School-environment, Teacher-related and Student-related Factors: Critical Causes of Low Academic Performance of Senior High School Students in Core Mathematics in the Kumasi Metropolis of Ghana

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Abstract
Mathematics is seen as the bedrock for scientific, technological and economic advancement of any country. The study explored the perceived causes of low academic performance of Senior High School students in core mathematics in the Kumasi Metropolis of Ghana. The study used the descriptive survey design with quantitative approach. Multi-stage sampling procedures were used to select a sample of 431 respondents (381 students and 50 core mathematics teachers). Students and teachers' questionnaires were used to collect data for the study. Means and standard deviations were used to analyse the data that was gathered. The findings of the study revealed that school-environment, teachers and students' factors such as inadequate teaching and learning materials, lateness and absenteeism, inability of teachers to complete their syllabus, students being unhappy in core mathematics classes and poor attitudes toward core mathematics as contributors to the low performance in core mathematics. Among others, recommendations were made based on enforcing the necessary laws by stakeholders in education to curb lateness and absenteeism, provision of TLMs and exhibition of good attitudes towards core mathematics.

Introduction
It is widely believed that education is seen as one of the key components of human and national development. Wambugi points that education is considered as a critical resource in that it helps a country to particularly equip the youth with respect to knowledge, skills and expertise in enabling them to be actively involved in the development of that country [1]. In this sense, the ability of a nation to develop largely depends on the availability of quality education to its citizens. The relevance of education that has been underscored globally has paved the way for the Ghanaian economy to put measures in place in ensuring that, its citizens are educated to acquire the necessary skills, knowledge and expertise to aid in the development of the country. The manifest function of education for a developing country like Ghana, therefore, is for the citizens to acquire the skill of literacy and numeracy [2]. With reference to the manifest function of education in Ghana, it is very clear that numeracy, which emphasises computational skills and particularly mathematics, is very important. Mathematics as a subject has a direct relationship with other subjects that are technical and scientific in nature. It is in this view that Tshabalala and Ncube stressed that

mathematics is the bedrock and a tool for scientific, technological and economic advancement of any country [3]. Mathematics is very vital not only because of the academic qualification one obtains, but also prepares the individual for the future irrespective of the work of life has he or she chosen [4]. It relates to everything in the universe which is connected to the daily life of individuals and thus, remains the subject that education and humans cannot function meaningfully without [5].

Mathematics as a discipline is therefore held in high esteem due to its presence in all scientific discoveries [6]. Notably, radio, television, telegrams, satellites, computers and calculators, among others, would not have come to being without the numerous results in pure mathematics [6]. The importance of school mathematics is emphasised by its usage in various contexts and thus, people working in the public and private sectors require some basic (core) knowledge of mathematics in their daily endeavours. UNESCO's report in science and technology in Africa maintains that, the development of knowledge and skills in mathematics is quintessential as it holds the key to Africa's industrialisation and poverty alleviation [7]. In Ghana, mathematics and more specifically, core mathematics is given all the necessary importance regarding the curriculum and all educational policies from the basic level to the secondary level. Sa'ad, Adamu

and Sadiq explain that core mathematics helps the individual to develop basic computational skills which foster the desire and the ability to be accurate in problem-solving and also prepares the mind of the individual to appreciate and understand further mathematics [8]. In addition, the study of core mathematics helps the individual to develop logical and abstract thinking, recognise problems and provide solutions to, with related mathematical knowledge and also inculcate in the individual the ability to be creative and curious in discovering solutions in their daily lives [8].

The vital role core mathematics plays has been recognised and that is why in Ghana, core mathematics is a compulsory subject in both basic and secondary schools. It is worth noting that, in Ghana, core mathematics is a prerequisite subject of study in all tertiary educational institutions that offer scientific and business courses and as a requirement for most employment opportunities. In this regard, a student must obtain a grade from A1 to C6 in West African Senior Secondary School Certificate Examination in order to satisfy the admission requirement in core mathematics. This suggests that, there is the need for students who want to pursue their education in tertiary institutions and secure attractive employment opportunities to perform well in core mathematics. There is therefore the need

to put in measures in boosting students' academic performance in mathematics and especially core mathematics.

Unfortunately, in all the priorities attached to core mathematics and the relevance placed on the subject in the academic lives of the students, it remains one of the poorly performed core subjects in Ghana regarding the West African Secondary School Certificate Examination, and thus, Senior High School students in the Kumasi Metropolis are of no difference [9]. As indicated in the Educational Sector Performance Report, core mathematics always achieves significantly lower pass rates as compared to Social Studies, Integrated Science and English Language throughout the country of which the Kumasi Metropolis is included [10]. In the Educational Management Information System's Report from 2012 to 2016, comparing the pass rate of core mathematics to the pass rate of other core subjects like Social Studies, Integrated Science and English Language, students' academic performance in core mathematics has been very low over years.

Table 1 depicts the pass rates of Senior High School students in all the core subjects in WASSCE from 2012/2103 academic year to 2015/2016 academic year in the Kumasi Metropolis.

Table 1: Statistics on the Pass Rates in Core Subjects form 2012/2013 Academic Year to 2015/2016 Academic Year in WASSCE in the Kumasi Metropolis

Academic Year	Core Subjects	Total Candidates	Pass Rates (A1 – C6)
2012/2013	Core Mathematics	42,516	20,756 (49%)
	English Language	43,833	29,324 (67%)
	Social Studies	43,474	35,648 (82%)
	Integrated Science	42, 854	23,579 (55%)
2013/2014	Core Mathematics	35,660	25,554 (72%)
	English Language	35,660	31,001 (87%)
	Social Studies	35,660	27,337 (77%)
	Integrated Science	35, 660	31,144 (87%)
2014/2015	Core Mathematics	24,076	13, 773 (57%)
	English Language	24,135	17,786 (67%)
	Social Studies	24,909	16,666 (82%)
	Integrated Science	24,109	14,231 (59%)
2015/2016	Core Mathematics	33,355	11007 (48%)
	English Language	32,458	17203 (69%)
	Social Studies	33,122	23517 (70%)
	Integrated Science	33,467	16399 (66%)

Source: EMIS (2012-2016); Ashanti Regional Education Office, 2018.

