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UNIVERSITY OF CAPE COAST

PERCEIVED INFLUENCE OF LARGE CLASS SIZE AND
PSYCHOLOGICAL CLASSROOM ENVIRONMENT ON STUDENTS'
ACADEMIC PERFORMANCE

BY

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Master of Philosophy degree in Educational Psychology

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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

This study investigated how large class size and the psychological classroom environment influenced students' academic performance. Again, the researcher sought to determine the extent to which large class size and psychological classroom environment influenced the manner in which teaching and learning was mediated in public senior high schools. To achieve this, the survey design was employed. 320 students were purposively selected from ten (10) public senior high schools in the Kumasi Metropolis. Questionnaire with a reliability coefficient of 0.791 was used to obtain data from the respondents. The study revealed that large class size influenced students' academic performance and also limits their learning opportunities of students. It was again unravelled that psychological classroom environment had a great influence on the students' academic performance. It has been recommended that since small class size and good psychological classroom environment enhance performance therefore, teachers and head teachers should make sure they conform to the required teacher to student ratio of 1:40 by the Ghana Education Service. Teachers should create an enabling environment for students to participate in classroom activities. Furthermore, the study showed that students performed well in smaller class size and good psychological classroom environment. Therefore, the Government should employ more teachers and build more classrooms to solve the problem of large class size in the senior high schools in Ghana.

KEY WORDS

Large Class Size

Psychological classroom Environment

Academic Performance

Public Senior High Schools

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DEDICATION

To my parents, Mr and Mrs Baako

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LIST OF ACRONYMS

GES:	Ghana Education Service
OWASHS:	Opoku Ware Senior High School
PBR:	People Behavioural Rating
PSHSs:	Public Senior High Schools
SHSs:	Senior High Schools
STAR:	Student-Teacher Achievement Ratio

CHAPTER ONE

INTRODUCTION

Background to the Study

Quality education remains the pivot of educational development of every nation. The quality of education depends on, among other factors, the number of students in class and the psychological classroom conditions under which students learn. Large class size and poor psychological classroom environment have been the major concern due to the increase in enrolment figures in our schools since the inception of the school feeding program and all the other social intervention programmes. With this, many educational policies have been put in place to reduce the number of large classes in Senior High Schools (SHSs) but students results remained the same. The widely held aim of education is to equip students with knowledge, skills, attitudes and competencies that will enable them to render useful services to themselves and to the society at large. As school population increases, class size also increases and this affects the psychological classroom environment and the academic performance of students (Osei-Mensah, 2012).

The priority of all countries, especially the developing ones, is to improve the quality of schools and the achievement of students (De Grauwe, 2001) since learning outcomes depend largely on the quality of education being offered (Barro, 2006). Barro further notes that higher quality education fosters economic growth and development. But quality education partly depends on how well teachers are trained and the number of students they

supervise in class since they are the key inputs to education delivery (Lockheed & Verspoor, 1991). The need to access high quality education has been the concern of many stakeholders in the country. But an aspect of education that has generated less attention is the proliferation of large class size and the quality of psychological classroom environment of students in Public Senior High Schools (PSHSs).

The need for better education and educational activities to build students and make them efficient in production and other endeavours of life is largely dependent on their class size, psychological classroom environment and how teachers are able to supervise students in class. Delong and Winter (1998) add that class size management strategies have a strong potential to positively influence students' achievement and learning. They are paramount concern for many teachers, especially novices and teachers who are contemplating new instructional approaches for the first time.

The medium through which the attainment of individuals and the nation's education can be achieved is learning outcomes. Learning outcomes have become a phenomenon of interest to all and these accounts for the reason why scholars have been working hard to unravel factors that militate against academic performance (Aremu & Sokan, 2003). This phenomenon has been variedly referred to in literature as academic achievements, or scholastic functioning. Academic achievements of learners have attracted the attention of scholars, parents, policy makers and planners.

In an attempt to provide good education worldwide, many factors have been identified as being responsible for the falling standard of education. Among such factors are the issues of large class size and poor psychological

classroom environments of students. Adeyemi (2008) defined class size as an educational tool that can be described as an average number of students per class in a school, while Kedney (1989) described it as a tool that can be used to measure performance of the educational system. Similarly, Hoffman (1980) described it as the number of students per a teacher in a class.

A psychological environment is created based on the interaction of key players in the classroom, namely students and teachers. Research in this area has varied greatly and proliferated during the early twenty-first century. Studies have been particularly concentrated on student class participation rates, teacher support, and communication of learning goals.

The notion of feeling supported as students have also been extensively examined in the classroom environment literature. Patrick, Ryan, and Kaplan (2007) found that there is a strong, positive relationship between students' level of motivation and engagement and their perceptions of the classroom environment as being socially supportive. The perception of a climate of mutual respect is required in order for students to increase their use of effective study strategies and increase feelings of confidence about their ability to successfully complete assignments. Furthermore, when students perceive that they receive emotional support and encouragement from their teachers and academic support from their peers they are more likely to be on-task in the classroom and use self-regulated strategies.

The national population growth of about 3.7% per annum puts a lot of pressure on the existing deteriorating PSHSs educational facilities in the country. The situation is most prevalent in PSHSs in the Ashanti Region. This problem can be attributed to the fact that Ashanti Region, being the fortress of

education and sport competition in Ghana has some of the good PSHSs that are good academically and in sporting events in the country. For instance, the in 2014 academic year the average number of students in the General science and General Arts classes at Kumasi Girls School was 60 respectively. In Kumasi High School, the average number of students in a Science or General Arts class was 57. At Prempeh College, a similar report indicated 62 students in the Business, Visual Arts and Science classes. At Armed Forces Senior High and University Practice Senior High School almost all the classes have more than 55 students in all classes. The researcher wants to check if the overcrowded students in classes and their psychological classroom environment have a link with their academic performances.

Statement of the Problem

For decades now, the traditional approach to teaching and learning has dominated Ghanaian schools. This traditional approach was mostly based on the behavioural principles and laws of learning (Seda, 2008). Students are often viewed as the recipient of knowledge and teachers have control over students' subject matter. The behavioural model requires strong management techniques on the part of the teacher (Garrett, 2005). This explanation shows that teachers are the classroom supervisors and have the responsibility of all on going issues in the classroom on how to maintain discipline in large class size and the psychological well-being of the student.

In view of the behavioural model approach, the Ghana Education Service (GES) instituted a teacher to students' ratio of 1:40, with the aim of enhancing effective teaching and learning procedure effectively in class. Adeyemi (2008) in his findings on the influence of class size on the quality of

output in senior high schools revealed that schools having an average class size of 35 and below obtained better results in the secondary school certificate examination (SSCE) than schools having more than 35 students per class. Oguntoye (2011) as cited in (Muraina, & Muraina, 2014) found that class-size had negative coefficient with students' academic performances in examination. Earthman (2002) revealed that comfortable classroom temperature and smaller classes enhanced teachers' effectiveness and provided opportunities for students to receive individual attention, ask more questions, participate fully in discussion, reduce indiscipline problems and perform better than students in schools with larger class size. Fafunwa (2010) as cited in Ayeni (2012), postulates that there is a gap in the quality of students in crowded classrooms, using inadequate and obsolete equipment, disillusioned teachers and psychological classroom environment on students. These combined deficiencies perhaps affected the students' academic performances.

But it is obvious to find 60 to 70 students in PSHSs in the Kumasi Metropolis and that leads to high incident of large class size and influences the psychological classroom environment of students as well. From the annual general meeting of Headmasters' conference held in July, 2015 at the University of Ghana, the speakers lamented on the increasing number of students to the inadequate facilities, teachers and other dwindling resources in schools. The increasing demand for PSHSs in the Kumasi Metropolis and subsequent increase in the number of students is a great concern to most teachers in the metropolis in recent times. At a staff meeting at Opoku Ware Senior High School (OWASHS) at Kumasi during the end of the 2014 academic year, teachers complained bitterly of the increasing number of

students in a class. Psychologically or emotionally students cannot concentrate when they are in such classes, a phenomenon that has been evolving in recent times. The same classroom that was given to 40-45 students some years back is now being occupied by 60-70 students hence causing discomfort to students in the class.

From my personal observation and checks from five (5) PSHSs in Kumasi Metropolis that I visited showed that, there was no school that has less than 40 students in a class. Table 1 gives the picture of the yearly percentage increase in enrolment in the Kumasi Metropolis.

Table 1: Estimated Students' Enrolment from 2009 to 2014 in the Kumasi Metropolis.

Year	Number of Students	Percentage Increase (%)
2009	15674	14.27
2010	16929	15.41
2011	17101	15.54
2012	18294	16.65
2013	19403	17.66
2014	22769	20.72

Source: Metropolitan Education Directorate Kumasi, (2017)

Data from the Metropolitan Education Directorate indicated that from 2009 to 2014 there has been consistent increase in enrolment in PSHSs in the Kumasi Metropolis. Thus, due to the persistent increase in enrolment on yearly bases, the researcher would raise the question of how teachers manage these large classes without compromising the quality of outcome. Again, the increase in enrolment has not also resulted in the infrastructure development in

schools. This therefore suggests that the prevalence of large class could lead to poor classroom management such as inadequate instructional materials, problem of utilization of classroom rules, lack of interest of students to learn.

Much research has been done on the influence of only large class and how it affect academic performance. Examples of such studies include the studies of Seda (2008), Eathman (2002), Adeyemi (2008) just to mention a few. My study focused on the interplay of both large class size and psychological classroom environment and how they influence academic performance. In the light of the above statement, this study sought to find out the influence of large class size and the psychological classroom environment on academic performance of students.

