the study in selected Districts in the Region.

We would be most grateful if you could provide her the opportunity for the study. Any information provided would be treated as strictly confidential.

Thank you.

  
JANE SABINA OBENG (MRS.)  
REGIONAL DIRECTOR OF EDUCATION  
CENTRAL

MS. REGINA MAWUSI NUGBA  
DEPARTMENT OF EDUCATION AND PSYCHOLOGY  
UNIVERSITY OF CAPE COAST  
CAPE COAST

Cc: All Metro/Municipal/District Directors of Education  
Central Region

APPENDIX C

QUESTIONNAIRE FOR HEADTEACHERS

UNIVERSITY OF CAPE COAST

SCHOOL OF GRADUATE STUDIES AND RESEARCH

FACULTY OF EDUCATIONAL FOUNDATIONS

DEPARTMENT OF EDUCATION AND PSYCHOLOGY

The purpose of this questionnaire is to evaluate the effectiveness (quality) of Junior High Schools (JHSs) education in the Central Region of Ghana. It is hoped that the results of the research will help expose the lapses in our educational system and aid in policy decisions concerning effectiveness of JHSs in Ghana. Please, respond to all items and do it honestly. No attempt will be made to associate your name with the completed instrument. All information will be kept confidential. Thank you for your time.

**Instructions**

Please read each question carefully and indicate the response that appropriately applies to you. Please indicate your response to each item by ticking [√] or writing in the appropriate space provided.

**Section A: Demographic Data**

Please tick [√] the appropriate box or provide the needed response.

1. Name of your school .....  
.....
2. Gender:
  - a. Male [     ]
  - b. Female [     ]
3. Which of the following describes your highest educational achievement?
  - a. Master of Philosophy (M.Phil.) [     ]
  - b. Master of Education (M.Ed.) [     ]
  - c. Master of Art (MA)/ Master of Science (MSc) [     ]

- d. Bachelor of Education (B.Ed. Maths, Sci, Arts etc.) [ ]
  - e. Bachelor of Arts/Sci/Mgt (BA, BSc, B.Com. etc.) [ ]
  - f. Higher National Diploma (HND) [ ]
  - g. Diploma in Basic Education (DBE) [ ]
  - h. Senior High School (SHS) [ ]
  - i. Others (Please specify).....
4. Are you a trained or untrained teacher?
- a. Trained [ ]
  - b. Untrained [ ]
5. How many years have you been teaching (in years)?  
.....
6. How long have you held the position as headteacher in this school (in years?).....
7. Teachers' Attendance Record:
- Teachers are: On time for classes [ ]
  - Not on time for classes [ ]
  - Teachers sign in and sign out [ ]
  - Teachers do not sign in and sign out [ ]
  - Teachers sign in but do not sign out [ ]
  - Teachers do not sign in but sign out [ ]
8. What category is your school?
- a. Private [ ]
  - b. Public [ ]

**Section B: Essential Input Factors in the Schools**

9. Class size (s) at Form 3 is/are.....
10. What is the textbook-student ratio in your school for the JHS 3 in the following subjects?
- A. **English language**
    - a. 1:1 (one book to one student) [ ]
    - b. 1:2 (one book to two students) [ ]
    - c. 1:3 (one book to three students) [ ]
    - d. 1:4 (one book to four students) [ ]
    - e. 1:5 or more (one book to five or more students) [ ]

**B. Mathematics**

- a. 1:1 (one book to one student) [    ]
- b. 1:2 (one book to two students) [    ]
- c. 1:3 (one book to three students) [    ]
- d. 1:4 (one book to four students) [    ]
- e. 1:5 or more (one book to five or more students) [    ]

**C. Science**

- a. 1:1 (one book to one student) [    ]
- b. 1:2 (one book to two students) [    ]
- c. 1:3 (one book to three students) [    ]
- d. 1:4 (one book to four students) [    ]
- e. 1:5 or more (one book to five or more students) [    ]

For each of the following statements, please tick [✓] the appropriate box. From No extent to Greater extent, where **No extent = 1; and Greater extent = 5.**

No extent – Depicts situation where the input factor is non-existent. Greater extent – Depicts situation where the input factor exists, adequate, and is of high quality.

No.	Statements	No -----> extent				
		Greater extent				
		1	2	3	4	5
11.	There are supplementary readers in English in the school for students to access.					
12.	Students have access to a library in the school					
13.	Student have access to a library in the classroom (cupboard)					
14	There are instructional materials for teaching and learning process in the school (e.g. chart )					
15	Every student has access to a table and chair (dual desk, mono desk) in the classroom					
16	The school has access to electricity					

17	The school has a science laboratory					
18	The science laboratory is equipped with materials and equipment					
19	Spaces within the classrooms allow free movement during lesson delivery.					
20	Parents provide the needed material (e.g. books and Pencils) for their children learning.					
21	Parents visit the school to appraise the achievement level of their children at least twice in a term.					