It can be observed from the Table 1 that, students' academic performance in core mathematics from 2012/2013 to 2015/2016 academic years has been low as compared to the other core subjects in the Kumasi Metropolis. The ultimate question to ask however, has to do with the causes of the low academic performance students have demonstrated regarding core mathematics in recent years. It should be emphasised that, the academic performance of students in various subjects of which core mathematics plays a role has resulted in an increased attempt to identify the possible factors responsible for the low academic performance of students. For instance, Anamuah-Mensah has indicated that the lack of effective

supervision and monitoring in schools, lack of motivation for teachers as well as inadequate number of qualified teachers contribute to the poor academic performance of students. Similarly, Etsey and Baidoo-Anu stressed that factors relating to the environment of the school, teachers, students, and parents contribute to the low academic performance of students [11-13]. Furthermore, factors such as intellectual ability, poor study habit, lack of goals, low self-esteem, low socio-economic status of the family, anxiety, poor family structure, among others are responsible for the low students' academic performance in core mathematics [14]. Looking at the relevance of core mathematics in the lives of students and the

economy as a whole, and with the factors identified in literature, it is very likely that some of these factors might have caused Senior High School students in Kumasi Metropolis to perform low in core mathematics as compared to the other core subjects over the years. It is against this background that the study has become necessary to explore the perceived causes of the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis of the Ashanti Region of Ghana.

Concept of Academic Performance

Academic performance can be viewed as a successful attainment or accomplishment in a specific subject area which include the assignment of grades, marks and scores aimed at describing a trait possessed by students [15]. As indicated by Ferla, Martin and Yonghong, academic performance depicts an individual's knowledge and perception he or she possesses with respect to his or her academic capability in performing successfully a given academic task at a designated level [16]. The concept of academic performance can therefore be likened to a stable judgment about an individual's perceived ability in a specific academic domain or a given academic task [16]. Adane emphasised that academic performance of students can be more objective due to the fact that numerous scores are assigned to students' learning outcomes [11]. This is done to measure the degree of students' adaptability in the entire educational system. On the other hand, the fact that academic success depends on the students' attitudes towards their academic achievement and themselves and attitudes of significant others towards their success and themselves, academic performance can be subjective. Academic performance of students in core mathematics can be high or low. For the purpose of this study, the emphasis is laid on low academic performance which has been shown to be demonstrated in the performance of students in core mathematics in the Kumasi Metropolis. As indicated by Diaz, low academic performance refers to a situation where subjects are unable to accomplish the expected abilities regarding a chosen domain which consequently affects their personality and entire life [17]. Similarly, Aremu noted that low academic performance specifically describes a situation where the performance of the examinee falls below the expected standard which is set by the evaluator of the performance [18].

School-environment factors and academic performance in mathematics

Mwenda, Gitaari, Nyaga, Muthaa and Reche note that school environmental factors denote how the quality of the physical environment and facilities as well as the perceptions students have about their school have an influence on their academic performance [19]. The factors include the availability of teaching and learning materials, location of the school, the quality of the physical facilities class size, teacher to student ratio, qualification of teachers, teachers' experience and supervision. The school environment factors also include preparation and vetting of lesson notes, organisation of in-service training and regular staff meetings, among others [12,19]. Lockheed and Verspoor maintained that teaching and learning materials facilitate the instructional processes due to the fact that they provide information, help in the organisation of the scope and the sequence of the instruction and provide opportunities for the students to apply the concepts they have learned [11]. This suggests that in cases where one or more of these factors identified is/are missing in the school environment, students' learning will be affected negatively and consequently affect students' academic performance.

It is evident that students exhibit a good performance when they have adequate instructional materials or aids (such as textbooks, teachers' guides, pictures, etc.) that will facilitate their learning and teaching processes [11]. In essence, the availability and adequacy of the use of these teaching and learning materials significantly affect the effectiveness and the efficiency of the teacher's lessons regarding the subject he or she teaches.

Mwenda et al. posited that the location of the school and the quality of the school tend to influence the performance of students [19]. This is because, the location of school specifically determines the patronage of students regarding the school and the general unattractiveness of physical plant and structure of the school building can be demotivating to learners which will lead to low patronage in school activities [20]. It is in this sense that Yinusa and Akanle stressed that good sitting arrangement and good building of the school result in high academic performance of students whereas dilapidated school plants lacking conducive environment as well as no sitting arrangements can be destructive [21]. A study was conducted by Engin-Demir on factors that influenced the academic achievement of poor urban primary school students in Turkey [22]. The study used a sample size of 719 respondents which included sixth, seventh and eighth graders who were selected through simple random sampling procedures. The study revealed that attending a school with a good and better school environment or plant is positively related and associated with increased mathematics scores. It can concluded from the finding of Engin-Demir that academic performance can be attributed to good infrastructure and the quality of the school environment [22].

A study by Fabunmi, Brai-Abu and Adeniji which focused on classroom factors as determinants of secondary school students' academic performance in mathematics in Oyo State, Nigeria, with a sample of 200 out of 336 secondary schools who were randomly selected, revealed that schools with smaller class sizes which include classroom space and class utilization rate tend to perform better academically than schools with larger class sizes [23]. In addition, a study by Salfi and Saeed revealed a significant negative relationship between school size and student's academic performance [24]. The study by Salfi and Saeed focused on relationship among school size, school culture and students' achievement at secondary school level in Pakistan [24]. The sample for the study included 90 secondary school head teachers and 540 primary, elementary and high school teachers who were working in government boys' secondary schools who were selected randomly. It was revealed that small class size performed better than medium and large class sizes and thus, concluded that class size is inversely related to student's academic performance. The assertion made by Salfi and Saeed and Fabunmi et al was emphasised by Kraft who opined that class sizes above forty (40) relate negatively to the academic performance of students and further noted that large class sizes are not conducive for serious academic experiences [11,23,24].

Studies have shown that schools that possess effective and efficient supervision regarding the teaching and learning activities result in high performance rates of students. For instance, a study conducted by Usman on the impact of instructional supervision on academic performance of secondary school students in Nasarawa State, Nigeria has shown a significant positive relationship between instructional supervision and academic achievement [25]. The study by Usman

was a descriptive survey in which instructional supervision and students' academic performance questionnaire were used to obtain relevant information from 92 teachers and 37 secondary schools using the simple random sampling procedure [25]. The result of Usman's study showed that regular instructional supervision using robust supervision strategies such as checking of students' notebooks, classroom visitation and inspection by school administrators, checking teachers' lesson plans and inspection of teachers' record keeping have significant positive relationship with teacher and students' performance in the secondary schools that were surveyed [25]. It is in this regard that a study by Ghanney and Aniagyei which investigated into the poor academic performance of students at public Junior Secondary School level in Obuasi Municipality with sample of 60 students, 15 teachers and 15 parents who were selected through simple random and stratified sampling procedures revealed that irregular supervision had a significant correlation (p < .05, r = .075) with performance in mathematics and that resulted in the poor performance of the schools [26].