Purpose of the Study

The purpose of the study was to investigate how large class size and the psychological classroom environment influenced students' academic performance and the extent to which they influenced the manner in which teaching and learning is mediated in PSHS. The specific objectives of the study were to:

1. Investigate how class size influenced students' academic performance in Public Senior High Schools.
2. Investigate how psychological classroom environment influenced students' academic performance in Public Senior High Schools.
3. Determine the extent to which class size and psychological classroom environment influenced the teaching and learning.

4. Ascertain how the situation of large class size and psychological classroom environment could be managed to enhance good academic performance in Public Senior High Schools.

Research Questions

To address the problems of the study, a number of research questions were formulated to guide the research towards achieving the stated objectives.

These research questions are delineated as follows:

1. How does class size influence students' academic performance in Public Senior High Schools?
2. How does psychological classroom environment influence students' academic performance in Public Senior High Schools?
3. How does class size and psychological classroom environment influence the manner in which teaching and learning is mediated in Public Senior High School?
4. How can large class size and psychological classroom environment be managed to enhance students' academic performance in Public Senior High Schools?

Research Hypotheses

Arising from the research questions, the following research hypotheses were formulated.

H₀1: There is no significant relationship between class size and psychological classroom environment.

H₀2: There is no significant relationship between class size and classroom interaction.

H₀₃: There is no statistically significant relationship among large class size, psychological classroom environment and class interaction and academic performance of students.

Significance of the Study

Whereas the research questions aimed at guiding this study, it is important to show practitioners the contribution of this study to policies and practices. It is envisaged that the study will be beneficial to school authorities and policy makers. This study sheds more light on the causal relationships between class size and psychological classroom environment in relation to students' academic performance. The outcome of the study is, therefore, expected to assist all stakeholders, government and corporate bodies to formulate policies that will reduce large class size and create a very good psychological classroom environment for students.

The study will also contribute to existing knowledge on class size and psychological classroom environment of students in Ghana and the world at large. The findings from the study will also give some directional indicators for future research regarding class size and psychological classroom environment policy of the Ghana Education Service. Thus the study will serve as a useful guide and reference material for researchers, scholars and academicians.

Delimitations

Marshall and Rossman (2006, p.42) asserted that, "All proposed research study have limitations; none is perfectly designed". With this in mind, it is worth mentioning that the study focused on the influence of class size and psychological classroom environment on students' academic

performance. Students were chosen as the main respondents of the study because they are the direct victims when it comes to influence of large class size and psychological classroom environment on their academic performances.

For the purpose of providing understanding of the issues at hand, the study focused on a cross-sectional survey design to have a fair bearing on the case. The total population of all PSHSs in Ghana was not studied but the studies focused on only form three (3) students in the selected PSHSs in the Kumasi Metropolis. The participants were selected with no consideration of their ethnic, cultural and socio-economic background. It was clear that those who were selected were not the true representation of the whole Public Senior High School population in Ghana, but it can be presumed that those that were selected share common challenges and barriers with the rest of the population in Ghana.

Limitations

According to Best and Kahn (1993), limitations are conditions beyond the control of the researcher and may place restrictions on the conclusions of the study and their application to other situations. The major limitations to this study were that since questionnaire were distributed to students who were allowed to fill them at their convenience, the researcher anticipated that some students may be influenced by their colleagues in filling them. Some respondents were unwilling to reveal the information and that also curtailed the data that was expected to be collected within one month period. Some respondents felt reluctant to respond to the questionnaire causing a delay for the researcher to finish the data collection and analysis on time.

Definition of Terms

Some of the words within the study are given operational definitions as they are used in the context and scope of the research as follows:

Academic Performance: This refers to the student's achievement, scores within the class and his position relative to all those subjected to the same test.

Large Class Size: In the context of this study, it is considered as a class that contains more than 40 pupils as stipulated by the Ghana Education Service.

Psychological Classroom Environment: It includes all beyond the physical arrangement of the class which is created based on the interaction of two key players in the classroom, namely student and teacher. Psychological classroom environment is centred on student participation rate, teacher support and communication of learning goals.

Teacher Support: They are the classroom related assistance that teachers in the classroom offer for their children to facilitate their academic activities.

Organization of the Study

The study was organised under five chapters. Chapter one consist of the background to the study, statement of the problem, the purpose of the study and the research questions. The chapter also includes delimitation of the study, limitation of the study, definition of terms as well as the organisation of the study.

In Chapter two, the main aims and objectives of the thesis were elaborated further. Here, the research questions being investigated were discussed by placing the study within its broader historical information on class size. The latter part of this chapter discussed relevant, empirical and theoretical literatures that have informed the design and execution of the study.

Chapter three describes the methodology that was employed for the study. The chapter describes the research design, population, sample and sampling procedure, research instrument, validity and reliability of the instrument, pretesting of instrument for data collection as well as procedure data processing analysis.

Chapter four of the study concentrated on the results and discussions of findings. The chapter includes the background characteristics of respondents. The analyses were done in line with the research questions and hypotheses.

Chapter five presents the summary, conclusions and recommendations of the study. An area of further research was also suggested in this chapter.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter reviewed the relevant literature and the researcher was aware of the fact that other authors have written on this topic. For this reason, it was necessary to review literature related to the topic. Information was gathered from journals, abstracts, the internet, books, and works people have done on managing class size. For easy referencing, the literature was reviewed under various sub-headings based on the research questions:

1. Theoretical framework;
2. Conceptual framework;
3. Historical Information on Class Size;

The empirical review was done based on the research questions

4. Class sizes and academic performances;
5. Psychological classroom environment and students' academic performances;
6. Class size and its influence on teaching and learning.
7. Management of class size and psychological classroom environment.

Theoretical Framework

A theoretical framework offers a “map” of the research process that guides the researcher in investigating the nature and scope of the study in relation to the research questions, objectives, and the purposes of the study. The theoretical framework for this study anchors on the social constructivism

theory by Lev Vygotsky (1978). In his work, Vygotsky emphasized the roles of social interaction and instruction. “He proposed that development does not precede socialization, but rather social structures and social relations lead to the development of mental functions” (Huitt, 2000, pp 56).

Social interaction plays an important role in student learning. It is through social interaction that students learn from each other, as well as adults. Fogarty (1999) stated, “Vygotsky’s theory suggests that we learn first through person-to-person interactions and then individually through an internalization process that leads to deep understanding” (p. 77). The theory was based on three major themes which include social interaction, the more knowledgeable other, and the zone of proximal development.

Social interaction plays a fundamental role in the process of cognitive development. In contrast to Jean Piaget’s understanding of child development (in which development necessarily precedes learning), Vygotsky felt that social learning precedes development. He states: “Every function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological)” (Huitt, 2000).

The more knowledgeable other refers to anyone who has a better understanding or a higher ability level than the learner, with respect to a particular task, process, or concept. The more knowledgeable other is normally thought of as being a teacher, coach, or older adult, but the more knowledgeable other could also be peers, a younger person, or even computers.

The zone of proximal development is the distance between a student's ability to perform a task under adult guidance and/or with peer collaboration and the student's ability in solving the problem independently. According to Vygotsky, learning occurred in this zone. Vygotsky focused on the connections between people and the sociocultural context in which they act and interact in shared experiences. According to Vygotsky, humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially, children develop these tools to serve solely as social ways to communicate their needs. Vygotsky believed that the internalization of these tools leads to higher thinking skills.

In summary, the social constructivism theory appears to be an effective framework for delivering on the influence of large class size and psychological classroom environment on academic performance in PSHSs in Kumasi Metropolis. The use of zone of proximal development can be applicable to the study because social constructivism theory highlights social interaction with the more knowledgeable person like the teacher to move classroom development forward.

By way of helping students in large class size to achieve their academic potential, it requires a more capable person, such as teacher or peer, provides assistance to the student; the student is able to complete the task with this assistance. Students, who are in the zone of proximal development, need active teaching. Teachers should be explaining, modeling, and using guided practice in the classroom. By modeling what they want their students to do, students will be able to work through their assigned tasks better. Think-alouds, an instructional strategy that allows students to talk through new steps of an

endeavour aloud, can be used with upper elementary and middle school students, who are in the zone of proximal development. This strategy assists students' thinking about how they make meaning. During think-alouds, students listen to a skilled reader using "strategies to comprehend text, and their teachers' thinking becomes visible to them" (Beers, 2003, p. 43). Students need time to try out various strategies, so that they can develop answers or responses. But when it comes to the unprofessional or the inexperienced teacher, the way of helping students in large class size to achieve their academic potential may not be easy because the teacher does not have the skill to provide assistance to the student to complete the task on time.

In a large class size and unfriendly psychological classroom environment, the teacher will be unlikely to apply or engage students in scaffolding, small groups, cooperative learning, group problem-solving, cross age tutoring, assisted learning, and/ or alternative assessment. Scaffolding is "a form of adult assistance that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts" (Daniels, 2001, p.107). The use of language and shared experience is essential to the successful implementation of scaffolding as a learning tool. By practising and making inferences, students are able to determine what and when inferences needed to be made. Teachers need to provide students, who are in the zone of proximal development, copies with specific sentences that have been underlined in a short story. The underlined sentences will help the students realize when they need to make inferences. Thus, students are able to acquire, develop and master complex reading skills. Scaffolding involves simplifying the learner's role rather than the task (Daniels, 2001).