**Section C: Process Factors in Junior High School Education**

22. What percentage of the syllabus is taught by the end of the year in Form 3?

- a. Below 50% [     ]
- b. Between 50 – 60% [     ]
- c. Between 70 – 80% [     ]
- d. Above 90% [     ]

For each statement, please tick [√] the appropriate box. Where **Strongly**

**Disagree = 1; Disagree = 2; Agree =3 and Agree Strongly**

No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
23	Students are regular to school.				
24	Students are punctual to school.				
25	Teachers are regular to school.				
26	Teachers are punctual to school.				
27	Teachers find it difficult to complete the syllabus for final year students in general.				
28	Teachers are able to complete				

	the respective syllabi on time for English Language.				
29	Teachers are able to complete the respective syllabi on time for Mathematics.				
30	Teachers are able to complete the respective syllabi on time for Integrated Science.				
31	Teachers find it easy to approach me as the head-teacher.				
32	On school issues, decision making is done by committees.				
33	As a head-teacher, I delegate management responsibilities to my staff members.				
34	As a head-teacher, I respond to expressed feelings by staff and students.				

Rate parents/guardians and community members/leaders as stakeholders involvement in your school using a four point scale (Not at all =1, a little =2, much =3, very much =4). For each statement, please tick [✓] the appropriate box. Not at all: Stakeholders do not involve themselves in school activities. Very much: Stakeholders involve themselves in school activities and contribute to school developmental projects.

No.	Statements	Not at all	A little	Much	Very much
35	Parents/guardians and community members are involved in building classrooms to assist the school.				
36	In my school, there is a good staff, parents/guardians (PTA) working relationship.				
37	Parents/guardians and community members are involved in instilling discipline by engaging with the school to come out with rules that bind the conduct of students.				
38	Apart from school fees, parents/ guardians and community members and leaders contribute financially for school extra expenses. (e.g. Building project or purchase of learning materials)				

**APPENDIX D**  
**QUESTIONNAIRE FOR TEACHERS**

**UNIVERSITY OF CAPE COAST**  
**SCHOOL OF GRADUATE STUDIES AND RESEARCH**  
**FACULTY OF EDUCATIONAL FOUNDATIONS**  
**DEPARTMENT OF EDUCATION AND PSYCHOLOGY**

The purpose of this questionnaire is to evaluate the effectiveness (quality) of Junior High Schools (JHS) education in the Central Region of Ghana. It is hoped that the results of the research will help in policy decisions concerning effectiveness of JHSs in Ghana. Please, respond to all items and do it honestly. No attempt will be made to associate your name with the completed instrument. All information will be kept confidential. Thank you for your time.

**Instructions**

Please consider each of the questions carefully and indicate the answer that appropriately applies to you. Please indicate your response to each item by ticking [] or providing the appropriate answers in the spaces provided.

**Section A: Demographic Data**

Please tick [] the appropriate box

1. Name of your school .....
2. Gender:
  - A. Male []
  - B. Female []
3. Which of the following describes your highest educational achievement?
  - A. Master of Philosophy (M.Phil.) []
  - B. Master of Education (M.Ed.) []
  - C. Master of Art (MA)/ Master of Science(MSc) []
  - D. Bachelor of Education (B. Ed Maths, Sci, Arts etc.) []
  - E. Bachelor of Arts/Sci/Mgt (BA, BSc, B.Com. etc.) []
  - F. Higher National Diploma (HND) []
  - G. Diploma in Basic Education (DBE) []

- H. Senior High School (SHS) [     ]  
I. Others (Please specify).....
4. Are you a trained or untrained teacher?
- A. Trained [     ]  
B. Untrained [     ]
5. Indicate the subject(s) you currently teach at the JHS 3 level
- A. English language [     ]  
B. Mathematics [     ]  
C. Science [     ]
6. Number of students in your JHS 3 class.....
7. How long have you been teaching in this school (in years)?  
.....
8. What category is your school?
- a. Private [     ]  
b. Public [     ]
9. Have you ever attended an in-service training after your appointment as a teacher to your current school?
- A. Yes  
B. No
10. If your answer is yes to question 9, how many times did you attend this in-service training since your appointment to this school? .....

**Section B: Essential Input Factors in the Schools**

For each of the following statement, please tick [] the appropriate box to indicate textbook-student ratio that apply to your class and subject.