Teacher-Related Factors and Academic Performance in Mathematics

Several factors emanating from the teacher such as attendance in school, interest in students' understanding and motivation, effectiveness of teaching, methods of teaching, use of language, completion of syllabus, preparation of lesson notes, mastery of content, etc. affect the performance of students [12,19,27]. From the work of Mwnenda et al. teachers' absenteeism, lateness and poor teaching methods contribute to the low academic performance of students. The study by Mwenda et al. focused on factors contributing to students' poor performance in mathematics in public secondary schools in Tharaka South District, Kenya [19]. The study used the descriptive survey design with a sample of 248 respondents who were elected through stratified and proportionate sampling procedures. The result of the showed that teachers' absenteeism and lateness contributed to low academic performance of students [19]. According to the World Bank, teachers' lateness and absenteeism at the basic and secondary school levels in Ghana have been worsened over the last years leading to low academic performance of students [28].

The study by World Bank was a national survey which was conducted in collaboration with the Ghana Statistical Service and the Ministry of Education, Youth and Sports [28]. It sought to evaluate school buildings, availability of books and learning outcomes. By using the mixed method approach, data was obtained from the central government, local governments, school management, teacher morale and methods, enrolment, learning outcomes and school building from over 50 secondary and basic schools for a period of 15 years. The results of the survey showed that absenteeism was worse in rural schools than in urban schools and worse in public schools compared to private schools and thus, affecting students' academic performance. It was further revealed that factors such as long distance, difficulty in accessing salaries, farming activities, poor working conditions, low morale and high students-teacher ratio, and transportation difficulties also lead to teacher absenteeism. In addition, a study conducted by Wekesa which focused on assessment of factors affecting students' performance in mathematics at secondary school level in Kenya, with a sample size of 4500 students, 60 teachers and 150 principals who were selected through stratified sampling techniques revealed that teachers' experience, lateness and absenteeism affect students' academic performance in mathematics. The finding of Wekesa is

obvious because, when teachers are late, the teaching and learning process is also delayed which affect learning outcomes of students when it happens consistently [29]. From a survey by Adane which sought to identify factors that are responsible for the low academic achievement of pupils in Kemp Methodist Junior High School at Aburi in the Eastern region of Ghana, with a sample of 120 pupils, 31 teachers and 120 parents who were selected through multi-stage sampling procedures revealed that lateness ranging from five minutes to one and half hours affect pupils' academic performance [11].

The finding of Adane explains the findings of Etsey on causes of low academic performance of primary school pupils in the Shama Sub-Metro of Shama Ahanta East Metropolitan Assembly (SAEMA) in Ghana [11,12]. The study by Etsey used a causal-comparative (ex post facto) in which 25 primary schools which included 15 Shama sub-metro schools and 10 SAEMA high achieving schools with a total of 495 pupils, 25 head teachers, 133 teachers who were randomly selected and 581 parents who were interviewed [12]. The findings of the study showed that when syllabi are not completed, students usually find it very tedious to understand the content to be communicated especially in the next grade level because educational processes occur in a continuum. A notable contribution to the lack of completion of the syllabus is adjusting the curriculum based on what is included in high stake test in order to improve test scores. As indicated by Anane, teachers adjusted the sequence of their curriculum based on what is included in high stake tests like WASSCE in order to improve tests scores. In this sense, there is the likelihood that vital aspects in the syllabus that do not appear on test are ignored which contributes to lack of completion of the said syllabus [30]. This results in most students' inability to follow and monitor the school's work due to the fact that they do not have the understanding from previous work which is a prerequisite for the syllabus regarding higher grade levels [30].

Another perceived teacher's factor as affecting students' performance is motivation and interest. It is obvious that an individual who exhibits a high sense of motivation puts his or her maximum effort in the employment he or she finds him or herself. In this regard, Ofoegbu theorised poor academic performance of students as relating to poor teachers' motivation in accordance with teaching task, negative attitude toward work and poor teaching habits which lead to poor motivation [31]. In this regard, lack of motivation and low professional commitment by teachers stand the chance of producing poor attendance and unprofessional attitudes regarding students, teaching and learning process which will consequently affect students' academic performance [12]. Moreover, effective teaching and subject matter knowledge as demonstrated by the teacher have been underscored in literature as influencing students' academic performance [14]. From the work of Enu et al. which focused on factors influencing students' mathematics performance in some selected colleges of education in Ghana in which a sample size of 50 students were selected randomly revealed that teachers' knowledge tutors' method of instruction affect students' performance in mathematics [14]. It must be pointed out that although the sample size for the study was small to have generalised the findings but it is very obvious that the quality of teachers and the commitment they portray are essential regarding the achieving of high students' academic performance. Agyeman noted that teachers who do not possess both academic and professional qualification in teaching would have a negative influence on the teaching and learning of

their subject area [11]. This suggests that teachers' knowledge of the content or subject matter as well as availability and adequacy of textbooks, time and other learning materials are influential regarding the learning of the students [11].

Certain quality characteristics such as certification and qualifications in the subject to be communicated are very important and they positively relate with the outcomes of students especially in mathematics and science [32]. A survey was conducted by Darling-Hammond on teacher qualifications and other school inputs that were related to students' achievement in the United States of America [32]. The study used a total of 50 schools between the years of 1993 and 1994 who were selected randomly. The study revealed that teacher preparation and certification were the strongest correlates of student achievement in mathematics. Similar to the finding of Darling-Hammond, a study was conducted by Abuseji on student and teacher related variables as determinants of secondary school students' academic achievement in chemistry in Pakistan [32]. The study used a sample size of 321 Form two senior high school students and 98 teachers who were selected through simple random and stratified sampling procedures [33]. The results of the study showed that teachers with higher academic qualification possess more content and subject matter knowledge in high quality teaching skills such as feedback, questioning, explaining things clearly to students. As part of the teacher-related factors, according to a study by Etsey which focused on causes of low academic performance of primary school pupils in the Shama Sub-Metro of Shama Ahanta East Metropolitan Assembly (SAEMA) in Ghana with a sample of 495 pupils, 25 head teachers, 133 teachers who were randomly selected and 581 parents interviewed revealed that the use of language and especially the local language as a medium of instruction created deficiencies in the students which make them unable to understand the textbooks they needed to use [12]. This is because, the text books that are used by the pupils are written in English and in cases where the local language is used as a medium of instruction, it creates deficiencies in student's understanding which consequently results in low academic performance. In addition, understanding of the lesson as well as completion of syllabi are linked with output and outcome and thus, in cases where the teacher is not interested in the understanding of concepts by students or inability of the teacher to complete the syllabi leads to low academic performance [12].