Conceptual Framework

Miles and Huberman (1994) explained that a conceptual framework may be an illustration or presented in a narrative form. The conceptual framework should include the key factors, variables, or specific topic of study. The researcher will present his conceptual framework in an illustrative form. The study seeks to give a prediction on the variables that show relationships between large class size and psychological classroom environment on academic performances of students. This is demonstrated in figure 1 below:

Conceptual Framework

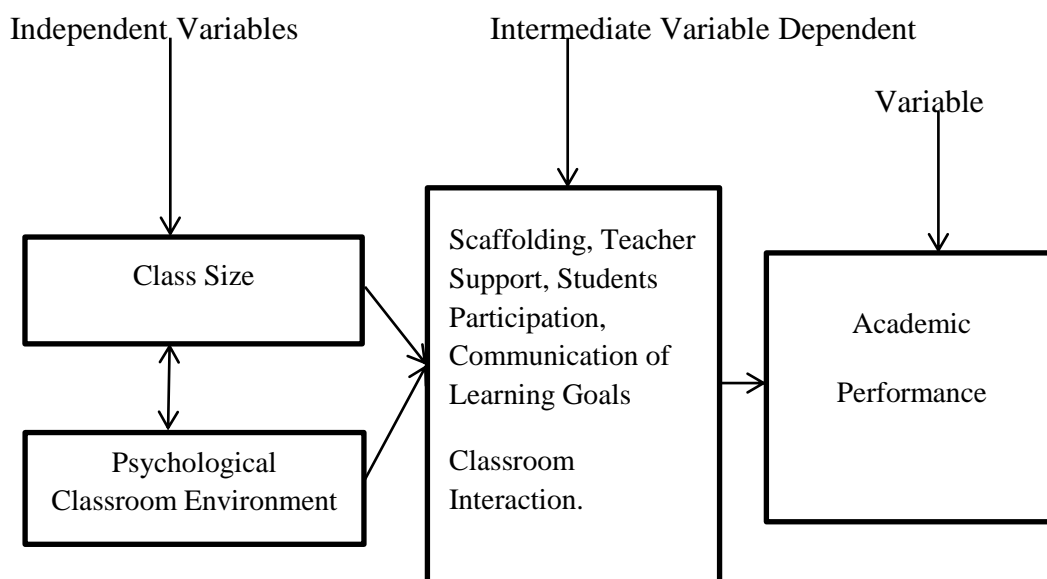


Figure 1: Conceptual Framework

Source: Author's Construct, (2017)

Psychological classroom environment and class size have direct influence on academic performance. Similarly class size has direct influence on psychological classroom environment which also affects students' academic performances. Factors that constitute psychological classroom environment include teacher support, student participation rate and communication of learning goals.

In a large class, teacher support rate is very low. This is due to the fact that the students are too many and the teacher cannot attend to them individually. The only students the teacher tends to support are those who are very active in class; that is those who ask questions, answer questions and contribute during instructional session. Those who are quiet, reserved and shy are not recognized in class so they receive less support from the teacher and this obviously leads to poor academic performance.

For instance, in a class of about (60) sixty students, not all of them will be able to participate in class considering the short period of time allocated for each lesson. But in a class of less number of students, each of them gets the opportunity to participate in class and this leads to good academic performance. Communication of learning goals also plays a significant role in the learning process in the sense that if students understand what is expected of them before, during, and after learning session, their learning processes are enhanced and this leads to better understanding of concepts which results in good academic performance among students.

Scaffolding, another significant element that helps students perform tasks on their own without teacher support or the more knowledgeable other is affected by class size. In a large class the teacher or the more knowledgeable other is unable to scaffold due to the large number of students in the classroom. But in a smaller classroom, the teacher is able to provide support to individual students until they are able to perform or understand a concept on their own and this will obviously lead to good academic performance. Classroom interaction also contributes significantly to both academic performance and the psychological environment. Smaller class sizes

encourage good teacher - student and student - student interaction in the classroom and this leads to good academic performance.

Historical Information on Class Size

At the turn of the twentieth century, a demand for schools to become more efficient and to practice the scientific management method resulted in the first class size studies. Spaulding in 1946, a school superintendent, emphasized the economic side of efficiency and provided efficiency examples from his district in Newton, Massachusetts. Using his method of analysing per-pupil costs and pupil recitation costs, Spaulding provides school districts with a way to reduce educational expenses by increasing class sizes and decreasing the number of teachers (Vandenberg, 2012). When criticized for his plan, Spaulding referred to the thousands of dollars that could be saved by a district and explained how this saved funding could be used to pay for the very expensive elective courses (Vandenberg, 2012).

Spaulding did not explain how academic achievement would be affected by such cost-cutting measures. The days of academic accountability would soon follow, creating the class size dilemma that twenty-first century school system leaders now have to address as they attempt to balance the budget and close the educational gap. William McAndrew of Chicago took the work of Spaulding further, not only using Frederick Taylor's scientific management principles to establish per-pupil funding ratios, but also conducting his own educational studies to provide the data needed to support increasing class sizes without the worry of decreasing academic achievement (Callahan, 1962).

Experimental research into how class size affects achievement gained popularity in the 1920's as researchers tried to determine whether or not saving money by increasing class sizes was affecting student progress (Biddle & Berliner, 2002; Vandenberg, 2012). In the decades to follow, a multitude of studies were conducted on class size; unfortunately, the results were varied and were often weakened by their research methods. With the increase use of meta-analysis, a more advanced method of research, educators finally had the ability to generalize research results and better apply research findings to the creation of educational policy (Biddle & Berliner, 2002).

Glass and Smith (1979) as cited in Vandenberg, (2012) pioneers in meta-analysis research regarding class size and student achievement, found that class sizes of fifteen or less students were the ideal, especially for at-risk elementary school children. By analysing 77 class studies conducted over 70 years, Glass and Smith (1979) combined 700 comparisons into a single curve to represent the relationship between class size and academic achievement. The complex regression analysis concluded that as class size population increased, academic achievement for students' decreased (Glass & Smith, 1979). Following an influx of survey research that attempted to identify whether or not classroom variables can account for differences in achievement, Hanushek (1986) contended that previous studies supporting smaller class sizes were wrong, and that educational achievement would not increase with the increased funding for smaller classes.

Using data collected from 59 studies involving 277 estimates on class size, Hanushek (1986) reported that a smaller class size did not result in higher academic achievement and benefits that could be identified as a result of

smaller class sizes were insignificant, especially when considering the increased cost of hiring more teachers. This was in direct contraction to the work of (Glass & Smith, 1979). Researchers subsequently identified limitations to Hanushek's analysis of the effect of class size on academic achievement and have provided studies to support the idea that decreasing the number of students within the instructional setting does positively affect learning (Biddle & Berliner, 2002; Vandenberg, 2012).

Finn, Pannozzo, and Achilles (2003) criticized Hanushek's analysis of class size reduction programs for the fact that the programs analysed were not the ones utilizing class size reduction but were analysing the ratio of students to teachers in classes, which does not provide a valid description of the day-to-day learning environment. Initial class size research focused on the efficiency and effectiveness of the strategy, and subsequent research focused on how class size affects classroom practices, like behaviour management and instructional activities.

Class Size and Academic Performance

The influences of class size on academic performance have been examined empirically via various research designs over the past few decades. Numerous experimental and quasi-experimental studies have investigated the effects of class size on student achievement and have been reviewed by (Glass & Smith, 1979). Overall, these reviews have indicated that class size reduction has positive effects on student achievement and that these effects become larger as the class size becomes smaller. Nonetheless, the majority of the studies have been small-scale and short term, and although their results may have high internal validity, the generality of their findings may be limited.

Another line of research has examined the effects of class size reduction via education production function studies (Hanushek, 1986). Typically such studies computed the association between class size and achievement, adjusting for important student variables such as race/ethnicity, social class, and previous achievement. The interpretation of the results of these econometric studies has been controversial. Although some reviewers have argued that the effects of class size are small and in many studies statistically insignificant (Hanushek, 1989), others have contended that the magnitude of the estimates of the mean differences in student achievement is a better way to assess class size effects than statistical significance (Greenwald, Hedges, & Laine, 1996; Hedges, Laine, & Greenwald, 1994). Although most of these studies were large-scale and hence their results may have high external validity, their internal validity may be limited because it was not obvious that the association between class size and achievement was causal (that is, class size may be endogenous). For example, it was likely that achievement defines class membership. In addition, omitted-variable bias was possible in these large-scale observational studies, and this could bias estimates of class size effects. Finally, the key independent variable (class size) was typically constructed using school size and the number of teachers in the school, hence it was not an accurate but an aggregate measure of class size.

Analyses of Project STAR data indicated that small classes had positive effects on student achievement (Finn & Achilles, 1990). More recent analyses that considered validity threats (e.g., attrition, switching) also demonstrated that small classes increased student achievement (Krueger, 1999). Other analyses have shown long-term positive effects of class reduction

on student performance (Finn, Gerber, Achilles, & Boyd-Zaharias, 2001; Krueger & Whitmore, 2001; Nye, Hedges, & Konstantopoulos, 1999).

Project STAR data have also been used to examine the differential effects of class size on the achievement of low-achieving, minority, and disadvantaged students. An early study reported that class size reduction had larger positive effects for minority students (Finn & Achilles, 1990). These average differences were significant for reading achievement for the first 2 years of the experiment. However, more recent studies that used modern and more appropriate statistical methods could not fully replicate the early findings. For example, Nye et al. (2000a) found weak evidence that class size reduction had larger benefits for minority students. The differential effects of small classes for disadvantaged students were statistically insignificant in all specifications. In a subsequent study Nye Hedges, and Konstantopoulos (2002) examined the differential effects of small classes on low-achieving students and found no evidence of additional benefits for these students. However, the study involved students who participated in project STAR for 2 consecutive years, and thus did not include new participants who joined the study the following year. Finally, a more recent study that used follow-up data from Project STAR indicated that being in small classes for 4 years may subsequently decrease the race/ethnic achievement gap in reading in grades 4 to 8 (Nye, Hedges, & Konstantopoulos, 2004). Nonetheless, overall there is weak evidence of differential effects of small classes for low-achieving, minority, and disadvantaged students.