11. What is the textbook- student ratio in your school for the JHS 3 in the subject you teach?

**A. English language**

- a. 1:1 (one book to one student) []
- b. 1:2 (one book to two students) []
- c. 1:3 (one book to three students) []
- d. 1:4 (one book to four students) []
- e. 1:5 or more (one book to five or more students) []

**B. Mathematics**

- a. 1:1 (one book to one student) []
- b. 1:2 (one book to two students) []
- c. 1:3 (one book to three students) []
- d. 1:4 (one book to four students) []
- e. 1:5 or more (one book to five or more students) []

**C. Science**

- a. 1:1 (one book to one student) []
- b. 1:2 (one book to two students) []
- c. 1:3 (one book to three students) []
- d. 1:4 (one book to four students) []
- e. 1:5 or more (one book to five or more students) []

For each of the following statements, please tick [] the appropriate box. From

No extent to Greater extent, where **No extent = 1; and Greater extent = 5.**

No extent – Depicts situation where the input factor is non-existent.

Greater extent – Depicts situation where the input factor exists, adequate, and is of high quality.

No.	Statements	No extent -----> Greater extent				
		Greater extent				
		1	2	3	4	5
12	There are supplementary books in my subject area for students to access.					
13	Students have access to library in the					

	school/classroom.					
14	I use teaching-learning materials to illustrate concepts in my classroom(s)					
15	There are instructional materials for teaching and learning process in my subject area.					
16	Students have access to a table and chair/dual desk/mono desk in the classroom.					
17	The school has access to electricity					
18	The school has a science laboratory					
19	The science laboratory is equipped with materials and equipment					
20	Spaces within the classrooms allow free movement during lesson delivery.					
21	Parents provide the needed material (books, Pencils, etc.) for their children learning at					
22	Parents visit the school to appraise the achievement level of their children at least times in a term.					

**Section C: Process Factors in Promoting Junior High School Education**

Please consider the following statements on process factors used in the provision of quality education in your school and indicate the answer that appropriately applies to you.

For each statement, please tick [√] the appropriate box.

23. What percentage on the average of the syllabus do you complete at the end of the year in your subject area in Form 3?

- a) Below 50% [        ]
- b) Between 50 – 60% [        ]
- c) Between 70 – 80% [        ]
- d) Above 90% [        ]

For each statement, please tick [√] the appropriate box. Where **Strongly**

**Disagree = 1; Disagree = 2; Agree =3 And Agree Strongly**

No.	Statement	Strongly Disagree	Disagree	Agree	Agree Strongly
24	My students are regular to school.				
25	My students are punctual to school.				
26	I find it difficult to complete the syllabus for final year students in my subject area.				
27	I am able to complete the syllabus on time for the Form 3 students in my subject area.				
28	I find it easy to approach the head-teacher.				
29	I have a good relationship with other staff, students, parents				

	/guardians and community members/ leaders.				
30	On school issues, decision making is done by committees.				
31	My head-teacher delegates management responsibilities to staff members.				
32	My head-teacher responds to expressed feelings by staff and students.				

Rate parents/guardians and community members/leaders as stakeholders involvement in your school using a four point scale (**1 = Not at all, 2 = a little, 3= much, 4 = very much**). For each statement, please tick [√] the appropriate box. Not at all: Stakeholders do not involve themselves in school activities. Very much: Stakeholders involve themselves in school activities and contribute to school developmental projects.

No.	Statements	Very much	Much	A little	Not at all
33	Parents/guardians and community members are involved in building classrooms to assist the school.				
34	In my school, there is a good staff, parents/guardians (PTA) working relationship.				
35	Parents/guardians and community members are involved in instilling discipline by engaging with the school to come out with rules that bind the conduct of students.				
36	Apart from school fees, parents/ guardians and community members and leaders contribute financially for school extra				

	expenses. (e.g. Building project or purchase of learning materials)				
37	Parent-teacher (PTA) meetings are conducted to discuss students' progress and challenges				

**APPENDIX E**  
**QUESTIONNAIRE FOR PUPILS**  
**UNIVERSITY OF CAPE COAST**  
**SCHOOL OF GRADUATE STUDIES AND RESEARCH**  
**FACULTY OF EDUCATIONAL FOUNDATIONS**  
**DEPARTMENT OF EDUCATION AND PSYCHOLOGY**

The purpose of this questionnaire is to evaluate the effectiveness (quality) of Junior High Schools (JHS) education in the Central Region of Ghana. It is hoped that the results of the research will help in policy decisions concerning effectiveness of JHSs in Ghana. Please, respond to all items and do it honestly. No attempt will be made to associate your name with the completed instrument. All information will be kept confidential. Thank you for your time.

**Instructions**

Please consider each of the following questions carefully and indicate the answer that appropriately applies to you. Please indicate your response to each item by ticking [] or writing in the appropriate space provided.

**Section A: Demographic Data**

1. What is the name of your school?  
.....
2. Gender
  - a. Male []
  - b. Female []
3. How do you commute to school every day?
  - a. On foot []
  - b. Public transport []
  - c. Private transport []
4. What category is your school?
  - a. Private []
  - b. Public []
5. How many minutes do you take to commute from your house to school in a typical school day? .....
6. How many are you in class? .....