Student-Related Factors and Academic Performance in Core Mathematics

A study was conducted by Engin-Demir which focused on the factors influencing the academic achievement of poor urban primary school students in Turkey with a sample size of 719 sixth, seventh and eighth graders who were selected through simple random sampling procedures [22]. It was found that irrespective of how intelligent a student was, students who devoted more time regarding their assignment and homework tend to improve on their grades which boost their academic performance. Gleaning from the finding by, the amount of time students devotes in doing his or her assignments increases their motivation and interest [22]. It is in this regard that a survey by Fraser and Kahle which focused on examining classroom, home and peer environment influences on student outcomes in science and mathematics using a sample of 7000 students who were selected through simple random sampling procedures revealed that homework tends to depict a positive relationship with respect to learning outcomes of students and that there is the need to extend

classroom learning to include giving homework to students [34]. An explanation to the position of Fraser and Kahle is when the given assignment is relevant to learning objectives, measured regularly, well explained, motivational, collected and when the necessary feedback is given [34]. In this sense, a study was conducted by Alomar on the personal and family paths to pupils' achievement in the United States of America. The used a sample size of 751 eighth grade pupils who were selected through simple random sampling procedures [35]. The results of the study showed that homework served as an interaction between the school and home which plays a central role measuring the academic performance of the students.

Moreover, students' attendance and regularity in class have the tendency of influencing their academic performance. As theorised by Allen-Meares, Washington and Welsh, poor students' attendance and irregularity resulting from cutting classes, unexcused absence from school, leaving school premises without permission, tardiness, among others are major determinants of students' academic performance [36]. An observation of the assertion by Allen-Meares et al. makes it clear that student's academic performance is negatively related to working during school hours. This is evident in the study conducted by Engin-Demir, Demir and Uygur [36,37]. The study by Engin-Demir et al. focused on examining the relationship between work, school performance and school attendance of primary school children in Turkey [37]. A sample of 652 working children and 423 non-working children from 23 schools in urban areas of the capital-Ankara were selected through cluster sampling procedures. The study revealed a significant difference in the school performance and school attendance of working and non-working children. It was further revealed that test scores and attendance of working children were lower than non-working children. From the findings of Engin-Demir et al. it can inferred that an increase in the working hours in school tend to decrease the academic performance of students and the vice versa [37].

Students' attitude which include absenteeism, indiscipline and truancy among others, also influence their performance. For instance Farrroq and Shah conducted a study on students' attitude towards mathematics in high schools in Pakistan [38]. The study used a sample size of 685 private and public 10th grade students who were selected thorough convenience sampling procedures. It was revealed by the study that students' success in mathematics significantly depend on the attitude towards the subject. The study further showed that attitudes such as students' absenteeism, lateness and indiscipline affect academic performance in mathematics. In addition, students' self-concept is very important in the academic performance of students. A study conducted by Diaz on the personal, family and academic factors affecting low achievement in secondary schools in Almeria, Spain, with a sample of 1178 students from four secondary schools, who were selected through stratified sampling procedures revealed that students' self-image about a specific subject facilitates his or her acceptance, rejection or interest and further motivates him or her do well in the subject and thus, self-image is a considerable factor in students' academic performance [17].

Help with studies at home affects students' academic performance and this was evident in Etsey's study on causes of low academic performance of primary school pupils in the Shama Sub-Metro of Shama Ahanta East Metropolitan Assembly (SAEMA) in Ghana [12]. The study by Etsey showed that help with studies

and homework supplement what is learnt in schools making those who are exposed to such aids perform high [12]. In addition, Etsey asserted that students' academic performance tends to be high when they enjoy the teachers' lessons [12]. It was revealed by Etsey in his study that students in high achieving schools enjoyed their teachers' lesson and factors accounting for this included commitment to teaching, adequate teaching and learning materials and teachers' professionalism [12]. It can be concluded that in situations where these attributes are low, students' performance is hindered and thus, the study seeks to find evident if some of these student-related factors are perceived to have caused the low performance in core mathematics over years in the Kumasi Metropolis.

With reference to the pass rate of students in core mathematics, it is obvious that students' academic performance in WASSCE with regard to core mathematics in the Kumasi Metropolis of the Ashanti Region of Ghana has been low. It must be emphasised that in cases where there is an improvement, it is very insignificant as compared to the other core subjects. For example, the pass rate in core mathematics in 2013/2014 academic year was 72%, the pass rate decreased in 2014/2015 academic year to 57% and further decreased to 48% in 2015/2016 (Educational Management Information System, [39]. In actual fact, comparing the pass rates of the other core subjects like English, Integrated Science and Social Studies, Senior High School students in the Kumasi Metropolis have recorded low performance in recent years in core mathematics which have created a lot of concerns. Looking at the relevance of core mathematics in our educational systems and in the lives of individuals, the low academic performance of students in core mathematics in the metropolis raises critical questions. Prominent among these questions is whether the causes emanate from teachers, students, school environment or parents. These are critical issues which have created a lot of concerns for some time now in the Kumasi Metropolis that need to be addressed.

Problem Statement
From the foregoing, numerous factors have been generally underscored as causes of low academic performance of students in core mathematics and other core subjects especially at the Junior High School levels in Ghana. Studies on the topic however are very limited with regard to the Senior High School levels in Ghana and especially in the Kumasi Metropolis. For instance, Agyemang have noted that teachers who do not possess the required academic and professional qualifications would consequently have a negative influence regarding the teaching and learning of his or her subject [12]. It was further stressed that, teachers who possess the required academic and professional qualification but work under unfavourable terms and conditions would be less dedicated to their work and become less productive than an unqualified teacher who works under favourable conditions and terms of service which will consequently affect students' academic performance [12]. Similarly, effective supervision of instruction improves the quality of teaching and learning [12]. This was justified by Etsey, Amedahe and Edjah that students in private schools perform better academically than their counterparts in public schools due to effective supervision of work. Another factor that might be responsible for low academic performance of students is motivation [12]. For example, it has been underscored that lack of motivation as well as professional commitment result in low or poor attendance and unprofessional attitudes toward students which consequently lead to low students' performance [12].

Factors such as availability and use of teaching and learning materials, class size, home-based factors, school environment and parental factors, among others, have been noted to affect students' academic performance [3,5]. It should be noted that, the presence of all or some of the factors identified in literature above, might have caused the low academic performance of Senior High School students in core mathematics in the Kumasi Metropolis in the Ashanti Region of Ghana. Most importantly, it is appropriate to obtain evidence of the availability of these and other factors responsible for the low academic performance of students in core mathematics in the Kumasi Metropolis. It is in this regard that the study has become necessary to obtain evidence of the perceived causes of the low academic performance of public Senior High School students in the Kumasi Metropolis of the Ashanti Region of Ghana.

Purpose of the Study
The main purpose of the study is to obtain evidence of the factors that caused the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis of the Ashanti Region of Ghana. The specific objectives of the study were to explore the perceived:
1. school-environment factors that contribute to the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis
2. teacher-related factors that cause the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis; and
3. Student-related factors responsible for the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis.