Larger class sizes result in less time being utilized for instruction due to more instances of student misbehaviour and off-task behaviour (Blatchford,

Bassett, Goldstein & Martin 2003a; Finn & Achilles, 1999). A lack of adequate physical space with which to control student behaviour and to implement non-traditional instructional strategies is also a problem in large classes (Blatchford, Russel, Bassett, Brown & Martin, 2007).

Teacher and student interactions are more in-depth and focused on student academic and emotional needs in smaller classes, facilitating instructional differentiation (Blatchford et al., 2003a; Pedder, 2006). The size of the class impacts the amount of time the teacher has for the management of the class and for the instruction of the students. With decreased instructional time, academic achievement is not likely to increase. Subsequent literature analysis connected class size effects on classroom management and classroom instruction with academic achievement in elementary schools. The issue of class size is one that can be traced back to the early nineteen hundreds (Callahan, 1962), yet it is still very relevant to the organizational structures of elementary, middle, and high schools of today (Biddle & Berliner, 2002; Glass & Smith, 1979).

With such a long history, one would think that the class size debate would be settled by now with conclusive evidence to support or disclaim the assertion that student achievement is affected by class size. However, this is not the case, resulting in a plethora of findings as varied as the studies themselves. Most previous studies on class size reduction focused on elementary schools, which is where the practice often used in an attempt to narrow the achievement gap present in minorities and economically disadvantaged students upon entering school.

Psychological Classroom Environment and Academic Performance

According to Miller and Cunningham (2011) beyond the physical arrangement of a classroom a psychological environment is also created, based on the interaction of key players in the classroom, namely students and teachers. Research in this area has varied greatly and proliferated during the early twenty-first century. Studies have been particularly concentrated on student class participation rates, teacher support, and communication of learning goals.

Many teachers equate student engagement and on-task behaviour with classroom participation, typically a top concern for teachers. Researchers support teachers' intuition of a difference in the participation style of the different genders. Whereas girls are more likely to participate as part of the relational responsibility they feel toward the teacher, boys tend to respond more often if they feel the class is interesting and less often if the class is perceived as boring indicating that for these students, teachers may be equally responsible for the participation level and learning (Miller & Cunningham, 2011).

Most studies have found that boys speak out in class about three times as frequently as girls do; however, both genders typically perceive girls as better class participants. Although responses vary when students are asked what participation consists of, the most common response, and one frequently examined by researchers, is that participation is defined as answering questions when specifically asked (Miller & Cunningham, 2011).

Both boys and girls seem to indicate a need for relational aspects to be present in order for this type of participation to occur; however, whereas

girls more frequently participate by responding to teachers' questions, boys are more likely to participate as a means of obtaining attention or being noticed by the teacher. Teachers who want to encourage development of relational aspects for both genders may need to utilize different acknowledgement techniques for male students to enhance their perceptions of feeling supported as a class participant (Miller & Cunningham, 2011).

The notion of feeling supported as students has also been extensively examined in the classroom environment literature. Miller and Cunningham (2011), Patrick, Ryan and Kaplan (2007) found that there was a strong, positive relationship between students' level of motivation and engagement and their perceptions of the classroom environment as being socially supportive. The perception of a climate of mutual respect is required in order for students to increase their use of effective study strategies and increase feelings of confidence about their ability to successfully complete assignments. Furthermore, when students perceive that they receive emotional support and encouragement from their teachers and academic support from their peers they are more likely to be on-task in the classroom and use self-regulated strategies.

Another large body of educational research has focused on the communication of learning goals to students in combination with the individual goals and expectations of students. Some students and classrooms are more focused on obtaining grades than on mastery of objectives; these students and classrooms are said to be performance oriented rather than mastery oriented (Miller & Cunningham, 2011). A multitude of studies have examined this social-cognitive aspect of classrooms and found that the

classroom-level learning goal can be linked to both behavioural and academic outcomes. Students in classrooms where performance is emphasized are more likely to engage in cheating, avoid help-seeking, and exhibit lower levels of academic engagement (Miller & Cunningham, 2011).

In contrast, students who are in a classroom where the focus is on learning and improvement demonstrate higher levels of self-efficacy and engagement as well as more positive affect (Miller & Cunningham, 2011). At the personal goal level, researchers have found that whereas students who are more focused on grades tend to have higher grades, those students who are more focused on mastering objectives tend to engage in more academically challenging tasks and retain information learned for a longer period of time (Miller & Cunningham, 2011).

The Role of the Teacher in Psychological Classroom Environment

The third focus of many examinations of classroom environment has been on teacher behaviours, specifically teacher development and school culture and how these components affect classroom environment. Some research suggests that due to the complexity of cultivating an effective classroom environment, it may be beyond the developmental scope of the newly graduated teacher. Some researchers recommend that professional development for new teachers should include intense mentoring and teaching partnerships that reduce isolation and form productive and meaningful relationships with other adults in the school community (Miller & Cunningham, 2011).

Following the research studies on physical and psychological environment many suggestions for teachers have been presented in the

literature, including classroom management plans and recommendations for building better relationships with students. Classroom rules and procedures should be introduced early in the school year and consequences should be enforced consistently across students and throughout the school year. Research has shown that routine and fairness have a positive impact on behaviour as well as academic quality. It has been found that teachers who run respectful classrooms are in turn more respected by their students, and students believe that these teachers also hold higher learning expectations (Miller & Cunningham, 2011). Teachers are encouraged to focus more on the learning task than on the outcome or grade assigned at the end of the task, although this becomes much more difficult if the emphasis in education is placed on accountability and high-stakes testing (Miller & Cunningham, 2011).

Although most classroom environment studies are by definition limited to classrooms, a few studies have investigated the impact of the school culture on classroom environment. Findings suggest that schools with an authoritative culture (e.g., clear direction, delegation of responsibilities, accountability to and from all) tend to be judged by students and teachers as being successful. Schools that lack leadership or have a culture of multiple micro-conflicts tend to be perceived by students and teachers as undermining educational gains (Miller & Cunningham, 2011).

Measuring Classroom Environment

In studies of classroom environment by Miller and Cunningham, (2011) a plethora of measurement tools have been employed, including direct, objective observational measures as well as more subjective perceptions of the classroom environment. The types of items that have been used range from

low inference (e.g., frequency counts of behaviour) to high inference (e.g., classroom members' perceptions about meaning of behaviours).

There has been a heavy reliance on perceptual measures in much of the literature, supported by the argument that observational measures tend to be low-inference based and are of a limited time period, whereas perception measures better capture high-inference constructs, and therefore better represent day to day experience in the environment (Miller & Cunningham, 2011). Moreover, advances in statistical analyses have allowed for better incorporation of multiple student observations in one classroom to be aggregated as a measure of classroom environment. In contrast, an objective observation tool is limited to a single opinion or an agreement statistics between two or three independent observers (Miller & Cunningham, 2011).

Some of the most extensive work on measuring classroom environment was completed in the 1970s by Moos (2009), resulting in the widely used Classroom Environment Scale (Moos, 1979; Miller & Cunningham, 2011). Moos's work, which has permeated the literature on classroom environment, is based on three essential areas of classroom environment: (1) Relationship dimension, which focuses on the interpersonal relationships between students and students and the teacher in a classroom; (2) Personal Development dimension, which centers on individual characteristics of the classroom member; and (3) System Maintenance and Change dimension which includes attributes such as classroom control and order as well as responsiveness to change. As delineated above, much of the research on classroom environment has also been attuned to these three dimensions or combinations thereof.

The mid-1990s was marked by a shift to more high-inference measures such as the *What Is Happening In this Class* (WIHIC), a questionnaire developed (Fraser, 2002; Miller & Cunningham, 2011). This scale focuses entirely on student perceptions of a wide range of dimensions of the classroom, including student cohesiveness, teacher support, involvement, investigation, task orientation, cooperation, and equity. Each of the dimensions in the WIHIC can be mapped to the three major dimensions of Moos's schema.

Influence of large Class Size and Psychological Classroom Environment on Teaching and Learning.

Student Behaviour

How the number of students in the class affects the classroom management practices is one area researchers investigated. The literature regarding how class size affects classroom management, including student discipline, is fairly consistent in its results, showing that as class sizes increase, time spent handling non-instructional tasks also increases (Deutsch, 2003; Finn, 2002; Vandenberg, 2012). Researchers (Blatchford, Russel, Bassett, Brown & Martin, 2007) analysed approximately 800 teacher surveys regarding how teachers' perceived class size affected their instructional and management practices. Teacher survey data suggested that as the number of students increased in the classroom, instances of student misbehaviour also increased. Large classes (31 or more students) were harder for teachers to manage than smaller classes (25 or less students). Teachers cited that more student misbehaviour occurred in the larger classes, resulting in more time

being spent on controlling the students rather than teaching (Blatchford, Russel, Bassett, Brown & Martin, 2007; Vandenberg, 2012).

Having utilised class time for the handling of student misbehaviour could affect student achievement and be a reason against increasing class sizes (Blatchford et al., 2007). Cakmak (2009) cited survey data similar to Blatchford, et al., (2007) in his research involving approximately 40 student teachers and their class size perceptions. Survey data indicated larger classes had more discipline instances and result in the teacher utilizing more time for the management of students than smaller classes. Student teachers also cited that smaller classes allowed them the opportunity to prevent student misbehaviour more than larger classes. Survey data indicated student teachers felt there was a relationship between larger classes having more instances of student misbehaviour and less academic achievement gains due to instructional time being used for classroom management (Cakmak, 2009; Vandenberg, 2012).