**Section B: Essential Input Factors in the Schools**

For each statement, please tick [√] the appropriate box.

7. Indicate the availability of English, Mathematics and Integrated Science textbooks in class.

A. English language

- a. I have one book for myself [     ]
- b. Two people share one book [     ]
- c. Three people share one book [     ]
- d. Four people share one book [     ]
- e. Five or more people share one book [     ]

B. Mathematics

- a. I have one book for myself [     ]
- b. Two people share one book [     ]
- c. Three people share one book [     ]
- d. Four people share one book [     ]
- e. Five or more people share one book [     ]

C. Integrated Science

- a. I have one book for myself [     ]
- b. Two people share one book [     ]
- c. Three people share one book [     ]
- d. Four people share one book [     ]
- e. Five or more people share one book [     ]

For each of the following statements, please tick [√] the appropriate box. From

No extent to Greater extent, where **No extent = 1; and Greater extent = 5.**

No extent – Depicts situation where the input factor is non-existent.

Greater extent – Depicts situation where the input factor exists, adequate, and is of high quality.

No.	Statements	No extent -----> extent				
		Greater extent				
		1	2	3	4	5
8.	There are some other books such as story books in the school for students to access.					
9.	I have access to a library in the school/classroom					

No.	Statements	No -----> extent Greater extent				
		1	2	3	4	5
		10	I have access to a table and chair/desk/mono desk in the classroom.			
11	The school has access to electricity					
12	The school has a science laboratory					
13	The science laboratory is equipped with ma and equipment					
14	Spaces within the classrooms allow free movement during lesson delivery.					
15	My parents provide the needed material (bo Pencils, etc.) for my learning at school.					
16	My parents visit the school at least twice a t to appraise my achievement level with the t					

**Section C: Process Factors in Junior High School Education**

For each statement, please tick [√] the appropriate box. Where **Strongly**

**Disagree = 1; Disagree = 2; Agree =3 And Agree Strongly**

No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
17	Teachers are regular to school.				
18	Teachers are punctual to school.				
19	Teachers are able to complete the respective syllabi on time for English Language.				
20	Teachers are able to complete				

	the respective syllabi on time for Mathematics.				
21	Teachers are able to complete the respective syllabi on time for Integrated Science.				
22	I find it easy to approach the head-teacher.				
23	My head-teacher praises both teachers and students for work done in the name of the school.				
24	My head-teacher responds to expressed feelings by staff and students.				

Rate parents/guardians and community members/leaders as stakeholders involvement in your school using a four point scale (1 = **Not at all**, 2 = **a little**, 3 = **much**, 4 = **very much**). For each statement, please tick [✓] the appropriate box. Not at all: Stakeholders do not involve themselves in school activities. Very much: Stakeholders involve themselves in school activities and contribute to school developmental projects.

No.	Statements	Very much	Much	A little	Not at all
25	Parents/guardians and community members are involved in building classrooms to assist the school.				
26	In my school, there is a good staff, parents/guardians (PTA) working relationship.				
27	Parents/guardians and community members are involved in instilling discipline				

	by engaging with the school to come out with rules that bind the conduct of students.				
28	Apart from school fees, parents/guardians and community members and leaders contribute financially for school extra expenses. (e.g. Building project or purchase of learning materials)				

APPENDIX F

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST  
COLLEGE OF EDUCATION STUDIES  
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE  
CAPE COAST, GHANA



Our Ref: CES-ERB/UCC.edu/v3/19-14  
Your Ref: .....

Date: March 4, 2019

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

Chairman, CES-ERB  
Prof. J. A. Omotosho  
[jomotosho@ucc.edu.gh](mailto:jomotosho@ucc.edu.gh)  
0243784739

Vice-Chairman, CES-ERB  
Prof. K. Edjah  
[kedjah@ucc.edu.gh](mailto:kedjah@ucc.edu.gh)  
0244742357

Secretary, CES-ERB  
Prof. Linda Dzama Forde  
[lforde@ucc.edu.gh](mailto:lforde@ucc.edu.gh)  
0244786680

The bearer, Regina Manusi Ngubg Reg. No ED/MEE/15/0002 is an M.Phil. / Ph.D. student in the Department of Education and Psychology in the College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He / She wishes to undertake a research study on the topic:

An evaluation of the effectiveness of Junior High School education in the Central Region of Ghana

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his proposal and confirm that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his study. The ERB would be grateful if you would give him the necessary assistance to facilitate the conduct of the said research.

Thank you.  
Yours faithfully,

Prof. Linda Dzama Forde  
(Secretary, CES-ERB)