Theoretical Review
The study uses Bronfenbrenner ecological systems theory to better understand the study variables [40]. The theory emphasises the immediate environment of an individual which is made up of four layers of interacting systems which can affect the total development of that individual. The four layers as indicated by Bronfenbrenner included the microsystems, mesosystems, ecosystems and macrosystems [40]. The chronosystem was later added which talks about the element of time and thus, the theory can be extended to the development of an organisation and specifically, the theory is appropriate for describing the complex systems of schools, districts or individuals. The microsystem explains the patterns of activities, roles and interpersonal relationships a developing person experience in a specific setting. The microsystem of a school includes students, family and parents, administration of the school, teachers and the community [41]. The mesosystem emphasises the linkages and relationships between the microsystems. For instance, the mesosystem of an individual school can be looked at from the perspective of an interaction and dynamics between students and parents (two structures of microsystems). In this sense, the expectations of parents with respect to the academic performance and success in extra-curricular activities of their children can have a direct or an indirect impact regarding the climate of the school.

The exosystem system specifically denotes the larger social system as well as event, decisions, policies and contingencies which the developing individual has no control or influence [42]. In this regard, it can be inferred that factors that emanate from the teachers and the school as causing low academic performance can be considered in the

exosystem since the students do not have any control of these factors as affecting their performance. The macrosystem depicts the social blueprint of the culture, subculture and the general social context which consists of the pattern of values, lifestyles, customs, beliefs, opportunities and resources of the individuals in the society [42]. From the Macrosystem, it can be inferred that teacher-related factors, student factors and school environment encompass the macrosystem which are based on the cultural, political and economic systems of the school and the community as a whole. The chronosystem depicts a time-based dimension that influences the operation of the layers of the ecological systems. In this regard, the day-to-day and year-to-year activities and developmental changes of a school that relate to its students, teaching and non-teaching staff, content choices and years of operation of the school emphasises the chronosystem of that school.

With reference to the purpose of the study which sought to explore the perceived causes of low academic performance of Senior High School students in core mathematics, one ought to take into consideration the individual student and his or her immediate environment within which he or she lives. This theory is particularly quintessential in that it exposes the researcher to critically view the low academic performance of Senior High School students in core mathematics as a phenomenon that is influenced by wider social systems. The theory has carefully outlined that students or children are directly located in some of the social systems such as the household, school, immediate neighbourhood and other social systems which they are not directly represented but impinges on their development as individuals. This includes social networks, siblings, parents, workplaces relationship, school environment, among others [42]. Furthermore, the theory has emphasised the influence of culture, political systems, social institutions and values of societies as responsible for the educational upbringing of an individual. It is therefore worth noting that the experiences and influences resulting from the various interactions among the social systems as indicated by Bronfenbrenner and are quintessential in the determination of the extent to which students are able to perform academically in their respective schools and thus, regarding the construct of ecological theory, the low academic performance of students in core mathematics can be linked with the features of the social systems as identified in the Kumasi Metropolis [40,42]. In this sense, the ecological theory as stipulated by Bronfenbrenner and is most appropriate for studying the perceived causes of the low academic performance of students in core mathematics in the Kumasi Metropolis [40,42]. The theory is specifically vital in the sense that it gives a holistic view of the social systems and not just an aspect of the system. With respect to this framework that seeks to explore the perceived causes of low academic performance of Senior High School students in core mathematics in the Kumasi Metropolis, it is believed that learning outcomes are dependent on the way the teaching and learning processes are conducted and the entire environment in which learning takes place. It is therefore expected that the low academic performance of Senior High School students in core mathematics in the Kumasi Metropolis would be affected by factors emanating from the school environment, teachers, students and home.

Methodology
Research Design
The study used the descriptive survey research design with quantitative approach. Descriptive survey research design objectively allows for the accurate description of activities, objects, processes and persons. The purpose of descriptive survey is to observe, describe and document aspects of a situation as it naturally occurs [43]. Quantitative approach involves the process of employing objective measure to a numerical data with the view of demonstrating the relationships existing between variables [44]. The design involves collecting data from all sampled respondents through the administration of a questionnaire on the perceived causes of low academic performance in core mathematics and analysing the responses [45]. This study is descriptive because, it sought to describe and explore a phenomenon in real life situation and to generate new knowledge about the topic.

Population and Sample
The target population for the study involves all second and third year public Senior High School students as well as all Senior High School core mathematics teachers in the Kumasi Metropolis. As at 2018, there were nineteen (19) accredited public Senior High School in the metropolis, with total Senior High School Form 2 and Form 3 population of 124,808 out of which five (5) are single sex girls' Senior High Schools, four (4) are single sex boys' Senior High School and ten (10) are mixed Senior High School and three hundred and twenty-two (322) core mathematics teachers [46]. The accessible population for the study consisted of Senior High School Form 2 and Form 3 students as well as Senior High School core mathematics teachers in four selected schools which stood at 6,448 students and 58 core mathematics teachers. The schools were selected after a thorough multi-staged sampling procedures and the second and third year students were used for the study because their long stay on campus might have exposed them to various experiences and knowledge regarding what they perceived to be responsible for the low academic performance of students in core mathematics. Through multi-stage sampling procedures including stratified sampling, simple random sampling and proportionate sampling, 381 Form 2 and 3 students were selected for the study. Purposive sampling was also used to select 58 core mathematics teachers for the study.

Instrumentation
A survey questionnaire was developed in line with literature and the objectives of the study to collect data for the study. The questionnaires were particularly developed for Senior High School students and teachers who read and teach core mathematics respectively to elicit responses on the perceived causes of the low academic performance of Senior High School students in core mathematics. The questionnaires were piloted test using 40 Senior High School students and 15 core mathematics teachers. After the pilot testing, Cronbach's alpha as used to estimate the reliability of teachers and students' questionnaires which stood at 0.71 and 0.79 respectively. Cronbach's alpha was used because the items on both questionnaires were measured on a four point scale 1= strongly disagreed, 2= disagreed, 3=agreed and 4=strong agreed. According to Pallant, a reliability coefficient (alpha) of 0.70 or higher is considered appropriate [47]. Before and during the administration of the instruments ethical issues such as informed consent, right to privacy, voluntary participation, no harm to participants, anonymity and confidentiality were fulfilled. The data was administered to the 439 respondents (381 respondents and 58 teachers) with the support of four (4) field assistants who were trained before the field work.

Data Processing and Analysis

The data analysis phase consisted of editing, coding and statistical computation. After data collection, the items on each of the questionnaires were labelled serially to ensure easy identification, errors and easy coding. Frequencies were run to check for all errors such as outliers and missing values. The data gathered was then analysed with the aid of Statistical Packages for Social Sciences (SPSS, version 21) after the data had been collated and edited in order to address questions that were answered partially or not answered at all. Data for all the research questions were analysed using means and standard deviations.