Through observations of approximately 330 classrooms in Tennessee, Finn and Achilles (1999) identified an improvement in student behaviour in smaller classes (13-17 students per teacher) than in larger classes (22-25 students per teacher). Students in smaller classes had less discipline referrals than students in larger classes. More on-task behaviours and less disruptive student behaviours were also observed in the smaller classes. Overall, less discipline issues were observed in the smaller classes, where researchers also noted that student instructional engagement was also higher (Finn & Achilles, 1999; Vandenberg, 2012).

Survey and observation data indicated that student misbehaviour occurred more in larger classes than in smaller classes (Blatchford et al., 2007; Cakmak, 2009; Finn & Achilles, 1999; Vandenberg, 2012). The more time that teachers had to devote to managing student behaviour, the less time teachers devoted to teaching. This research suggested that less time for instruction could result in less academic achievement. In determining whether or not to increase class sizes, the loss of instructional time due to classroom management issues should be considered. Another issue associated with larger class sizes is the lack of physical space and how this affected the classroom environment (Vandenberg, 2012).

Classroom Interactions

Limited physical space due to large classes results in an increase in student behaviour, increase in safety issues, and decrease in instructional activity variety (Blatchford et al., 2007; Deutsch, 2003). Adding to the research regarding class size and classroom management are studies analysing how the interactions between teachers and students are affected by large numbers. Results from approximately 140 teacher surveys from Burke County, North Carolina suggested that smaller classes (15 or less students) helped teachers prevent discipline problems through the personal relationships they were able to establish with their students. Teachers stated that in smaller classes, they were able to interact more with their students and prevented discipline problems from occurring (Egelson, Harman & Achilles, 1996; Halbach, Ehrle, Zahorik & Molnar, 2001). These findings were replicated in teacher surveys from teachers in New York class size reduction programmes;

the teachers also stated that being able to get to know their students personally allowed them to have less discipline problems (Finn et al., 2003).

Student-to-teacher interactions are affected by class size, which affects the instruction of students and the classroom management of students. In large classes, teachers are not able to build the relationships that they are able to build in smaller classes (Egelson et al., 1996; Finn et al., 2003; Halbach et al., 2001). Being able to interact with their students helps teachers decrease the amount of time they have to devote to classroom management issues and increase the amount of time they can devote to instruction. By simply reducing the number of students, educational leaders could enhance the learning process because teachers will be able to devote more time to instruction.

Student-to-student interactions were also found to be affected by class size (Blatchford, Bassett, Goldstein, & Martin 2003a). Using data from 235 systematic observations of children aged 5-7 years, students in larger classes (average of 33 students per teacher) were more likely to be engaged in social discussions unrelated to the instruction than students in smaller classes (average of 19 students per teacher). Peer conversations in the larger classes were observed to be about social matters and were more likely to be distracted by the actions of their peers during instruction (Blatchford et al., 2003a). For social relations, larger classes were ranked by teachers on a Pupil Behaviour Rating (PBR) instrument as having more positive peer relationships for students than smaller classes. Smaller classes were cited on the PBR as having more aggressive student behaviour towards peers (Blatchford, Edmonds, & Martin, 2003). Larger classes provide social benefits for students but smaller classes provide instructional benefit.

Non-instructional Tasks

Increasing the number of students in the classroom affects the teacher-to-student interactions and the student-to-student interactions (Blatchford et al., 2003a; Blatchford et al., 2007; Deutsch, 2003). Increasing the student population also affects the amount of non-instructional duties of the teacher. Data from 788 teacher questionnaires showed that teachers of smaller classes found the decrease in grading and recordkeeping responsibilities conducive to increasing achievement. The less time spent grading students allowed more time and energy for planning and teaching. Eliminating activities to decrease the grading workload in larger classes was cited by teachers as being a common practice even though they knew that this could negatively affect the achievement of the students (Blatchford et al., 2007).

Effectively meeting the needs of all students within the classroom through instruction and outside the classroom through assessment was cited as being important by all teachers in the study. However, teachers within larger classes (average of 33 students per teacher) noted less job satisfaction than teachers in smaller classes (average of 19 students per teacher). One reason for this decrease in teacher morale was identified as being unable to effectively handle all of the non-instructional tasks required (Blatchford et al., 2007). Larger classes require teachers to devote more time outside the class for the completion of non-instructional tasks. Smaller classes enable teachers to focus more on the planning of instruction and to have greater job satisfaction.

Students in large classes are more likely to display off-task behaviour, such as talking with peers on topics unrelated to the instruction and to be in need of teacher redirection; thus, large classes often result in the wasting of

instructional time and low academic achievement (Cakmak, 2009; Finn & Achilles, 1999). This increase in time being utilized for classroom management results in less time being utilized for instructional purposes, which means teachers are unable to enhance their lessons through engaging activities and/or instruction (Halbach et al., 2001). Hindering the use of more activities is also the lack of physical space presented by large classes, and the lack of teacher-to-student interactions (Blatchford et al., 2007; Deutsch, 2003; Egelson et al., 1996; Halback et al., 2001). For each classroom management issue, time is taken away from the instruction of the students, affecting their academic achievement. Teachers also reported that large classes increased grading workloads and decreased their job satisfaction (Blatchford et al., 2007). Increasing class sizes increases the amount of classroom management. Time used by a teacher to discipline students or to record attendance is time taken away from instruction and learning.

Class Size and Classroom Instruction

Initial class size research focused on whether reducing class sizes was effective and cost-efficient. Researchers then focused on how class size affected the practices and routines of the classroom. Research on how class size affected the management practices of teachers found that larger class sizes resulted in more student misbehaviour (Blatchford et al., 2007; Cakmak, 2009; Finn & Achilles, 1999). A lack of physical space to separate disruptive students and to use different types of instructional activities has also been cited in class size research as a disadvantage of large classes (Blatchford et al., 2007; Deutsch, 2003).

Large student populations prevented teachers from being able to interact with their students as much as they would in smaller populations. This factor also contributed to an increase in classroom management issues (Egelson et al., 1996; Halbach et al., 2001). Teachers reported less job satisfaction due to increased non-instructional workload in larger classes (Blatchford et al., 2007). More discipline issues, less instructional activities, less teacher and student interactions, and more non-instructional tasks contribute to less effective instructional time.

Teacher and Student Interactions

Classroom management issues due to large class sizes affect the instructional environment by taking time away from instruction. However, class size also affects the instructional environment in other ways. Teacher and student interactions are vital to an effective instructional environment (Blatchford et al., 2003a). Students in small classes interacted more with their teachers and were more engaged in their learning than students in large classes and were often observed as passively listening to the teacher interact with other students (Cakmak, 2009). Data from 235 observations of children aged 5-7 years showed that students in smaller classes received more interaction from their teachers and had more active roles in the classroom than students in larger classes. The quality of teacher and student interactions was higher in smaller classes as well. Students in smaller classes initiated more interactions with their teachers through content-related questions and student initiated responses (Blatchford et al., 2003a).

Quality teacher and student interactions increase students' engagement, and having students more actively engaged in the classroom is positive of

smaller classes (Blatchford et al., 2003). A critical component of quality teacher and student interactions is instructional feedback. According to Pedder (2006), teachers stated that small classes allowed them to provide students with more individual feedback and more one-to-one interactions, and both were identified by teachers as facilitating learning. From 24 case studies conducted in classes of children aged 5-7 years, Blatchford et al. (2003a) cited more instances of immediate feedback in smaller classes (average of 19 students per teacher) than in larger classes (average of 33 students per teacher). Teachers indicated that providing students with quick and frequent feedback is an important advantage of smaller classes. This factor also increased their level of job satisfaction (Blatchford et al., 2003a).

Increased individual feedback is one way that smaller classes contribute to a successful learning environment. Smaller classes also facilitate learning through the interactions of the teachers resulting in the teacher building a deeper relationship with the student (Blatchford et al., 2003a). Questionnaire data from 642 teachers of students aged 5-7 years suggested that teachers felt they were unable to get to know their students in large classes. Not being able to interact with each child daily in large classes was cited as a reason for this. This lack of interaction led to teachers being less competent in knowing the needs of their students academically and emotionally (Blatchford et al., 2003a).

For teachers to be able to assess the instructional needs of their students, they must be able to interact with each child daily. Unfortunately, this is not a possibility in large classes where teachers become overwhelmed by the number of students needing their constant attention (Blatchford et al.,

2003a). Smaller classes facilitate more frequent and higher quality interactions between teachers and students, and this interaction is vital to the implementation of effective instructional practices.

Instructional Activities

Small class increases teacher and student interactions (Blatchford et al., 2003a). Teachers in smaller classes are able to provide students with more instructional feedback (Pedder, 2006). Daily interactions with students enabled teachers to assess the instructional and emotional needs of their students (Blatchford et al., 2003a). Being able to have quality interactions with their students is an important aspect of smaller class sizes as this facilitates the teacher to plan and implement effective instructional activities (Blatchford et al., 2003a).

The use of direct instruction of individual students is one result of increased teacher and student interactions that positively affect the instructional activities of the classroom. Researchers (Blatchford et al., 2003a; Cakmak, 2009) observed that teachers devoted more time in the direct instruction of individual students in smaller classes. Having smaller classes also allows the teacher to create smaller groups for group instruction, resulting in more opportunities for teachers to interact with individual students and to provide more meaningful instruction to all students in the class (Finn, Pannozzo, & Achilles 2003).