Results and Discussion
Research Question One:

What are the school environment factors that caused low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis?

To answer this research question, core mathematics teachers were asked to respond to some items which were measured on a four-point Likert scale with 1- strongly disagree, 2- disagree, 3- agree and 4- strongly agree where 1 indicates the least agreement to the statements and 4 indicating the strongest agreement to the statements. Teachers were asked some questions relating to school factors because I believed that the teachers had a good understanding regarding these factors since they worked directly with the school and had access to these materials. Means and standard deviation were used to analyse the responses of respondents. In the analysis, mean values above 2.5 (1+2+3+4/ =2.5) shows that majority of the respondents agreed with the statement while a mean value below 2.5 shows that majority of the respondents disagreed with the statement. A summary of the responses is presented in Table 2.

Table 2: School Environment Factors that Cause Low Academic Performance in Core Mathematics

Statements	Mean	Std. Dev
My school does not have adequate teaching and learning materials to support core mathematics lessons	2.72	.81
Core mathematics textbooks are not made available to students and teachers to enhance students' learning in my schools	2.74	.97
There are inadequate professional core mathematics teachers in my school	1.74	1.0
My school does not regularly organise in-service training, seminars and workshops for core mathematics teachers	3.22	.71
My school lacks a conducive environment for teaching and learning core mathematics	1.98	.89

Source: Field survey (2018), N =58

From Table 2, it is evident that majority of the teachers agreed to the statements "My school does not have adequate teaching and learning materials to support core mathematics lessons" (Mean = 2.72, Std. Dev. = .81), "Core mathematics textbooks are not made available to students and teachers to enhance students' learning in my schools" (Mean = 2.74, Std. Dev. = .97) and "My school does not regularly organise in-service training, seminars and workshops for core mathematics teachers" (Mean = 3.22, Std. Dev. = .71). It can be inferred from the result that, the perceived school environment factors that might have caused the low academic performance in the Kumasi Metropolis included inadequate TLMs to support the teaching and learning of core mathematics, unavailability of core mathematics textbooks and lack of in-service training, seminars and workshops organised by the school for core mathematics teachers.

It should be pointed out that the results is consistent in literature. For instance, Mensah, Okyere and Kuranchie and Mbugua, Kibet, Muthaa and Nkonke found that inadequate teaching and learning materials cause poor performance in mathematics by students. On this score, a situation where there is the absence of teaching and learning materials makes teaching and learning more abstract which consequently affect students' performance and that was what might have happened in the Kumasi Metropolis [27,48]. According to Etsey, core mathematics textbooks are needed because they are the basic textbooks which are to be used by students and teachers. Exercises are given from the textbooks and the use of the textbooks enables students to understand and learn further what they have been taught [12]. The finding is therefore in line with Etsey who posited that lack of textbooks makes students unable to do a lot of exercises which make them receive little or no attention and feedback to enhance their knowledge and improve their academic performance. Mwenda et al. Found that the ability of a school to organise regular in-service training programmes for teachers would enhance teachers' understanding about the current trends in their profession which when done, would boost students' academic performance [19]. The fact that in-service training, seminars and workshops were not organised regularly for teachers in the Kumasi Metropolis suggests that core mathematics teachers in the metropolis lacked the knowledge of the current trends in practice of their profession which might contribute to the low academic performance of students. The finding is therefore in line with Mwenda et al. In that, when schools organise regular in-service training programmes, seminars and workshops for teachers, their knowledge of the current trends in their profession would improve and this positively affect the academic performance of students [19].

Research Question Two

What are the perceived teacher-related factors that contributed to the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis?

To answer this research question, core mathematics teachers were asked to respond to some items which were measured on a four-point Likert scale with 1- strongly disagree, 2- disagree, 3- agree and 4- strongly agree where 1 indicates the least agreement to the statements and 4 indicating the strongest agreement to the statements. Teachers were asked some questions relating to these factors because I believed that the teachers had a good understanding about themselves and their responses would reveal the difficulty they encountered in their profession. Means and standard deviation were used to analyse the responses of respondents. In the analysis, mean values above 2.5 (1+2+3+4/ =2.5) shows that majority of the respondents agreed with the statement while a mean value below 2.5 shows that majority of the respondents disagreed with the statement.

A summary of the responses is presented in Table 3.

Table 3: Teacher-related Factors that Cause Low Academic Performance in Core Mathematics

Statements	Mean	Std. Dev
Core mathematics teachers use poor teaching methods	1.58	.73
The relationship between core mathematics teachers and their students is poor	1.60	.64
Core mathematics teachers are not concerned about students' interest and progress	1.40	.64
Core mathematics teachers are often late in core mathematics lessons	2.52	.87
Core mathematics teachers' absenteeism is common in my school	1.46	.65
Core mathematics teachers most often do not complete their syllabus	2.98	.71
Core mathematics teachers show poor attitudes towards core mathematics	1.46	.68
In-service training, seminars and workshops are not organised regularly for core mathematics teachers in my school	3.28	.70
Core mathematics teachers in my school most often do not prepare their lesson notes	2.58	.88
Core mathematics teachers lack the pedagogical and content knowledge in teaching core mathematics	1.40	.67

Source: Field survey (2018), N=50

From Table 3, it is depicted that a greater percentage of the respondents agreed that core mathematics teachers were often late in core mathematics classes (Mean = 2.52, Std. Dev = .87) and that core mathematics teachers most often did not complete their syllabus (Mean = 2.98, Std. Dev = .71). From Table 3, majority of the sampled respondents agreed that in-service training, seminars and workshops were not organised regularly for core mathematics teachers in their school (Mean = 3.28, std. Dev = .70) and that core mathematics teachers in their school most often did not prepare their lesson notes (2.58, Std. Dev = .88). The results of the research question have revealed that lateness of core mathematics teachers, inability of core mathematics teachers to complete their syllabus and lack of training, seminars and workshops as well as inability of teachers to prepare their lesson notes were perceived by core mathematics teachers as contributing to the low academic performance of SHS students.

To confirm the stance of core mathematics teachers, students were also asked some questions about their core mathematics teachers. The summary of result is presented in Table 4.

Table 4: Students' views on Teacher-related Factors that Cause Low Academic Performance in Core Mathematics

Statements	Mean	Std. Dev
The relationship between core mathematics teachers and their students is poor	2.88	1.0
Core Mathematics teachers do not show interest in students' understanding	3.15	.95
Core mathematics teachers are often late in core mathematics lessons	2.65	.99
Core mathematics teachers' absenteeism is common in my school	2.86	1.0

Source: Field survey (2018), N=50

The results from Table 4 indicate that majority of the students agreed to the statements "The relationship between core mathematics teachers and their students is poor" (Mean = 2.88, Std. Dev = 1.0), "Core mathematics teachers do not show interest in students' understanding" (Mean = 3.15, Std. Dev = .95), "Core mathematics teachers are often late in core mathematics lessons" (Mean = 2.65, Std. Dev = .99) and "Core mathematics teachers' absenteeism is common in my school" (Mean = 2.86, Std. Dev = 1.0). The results show that students believed that their relationship with core mathematics teachers was poor, teachers were often late in class, absenteeism of their teachers was common in their schools as well as teachers were not concerned about their interest and progress and these factors might have caused students to perform low academically in core mathematics.

Etsey stressed that lateness and absenteeism reduce the amount of instructional time which lead to the inability of teachers to complete their syllabus [12]. This becomes worse when teachers adjust the sequence of their curriculum based on what is included in high stake tests like WASSCE in order to improve tests scores, which according to Anane prevent teachers from completing their syllabus [30]. The findings are in line with studies of Mwenda et al. and Sa'ad et al. who were of the view that lateness and absenteeism of teachers are critical in determining the academic performance of students [8,19]. the findings also support the position of Enu at al. have indicated that teachers' work habit including how they prepare for their lesson by preparing their lesson notes significantly contributes to how well they would be focused and directed in their delivery in class [14]. A situation where this is prevalent will result to lack of focus, direction and systematic delivery of lessons in enhancing students' understanding and better their (students) learning outcomes and this would affect their academic performance negatively. According to Mensah et al. a good relationship between teachers and students leads to positive attitudes which radiate confidence in students and make them develop positive attitudes toward the learning of core mathematics thereby boost students' academic performance positively [48]. In confirming the views of Mensah et al. the fact that the relationship between core mathematics teachers and their students is poor, it is likely that some misconceptions and problems on the part of students in core mathematics were not addressed

which might have contributed to the low academic performance of students [48]. In addition, Etsey found that when the teacher shows less concern and interest about students' understanding of lesson, it leads to low academic performance [12]. In this sense, since core mathematics teachers in the Kumasi Metropolis exhibited less concern of their students' understanding of the concepts taught, the outcome was that their academic output in terms of their academic performance in core mathematics was low and it is in this regard that Aggarwal maintained that best learning takes place when the teacher is successful in arousing the interest of the students [12].

Research Question Three
What are the perceived student-related factors responsible for the low academic performance of public Senior High School students in core mathematics in the Kumasi Metropolis?

To answer this research question, students were asked to respond to some items which were measured on a four-point Likert scale with 1- strongly disagree, 2- disagree, 3- agree and 4- strongly agree where 1 indicates the least agreement to the statements and 4 indicating the strongest agreement to the statements. Means and standard deviation were used to analyse the responses of respondents. In the analysis, mean values above 2.5 (1+2+3+4/ =2.5) shows that majority of the respondents agreed with the statement while a mean value below 2.5 shows that majority of the respondents disagreed with the statement. A summary of the responses is presented in Table 5.

Table 5: Perceived Student-related Factors that Cause Low Academic Performance in Core Mathematics

Statements	Mean	Std. Dev
Lateness of students in core mathematics lessons is common in my school	2.22	1.0
Students' absenteeism in core mathematics lessons is common in my school	2.51	1.1
Students most often fail to do core mathematics assignments and class exercises in my school	2.81	1.1
Students are unhappy during core mathematics lessons in my school	2.90	1.1
Students have low self-esteem in core mathematics in my school	3.15	.96
Peer group influence does not promote the learning of core mathematics in my school	2.82	1.1
Students exhibit poor attitude towards core mathematics in my school	2.89	1.1
Students are not motivated in learning core mathematics in my school	2.71	1.1
Students spend limited time in learning core mathematics in my school	2.87	1.0
Core mathematics is too abstract due to the way it is taught in my school	2.79	1.1

Source: Field survey (2018), N = 381

With reference to Table 5, a greater percentage of the respondents agreed to the statements "Students' absenteeism in core mathematics lessons is common in my school" (Mean = 2.51, Std. Dev = 1.1), "Students most often fail to do core mathematics assignments and class exercises in my school" (Mean = 2.81, Std. Dev = 1.1), "Students are unhappy during core mathematics lessons in my school" (Mean = 2.90, Std. Dev = 1.1) and "Students have low self-esteem in core mathematics in my school" (Mean = 3.15, Std. Dev = 1.0). The results in Table 5 further indicate that majority of the respondents agreed to the statements, "Peer group influence does not promote the learning of core mathematics in my school" (Mean = 2.82, Std. Dev = 1.1), "Students exhibit poor attitude towards core mathematics in my school" (Mean = 2.89, Std. Dev = 1.1), "Students are not motivated in learning core mathematics in my school" (Mean = 2.71, Std. Dev = 1.1), "Students spend limited time in learning core mathematics in my school" (Mean = 2.87, Std. Dev = 1.0) and "Core mathematics is too abstract due to the way it is taught in my school" (Mean = 2.79, Std. Dev = 1.1). The results in Table 5 show that student-related factors as perceived by students in causing low academic performance in core mathematics were students' absenteeism in core mathematics lessons and failure of students to do core mathematics assignments and class exercises. It can be observed from Table 5 that students were unhappy during core mathematics classes, students had low self-esteem in core mathematics, and the inability of peer group influence to promote the teaching and learning of core mathematics were perceived by students as contributing to low academic performance in core mathematics. The results in Table 5 further show that students exhibited poor attitude toward core mathematics, students were not motivated to learn core mathematics, student spent limited time in studying core mathematics and core mathematics was too abstract due to the way it was taught and might have caused students to perform low academically in core mathematics.

To confirm the revelations of the students, core mathematics teachers were also asked about some factors they perceived on the part of students as causing low academic performance in core mathematics. A summary of result is presented in Table 6.

Table 6: Teachers' Perceived Student-related Factors that Cause Low Academic Performance in Core Mathematics

Statements	Mean	Std. Dev
Students' absenteeism in core mathematics lessons is common in my school	2.64	.83
Lateness of students in core mathematics lessons is common in my school	2.66	.80
Students are unable to participate actively in core mathematics lessons	2.74	.60
Students are not motivated to study core mathematics	2.66	.82
Students in my school have low self-esteem in core mathematics	2.88	.82
Students in my school find it difficult to understand core mathematics lesson	2.54	.81

Source: Field survey (2018), N = 50

From Table 6, majority of respondents agreed to the statements "Students' absenteeism in core mathematics lessons is common in my school" (Mean = 2.64, Std. Dev = .83), "Lateness of students in core mathematics lessons is common in my school" (Mean = 2.66, Std. Dev = .80), and "Students are unable to participate actively in core mathematics lessons" (Mean = 2.74, Std. Dev = .60). In addition, a greater percentage of the respondents agreed further to the statements "Students are not motivated to study core mathematics" (Mean = 2.66, Std. Dev = .82), "Students in my school have low self-esteem in core mathematics" (Mean = 2.88, Std. Dev = .82) and "Students in my school find it difficult to understand core mathematics lesson" (Mean = 2.54, Std. Dev = .81). The results in Table 6 show that from the perspective of the core mathematics teachers, students' absenteeism, lateness of students, inability of students to participate actively in core mathematics classes, lack of motivation, low self-esteem and difficulty of students in understanding core mathematics lessons might have caused students to perform low in core mathematics.