Smaller classes allow teachers to interact more with their students through such methods as direct instruction. Another result of smaller class sizes is the opportunity for more flexible teaching activities, including the use of more non-traditional activities. Observation data of classes of children aged

5-7 years showed that teachers of smaller classes (average of 52 students per teacher) were more likely than teachers of larger classes (average of 33 students per teacher) to use activities other than whole group lecture. These teachers were observed as using smaller group activities, more inquiry-based activities, and more open-ended activities (Blatchford et al., 2007).

Teacher questionnaire data suggested that smaller classes facilitated the use of non-traditional activities because the teachers felt more comfortable with having the students move around the room. The teachers also stated that they felt they knew the abilities of their students better because of their frequent interactions with the students (Blatchford et al., 2007). Teacher survey data indicated that teachers were more likely to use innovative teaching strategies when the class was small because the teacher felt like he or she could maintain the attention of the students better (Blatchford et al., 2007). Because small class numbers encourage more interactions with the students, teachers are more comfortable with using non-traditional activities to better meet the needs of all students.

How large Class Size and Psychological Classroom Environment can be managed to enhance Academic Performance.

Classroom Management

Classroom management is also a critical part of effective and successful instruction. Effective classroom management initiates with well-organized and efficient lesson plans preparation, helps a teacher teach and students learn. Students perform well in an optimistic classroom atmosphere and an environment in which they feel secure, safe, cared for, and involved (Aslam, Sulerman, Zulfigar, Shafaat, & Sadiq, 2014). Keeping students well

behaved and on task will allow the teacher to concentrate on the instruction of the lesson being taught and will allow more time for facilitating the learning. Classroom management is a large part of the environment factor of a classroom. Well behaved and on task students allow for all students to feel safe and secure in the classroom. In order for students to be able to concentrate and perform well they need to be able to concentrate on their work and not their safety and wellbeing.

Buchong and Sheffer (2009) suggested that to be most effective a teacher should establish class norms and procedures early on and make sure that those rules and norms are clearly stated and easily understood by the students. Establishing stability and structure in the classroom will allow the students to feel comfortable in their surroundings and be able to navigate confidently while actively engaging in their learning. Buchong and Sheffer explained that creating a warm and inclusive classroom environment while planning for all children to feel welcome and using a number of methods could help educators create a learning environment that encourages and supports all types of learners. Buchong and Sheffer explain the importance of establishing a classroom environment that is favourable for helping all students work cooperatively in order to learn. Strategies that were outlined as key for establishing a warm and inviting classroom were creating an organized space that has easily accessible resources for students and adding colour to the classroom in order to bring life to cold, stark rooms. Another suggestion was to create traditions and establish classroom meetings to help students, become problem solvers and encourage collaboration and cooperation with the diverse members of the classroom. Finally, Buchong and Sheffer talked about the

importance of teaching self-advocacy. The classroom environment is a very important place for children to learn, grow, and become better prepared to participate in the world around them.

Greenberg, Putnam, and Walsh (2014) examined America's traditional teacher preparation programs to see if 122 cited programs offered research based strategies to their teacher candidates to help them better manage their classrooms from the start. Greenberg et al. examined degree to which the programs provided opportunities to practice research-based classroom strategies, techniques, and management. The group identified various ways that the sample could work on classroom management and how much time these programs dedicated to classroom management. Greenberg et al. focused their analysis on classroom management instruction, practice, and training given to each program. The findings of the study showed that while most programs claimed to teach classroom management, very little time and effort was given to classroom management instruction and management. The study reported that time and effort needs to be placed on providing opportunities for new teachers' preparation programs to teach new teachers how to manage a classroom successfully.

Classroom management is proactive and includes the establishment of appropriate classroom rules and procedures. Students must feel very comfortable and so that their input in learning is valued in order to create learning centered environments where the teaching and learning are valued. (Kaliska, 2002). Kaliska noted it is vitally important for a teacher to plan and set up classroom rules and procedures, in order to maintain structure to cut down on discipline issues in the classroom. If students are given a voice and

participate actively in creating classroom rules and procedures they will feel more connected to their environment. Campbell (2009) explained that in order to improve the motivation of students, the teacher's master plan must be well-developed in order to deal with discipline problems in the classroom. When students know that their teacher believes in them, then they in turn believe in themselves creating environments of learners who are confident and who have good self-esteem.

Positive Discipline

Discipline in the classroom is another way to create a positive classroom environment to help build academic success in students. Mendler (2012) suggested that children who feel encouraged and comfortable in their environment will act out less and put forth more effort into their work. It is important to begin each year with rules and procedures clearly outlined and in place. There are many types of disciplines that can be used in the classroom to lessen student's misbehaviour. One type of classroom discipline is positive discipline. The foundation behind the strategy of positive discipline is the use of encouragement. When students feel encouraged by their teacher they are willing to take more risks and are more confident knowing that they will not be ridiculed or shamed for doing so. There are many ways to foster encouragement in the classroom such as giving praise to students for their efforts and work.

Another way is to give positive reinforcement and use accountable talks with the students. Nelsen, Escobar, Ortolano, Duffy and Owen-Sohocki (2001) suggested that there are many ways to establish positive discipline in the classroom. Nelsen et al, (2001) suggested one way to give positive

reinforcement is to teach and model the many facets of positive discipline by using cooperation, mutual respect, kindness and firmness, offering choices, and involving students in the decision-making process. This type of modelling will help students develop the skills and attitudes necessary to become solution oriented (Nelsen, et al, 2001).

Charles and Senter (2005) examined positive discipline in the classroom and how it is used and intended to empower students to become more successful in all areas of their lives. Behaviour problems can adversely affect the academic success of students. When behaviour issues are eliminated from the classrooms the teacher has more time to focus on building relationships with the students and establishing a classroom community of respect and kindness. Charles and Senter identified three empowering perceptions and essential skills that contribute to the benefits of positive discipline. These they outline as: establishing classroom norms, class meetings, and building student-teacher relationships. They used class meetings to develop both the perceptions and essential skills that help to contribute significantly to success in life.

Charles and Senter (2005) identified many ways that teachers show their care about their students' welfare. According to them, teachers show that they care about their students when they decide to go out of their way to get to know their students as individuals and have faith in their ability to make meaningful contributions to the classroom. They explained that students know teachers care when they feel that they are being listened to and that their ideas and thoughts matter (Charles & Senter, 2005). Taking time at the beginning of the school year to establish classroom norms, class meetings, and to show

the students that they will play important roles and also create a solid relationship between students and teachers. The more comfortable students feel in their school environment the more effort they will put forth into their classwork and academics activities.

Somayeh, Sayyedmirshah, Sayyedmastefa, and Azizollah, (2013) investigated the effect of positive discipline on the learning process by focusing on student's abilities. The researchers investigated the effect of positive discipline on the learning process from teachers and principals' point of view and also to seek solutions. The sample studied was 105 principals and 321 teachers who were selected by stratified random sampling. The data were collected by using a self-administered questionnaire. The questionnaire included three dimensions and 30 questions. There were four main research questions introduced and analysed in the study. They found that positive discipline had a positive impact on the learning process. They also found that students' commitment was effective in the realization of positive discipline in the learning process. The study indicated that the effect of the students' commitment solution on realization of the positive discipline is more than average level for both teachers and principals (Charles & Senter, 2005).

Classroom Design

Another facet of creating an effective classroom is the organization or layout of the classroom. A classroom that is well designed and organized will have necessary resources available to students in a readily accessible area. The impact of the physical environment of the classroom is extremely powerful (Kovalik & Olsen, 2009). Aslam, Sulerman, Zulfigar, Shafaat, and Sadiq (2014) reported that a disorganized and chaotic classroom can disrupt a

student's learning. Proper arrangement of a classroom plays a remarkable role in making the instructional process more effective and establishes an atmosphere favourable and encouraging to learning. Aslam, Sulerman, Zulfigar, Shafaat, and Sadiq (2014) reported that the quality of the physical and psychological classroom setting significantly affects academic achievement of the students. This implies that physical and psychological classroom qualities promote effective and successful teaching-learning process. Opdenakker (2011) suggested that teachers carry out a number of specific tasks: developing supportive, caring relationships with and among students; organizing and implementing instruction to optimize students' opportunities to learn; using group management methods to encourage students' engagement in learning tasks; promoting the development of students' self-regulation and social skills; and using appropriate interventions to assist students with behaviour problems.

Buchong and Sheffer (2009) stated that a warm classroom environment can lead to increased academic achievement and a sense of pride and belonging in the school. A classroom that is warm and inviting may include such elements as natural lighting, comfortable temperature setting, pictures, warm paint colours on walls, and the organizational design of desks and resources. The environment of the classroom should include having all resources and areas of the room accessible to all the students in the classroom. The students should feel that they are a part of the classroom.

This will allow the students to feel that they have a voice in the classroom and that their thoughts and ideas matter. A student who feels secured and confident in his or her classroom environment will more readily

express his or her ideas and thoughts during collaborative learning. Classrooms that encourage emotional well-being create an atmosphere for both learning and emotional development. Educational research supports creating an atmosphere of mutual respect where students feel relaxed in asking questions and expressing their thoughts and feelings (Buchong & Sheffer, 2009).

Evanshen and Faulk (2011) suggested that the layout and organization of a classroom can also affect students' academic achievement. It is important to have the classroom set up and organized the first day of school. Welcoming students into a room that is clutter free, warm, and inviting can help students ease into the transition of a new school year and keep them excited about learning. It's important to make sure that the desks are placed in a way that a good and safe flow of student traffic is possible while chaos and confusion are kept to a minimum. If students are crowded together and have no space to call their own or space to work, motivation and effort may be negatively impacted. Another important factor to consider in laying out a classroom is organizing student resources. Class supplies and resources will need to be laced where students can access them quickly and easily. Evershen and Faulk (2011) recommended that classrooms be organized so that resources are easily accessible to students to cut down on lost and transition times.