Etsey suggested that the effect of lateness and absenteeism is that concepts taught becomes difficult for a student to understand on his or her own and thus, continue missing of classes could lead to loss of content and knowledge [12]. The findings confirm the findings of Mwenda et al. Allen-Meares et al. and Etsey who indicated that students' absenteeism and lateness accounted for the poor academic performance of students [12,19,36]. The result of incidence of lateness and absenteeism is that students in the metropolis lost in terms of what was taught which might have resulted in their inability to do class exercises and assignments thereby resulting in low academic performance. Engin-Demir noted that when students devote more time in studying and do their assignment and homework, their grades are boosted which boosts their academic performance [22]. According to Alomar, homework serves as an interaction between the school and home which plays a central role in measuring the academic performance of the students [35]. This finding is in line with the views of Etsey, Engin-Demir and Mwenda et al. who emphasised that failure to do assignments and class exercises leads to low academic performance of students [12,19,22]. According to Sa'ad et al. students' motivation is a necessary tool to enhance their understanding and performance [8]. The findings re-emphasises the positions of Enu et al. who were of the view that self-motivation also influences performance in mathematics [14]. Drawing from the views Enu et al. that fact that students were unhappy and demotivated hindered their understanding and participation in the teaching and learning of core mathematics and that lowered their academic performance in the subject [14].

Furthermore, Diaz points that students' self-image about a specific

subject facilitates his or her acceptance, rejection or interest and further motivates him or her in the subject [17]. The findings supported Diaz and Etsey who posited that, when students become demotivated and show no interest in what they do, their self-concept and esteem are lowered which later affect their academic performance [12,17]. It is evident that students spent a lot of time with their peers especially when they are in school. To a very large extent, the actions of peers affect students because they see them as their own [30]. In situations where peers of a particular student exhibit negative attitude toward core mathematics, such a student would also follow suit which would affect their academic performance and the vice versa. In addition, the findings confirm the positions of Mbugua et al. and Engin-Demir that, when students develop poor attitude towards core mathematics, they would not be motivated and show interest in learning it [22,27]. This would prevent the students from spending enough time in studying core mathematics because of lack of interest which causes them to perform poorly and this might have happened in the case of the students in the Kumasi Metropolis. In confirming other findings, Etsey, Mwenda et al. Mbugua et al. and Sa'ad et al. found that when students do not understand mathematical concepts, have low self-esteem, are demotivated and exhibit poor attitude toward mathematics, they would not be able to participate actively in core mathematics classes and that was what might have happened to the students in the Kumasi Metropolis [8,12,19,27]. The case becomes worse when concepts taught are not applied to and linked with the real life situations of students, and supported by effective teaching and learning materials [12]. When this happens, students find it very difficult to understand the lessons which would lead to low academic performance and this might have happened in the case of the students in the Kumasi Metropolis.

In confirming the theoretical review of study, it can be inferred that all the factors that originate from the school environment, teachers and students as identified in the study are located in the immediate environment of the students. Specifically, students leave their homes and spend majority of their lives at school. The school is made up of teachers and peers, among others, who directly influence the behaviour of students. In cases where such environment are filled with factors that hinder the successful learning of core mathematics, the end result is low students; performance that has been recorded in the study area.

Conclusions and Recommendations
The study makes a conclusion that the factors that result from students, teachers and the school environment that have been revealed in this study do not operate in isolation. For instance, when teachers absent themselves and are late in core mathematics classes, it would result in incompletion of the syllabus which would

also affect students' motivation, enthusiasm, commitment and understanding of core mathematics. In addition when the school fails to organise in-service training, seminars and workshops or fails to provide teaching and learning materials, teaching becomes problematic, which consequently affect the academic performance of students. Secondly, it can be concluded form the findings that both the teachers and students did not put in their best when it comes to students' academic performance in core mathematics. Since teachers work directly with students, the presence of the factors that have been revealed as a result of the actions of the teachers and students hinder effective teaching and learning of core mathematics. It can therefore be concluded that both teachers and students failed to do their best regarding the teaching and learning of core mathematics in the metropolis and that might have resulted in the low performance. The findings from this study have the under listed.

Recommendations

1. The study recommends that the Ministry of Education as well as the Ashanti Regional Educational Directorate must enforce the necessary laws and actions to curb the menace of lateness and absenteeism of students and core mathematics teachers.
2. Core mathematics teachers should be encouraged by all stakeholders of education such as parents, school authorities, educational authorities and government agencies in education to exhibit good and appropriate academic relationship with their students.
3. Students should also be encouraged by their parents, teachers, peers and other stakeholders in education to exhibit good attitude toward mathematics, be happy and increase their enthusiasm to do mathematics.
4. Core mathematics teachers should also communicate the relevance of core mathematics to students, link the teaching and learning of core mathematics to the daily and real life situations of students, find and use appropriate teaching and learning materials to enhance students' understanding.
5. Core mathematics teachers should develop appropriate strategies to complete their scheme of work and the syllabus as well as prepare adequate lesson notes and ensure that they cover all the relevant aspects of the syllabus to improve students' learning and performance.
6. The study recommends further that the Senior High School in the Kumasi Metropolis should make efforts to provide the necessary teaching and learning material that are needed to enhance the teaching and learning of core mathematics.
7. Regular and appropriate in-service training, seminars and workshop should be organised for core mathematics teachers so that they will be in the know of the current trends in their profession. In addition, core mathematics textbooks should be made available for use to both teachers and students by the school and other stakeholders in education so that they can refer, practice and read from these textbooks to enhance their understanding.
8. In addition, the study recommends that students should associate themselves with peers who will guide them to develop the zeal and interest to study core mathematics. Students must avoid bad peers and companies who prevent them from studying. Students should make sure that the influence they receive from their peers is the one that will promote effective learning especially in core mathematics.
9. Lastly, the study recommends that, for an improvement in the low academic performance of students in core mathematics, attention should not be given to the individual factors but rather, it should involve all the factors.

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