Thompson (2008) suggested that it is important to create a classroom that is inviting and welcoming. Hanging students work up on the walls to celebrate students' success can help to make students feel that they belong and that the classroom is "theirs." Along with using student work on the walls, rules, procedures, and "I can" statements that are created by the class can help

to give the students a voice in their classrooms. Students can give suggestions and brain storm rules and ideas for creating structures in the room. Thompson (2008) also stated that creating charts with classroom rules and hanging them in the room will not only remind students of teaching and classroom expectations but will also give students pride in what they have created. Students can thrive in environments where teachers take their needs seriously and where they feel valued. Teachers should create classrooms that invite students to join in the learning community; they should also reach out to their students in a way that is tangible. An inviting classroom sends a clear message to their students that they are important and that their teacher approves of them.

Denton and Kriete (2000) reported that when the classroom is well organized, warm, and inviting, students will feel more at ease and more able to focus their time and energy on their learning. Classrooms that are organized will encourage students to thrive academically. Children can relax in their daily school life and focus their energy on learning and feel competent when there is a sense of order and predictability. The classroom needs to meet the physical and emotional needs of the people who spend the most time there. Denton and Kriete (2000) stated that in order to design classrooms that promote the needs of both the student and teacher the space needs to highlight and tailor the classroom to fit the needs and experiences of the children who spend time there. Walking into a well-lit, cheerful room can help create the mood of the students who spend their day there. Having students work displayed on the walls, the walls are painted with a warm and, cheerful colour,

and carefully arranged furniture can help to create a positive atmosphere where the students are excited to learn (Denton & Kriete, 2000).

Dusenbury (2011) argued that, it is important to create environments that make the students feel safe, comfortable, and welcome. Students who feel comfortable in their environment will be more successful academically. Learning will follow when the teacher is conscious of the classroom environment and the way he or she creates a climate of respect and safety. Safety of the students should be one of the first considerations when creating the design of a classroom. Exit signs and doorways should be clearly visible and free of obstructions, enabling the students to enter and exit quickly and safely. Feeling unsafe, however, adversely impacts students' motivation, attitude, behaviour, and overall functioning in school while also producing lower levels of academic achievement. In order for students and staff to perform at their best, they must feel safe in all aspects of their experiences, which require a concerted effort on the part of all stakeholders (Dusenbury, 2011).

Clapper (2010) explored the idea of a safe learning environment from the psychological safety perspective and ways to establish one. Clapper stated that in order to create a safe learning environment, there are certain things that must be put into motion. One, the teacher must set the stage for learning, the teacher should create an atmosphere of trust where students feel safe taking chances and are not afraid to make mistakes. This would mean that the teacher would have to expose students to asking questions and giving input. The teacher would also need to move away from passive means of instruction to

more active strategies that energize the learning environment to maximize learning (Bellamy, 2016).

The classroom environment can be an important part of the academic success of students. Creating a warm, inviting area where children can comfortably and safely explore, engage, and learn is the key to their success. There are many ways to construct an inviting classroom by including such characteristics and elements as comfortable lighting, temperature, warm décor, maintaining an organized and safe classroom layout for students to engage in purposeful lessons. Hillman (1989) reported that creating a classroom that is welcoming and where a child feels safe and secure will positively affect academic performance.

A positive learning climate in a school for young children is a composite of many things. It is an attitude that respects children. It is a place where children receive guidance and encouragement from the responsible adults around them. It is an environment where children can experiment and try out new ideas without fear of failure. It is an atmosphere that builds children's self-confidence so they dare to take risks. It is an environment that nurtures a love for teaching (Hillman, 1989).

Classroom Culture and Collaborative Groups

Sergiovanni (1994) states that there can be major impacts on a students' academic success and motivation based on the climate of a classroom. He also mentioned that it is very important for the teacher to build teacher-student relationships at the beginning of the school year. A teacher can build those relationships by communicating classroom expectations and

making the student feel welcome the moment he or she walks through the door.

Sergiovanni suggested that fostering a sense of community that can bind the teacher and student together can help to bind students together in ways that will lift both students and teachers to a higher level of commitment, performance, and self-understanding. Creating a classroom community that enables them to become a collective group of “we,” and not just a group of “I’s” allows them to feel that they belong and that they are a part of the classroom. Dufour, Dufour, and Eaker, (2008) suggested that collaboration and cooperation within the classroom are two ways that a teacher can help build peer relationships. When students come together creating, discussing, and engaging with one another they build self-confidence and social skills they can use throughout their lifetimes. It is important for a teacher to develop classroom norms that will encourage and reflect the student’s commitment to the class as a whole and that will bring stability to the daily routine. The norms of the classroom should reflect all members of the classroom and all members should be involved in making those norms.

Iyer (2013) reported that cooperative learning promotes thought provoking and interactive environments for the students. The instruction and activities based on cooperative learning are creative, thought provoking, and interactive and offer ideas for how the children can live the value in practice and find the answers from within themselves. Cooperative learning can be used to enhance and promote higher student achievement. In cooperative classrooms students are able to communicate with one another their thoughts,

feelings, and ideas based on the concepts that are being introduced by the teacher.

Johnson and Johnson (2009) reported the students become active members in their own learning taking ownership of their thinking and learning that is needed to work effectively with diverse schoolmates. Students learn how to communicate effectively, provide leadership, and help the group make good decisions, build trust, repair hurt feelings, and understand each other's perspective. Cooperative groups provide an arena in which individuals develop interpersonal and small group skills. Teachers in a cooperative learning classroom become the facilitators and allow students to take charge and become the instructors. Cooperative learning promotes greater efforts to achieve more positive relationships and greater psychological health than competitive and individualistic learning. Cooperative learning strategies can be used in a classroom to help students reach their potentials.

Schlechty (2009) reported that cooperative learning is not just about putting children in a group to work but about creating classroom activities and projects that help to promote independence, individuality, communication, social skills, and accountability. In cooperative groups students come together to solve problems and strategize solutions to all sorts of problems. Including cooperative groups in the classroom enhances the culture of the classroom by motivating the students into doing their best.

When a student has critical thinking skills, can work collaboratively, and has the skills necessary to work in groups, he or she will have skills that are essential citizenship skills also. Gibbs (2006) stated that essential collaborative skills learned become the foundation for a vital community,

working together with others from diverse backgrounds, solving problems, assessing for improvement, and celebrating their achievements. The on-going practice of these key collaborative skills creates a classroom with high levels of participation on the part of all students and establishes a positive climate for teaching and learning.

Finally, students in the classroom should be scaffolded to be able to work on complex tasks. With this strategy there will be times when the groups can begin work without any prior knowledge or teaching of the content to be taught, whereas there will be times when discussions of content will need to take place prior to students beginning their work in order for the groups to be successful. Gibbs (2006) further suggested that collaborative learning is potentially a highly effective method of teaching and instruction. Using methods such as the collaborative learning will help to promote productive group processes and provide needed support to students as they engage in complex tasks are likely to be effective.

Coon (1993) outlined several areas to guide the beginning teacher on how to create and spark new methods, ways to instruct students, and to build successful classrooms. He outlined creative, suggestive ways to build positive classroom environments starting before school opens, through the school year, and ending with a chapter on inspiration and ways to create special events and classroom management. In creating a positive classroom environment, it is instrumental to build students' self-esteem and confidence in order to help them succeed. Students feel more able to learn and succeed when they are relaxed and are a part of a positive atmosphere. This classroom atmosphere can be created by keeping a positive attitude towards the class as a whole and

by designing a functional and cheerful room that is suited to the learning that is taking place and minimizes any frustration.

Coon (1993) outlined the importance of building self-esteem by supporting and making students feel good about themselves by accepting and giving clear guidelines within which they can explore and grow. Students should have their success celebrated and be given support and praise to move on from times of mistakes and stumbles. They should never feel that their mistakes are failures but merely experiences that they can expand and grow from. To help a child develop a positive image a teacher can offer acceptance, set limits on specific actions, offer respect by giving the child more responsibility, allow the child to take risks, and capitalize on the child's strengths. When students feel they are accepted and are learning in a positive atmosphere, they will be more successful academically. Coon emphasized that when a classroom has a comfortable atmosphere and is cheerful students will enjoy learning more.

Motivation

It is important to establish and keep students motivated and engaged in their learning. Erwin (2004) asserts that when establishing motivation in the classroom a teacher can use such strategies as collaborative learning groups, positive reinforcements, student choice activities, and purposeful hands-on activities. Collaborative learning help students learn to work collectively in a group sharing and discussing ideas and problem solving strategies. They are able to take these skills and transfer them into all subject areas of the classroom building their self-confidence and esteem.

Kobus, Maxwell, and Provo (2008) studied ways to increase student motivation in the classroom setting. Three grade levels and 80 students were observed during a 5-month motivation intervention. The motivation intervention strategies that were used were providing creative engagement, positive reinforcement, and self-assessments. The targeted desired behaviours that were being observed were improvements in the areas of off-task behaviour, student work quality, and following directions. Behaviour checklists, parent checklists, and student checklists were all used to gather data on opinions of both the students and parents concerning schooling. The results of the study showed that the interventions were all effective in motivating students' behaviours to some degree.

Valerio (2012) noted that motivation is a fundamental element of students learning; teachers can assist in increasing and developing motivation for optimal achievement in the classroom. Through the facilitation of a supportive classroom environment, engaging learning experiences, goal setting, and teacher enthusiasm teachers can empower students to find joy and excitement in their learning. Motivating and engaging students daily are a challenge that most teachers face. Valerio also stated that motivation is a key element to not only keeping students engaged but in keeping classroom behaviour issues to a minimum. If students are engaged and motivated in their work and are challenged, there is less time for distractions and behavioural issues. All classrooms have a wide range of learners, so there are several different types of motivation and encouragement strategies that need to be used to ensure that all students are being motivated and engaged. Stipek and Seal (2001) suggested that another way to create a positive culture in a

classroom is creating a supportive caring community where students and teachers build respectful, warm relationships with one another. In order to create these types of environments teachers need to understand how to create and construct them. Students will be self-motivated to learn when they feel capable and skilled, and confident of becoming more when they have some choice and control over their learning; and when they feel loved, supported, and respected by their teacher. Johnston (2004) suggested that the language used in a classroom can have a huge impact on students emotionally and in motivating them in their learning. Within productive classrooms, children are not just taught skills, they are taught how to be a part of building emotionally and relationally healthy learning communities. These healthy learning communities are helping students become competent, caring, secure, and actively literate beings.

Positivity and the Power of Words

Johnston (2004) suggested that if teachers establish and create discussions among students by modelling positivity, collaboration, efficacy and carefully choosing their words to communicate the meaning of what they are saying, they become the model of how they want the student to articulate their thoughts. Teaching children to construct meaning with their words is important to their becoming literate and confident. If a teacher can establish a routine of modelling ways to communicate with others in the classroom, it will make the classroom culture a more positive place where learning can take place. Vygotsky (1978) pointed out that, meaningfulness is what makes it possible for children to interact in productive ways, and that children need to

be in control of their learning, integrating connections among feeling, thinking, and acting.

Weber (2004) supported the idea that positive words and respectful communication among students in a classroom are vital to the creation of a healthy classroom culture. Weber studied how words can have the power to inflict pain on others when the words are cruel or harsh. But on the other hand, words also have the power to bring communities together and build relationships among people. Weber reported that words have the power to not only hurt or breakdown a person; they also have the power to heal and lift people up. In a classroom environment the communication or way students articulate with one another can have a profound effect on their motivation and academic success. If students are encouraged to praise one another and speak positivity in their classroom environment, they will feel more confident in sharing and discussing their ideas. When students are working in groups on projects and have learned how to use “accountable” talks with one another, their self-esteem grows and they will engage more in their learning (Weber, 2004).

Michaels, O’Connor, Hall, and Rasnick (2013) stated that talking with others about ideas and work is fundamental to learning. Talking with others gives individuals the opportunity to organize thinking into coherent utterances, hear thinking sounds out loud, listen to how others respond, and, often hear others add to or expand on their own thinking (Michaels, O’Connor, Hall & Rasnick, 2013).

Michael et al. (2013) suggests that the culture in a classroom can be affected greatly by the language being used in it. If students are constantly

being yelled at or talked to in a negative way with and harsh words, they will become withdrawn and self-conscious. But if a teacher establishes early on strategies to help students articulate to one another in positive uplifting ways, it will build a culture of confidence, excitement, caring, and respect. For classroom talk to promote learning it must be accountable to the learning community, to accurate and appropriate knowledge, and to rigorous thinking.

Classroom Lighting and Temperature

Another characteristic of the classroom environment is lighting and temperature. Having enough light to read and a comfortable temperature to work in is very important to the focus and engagement of students. If a classroom is too hot or cold, it can be a distraction to the learning process. The lighting could also deter students from the learning process. Having a classroom that is overly bright or dark could cause students to be overstimulated or struggling to concentrate. Kovalik and Olsen (2009) studied how lighting in schools has been examined from various points of views over the past 50 years. Sufficient light to easily read a book, see work on one's desk, and see the board have long been the accepted standards for classroom lighting. In a study investigating whether daylight and other aspects of the indoor environment in elementary school student classrooms have an effect on student learning, the Heshong Mahone Group (2003), tested 8,000 students from 450 classrooms grades 3-6 looking at the relationship between daylight and student performance. Regression analysis was used to examine the effects of daylight on students learning. The results of the study showed that the visual environment is extremely important for student learning. The findings showed that things such as direct sunlight that is penetrating through unshaded

south or east facing windows caused both thermal and glare discomfort. When teachers do not have control of their windows, student performance is negatively affected. When a classroom environment has good and ample view out a window, better results of student learning were found. The study also found that the acoustic environment was very important for learning. Excessive noises, annoying sounds, and classrooms with poor acoustics had negative effects on student performance. One other factor that affected student performance negatively was poor air quality and ventilation.

The Heshong Mahone Group's (2003) study also found that in order for the classroom environment to support and enhance student learning issues such as quiet ventilation systems and thermostat controls that the teacher can control should be accessible. Also window shades should be provided to eliminate glare and direct sunlight from entering the windows at an overwhelming amount. Lastly, better classroom design and materials that could help to eliminate noise were extremely effective in supporting student learning and success.

Pulay (2015) examined whether a higher correlated colour temperature of fluorescent lighting in an elementary school classroom influenced student on-task behaviour compared to fluorescent lighting with a lower correlated colour temperature. The findings of the research showed that the higher correlated colour lighting affected more students and had impact on student's behaviour, academic success, and attitude. The finding of the study revealed that when the classroom environment has a consistent and comfortable temperature and good lighting, the academic success of a student can be enhanced.

CHAPTER THREE

RESEARCH METHODS

Introduction

The quality of any research project hinges on gathering relevant information that would be used to solve a stated problem. The quality of these processes determines the validity and reliability of data collection and the results obtained. To achieve this, systematic methods and instruments of collecting information for this study were adopted. The focus of the study was to investigate how large class size and the psychological classroom environment influence students' academic performance. Again, the researcher sought to determine the extent to which large class size and psychological classroom environment influence the manner in which teaching and learning was mediated in Public Senior High Schools in the Kumasi Metropolis. This chapter presented the methodology that was used for the study. It focuses on research design, population, sample and sampling techniques, instrument, data collection procedure and data analysis.

Research Design

Quantitative study is an umbrella term that encompasses many research designs including survey, correlational study, causal comparative study and experimental Study. The designs may have some related feature and difference but out of these, the survey was chosen for the purpose of investigating the current status on how large class size and the psychological classroom environment influenced students' academic performance.

According to Ary, Jacobs and Razavieh (1990), survey studies are designed to obtain information concerning the current status of phenomena. Seidu (2006) described survey as the study of existing condition, prevailing view points, attitudes, on-going processes and developing trends in order to obtain information that can be analysed and interpreted to come up with a report of the present status of subject or phenomenon under study. This design was found suitable because it gives an in-depth description of the phenomena in their existing setting and economical in collecting data from a large sample with high data turn over (Kothari, 2004).

Gay (1992) contended that survey determine and report just the way things are. He further indicated that they are directed towards the determination of the nature of situation as they exist, as at the time of the study. Fraenkel and Wallen, (2000) stated that obtaining answers from a large group of people to a set of carefully designed and administered questions lie at the heart of survey research. Thus, the researcher employed survey in his research because it focused opinions of people on influences of large class size and psychological classroom environment has on the academic performance among PSHS in the Kumasi Metropolis.

For this study, the researcher chose cross-sectional survey because he collected the data at a limited time. For example, the researcher surveyed the views of students on how large class size and psychological classroom environment influenced teaching and learning and how the situation can be managed. From the view of Sheperis, Young and Daniels (2010), using cross sectional survey design, the researcher is able to collect data quickly and generate research results in a timely manner. Again, they further stated that the

design provides information about participants' present-day state of their psychological classroom environment. With this, the data obtained can quickly be used to make decision about current situation of large class size and psychological classroom environment situation of students in Ghana.

Hennekens and Buring, (1987) also outlined the strengths and weaknesses of cross sectional survey. The strengths are relatively quick and easy to conduct, data on all variables are collected only once, ability to measure prevalence for all factors under investigation, multiple outcome and exposures can be studied, good for descriptive analysis and for generating hypothesis. The weaknesses are difficulty to determine whether the outcome followed exposure in time or exposure resulted from the outcome, it measures prevalence rather than incident cases, associations identified may be difficult to interpret, susceptible to bias due to low responses and misclassification due to recall bias. Since the researcher was working with a limited time, cross sectional survey was appropriate in helping to relatively conduct and collect data within a shorter time.

The Study Area

An important component of the research process is site selection. According to Berg (2004), an inappropriate location could “weaken or ruin eventual findings. The researcher must be careful to identify an appropriate population, not merely an easily accessible one”. To obtain the most relevant data, Kumasi Metropolis in Ashanti Region, was purposefully chosen as the study area for a number of reasons.

Kumasi is located in the transitional forest zone and is about 270km north of the national capital, Accra. It is between latitude 6.35°-6.40° and

longitude 1.30°-1.35°, an elevation which ranges between 250-300 metres above sea level with an area of about 254 square kilometres. The unique centrality of the city as a traversing point from all parts of the country makes it a special place for many to migrate to. The Kumasi metropolis is the most populous district in the Ashanti Region. During the 2010 Population Census it recorded a figure of 2,130,249. It has been projected to have a population of 3,625,180 in 2020 based on a growth rate of 5.4% and this accounts for just under a third (32.4%) of the region's population. Kumasi has attracted such a large population partly because it is the regional capital, and also the most commercialised centre in the region.

Other reasons included the centrality of Kumasi as a nodal city with major arterial routes linking it to other parts of the country and also the fact that it is an educational centre with six (6) public and private Universities, two Colleges of Education, twenty five (25) private and public Senior High Schools and four hundred and five (405) Basic Schools. Kumasi Metropolis is currently the second most urbanised area in the country, after Accra (87.7%). The large urban population in the region is mainly due to the fact that the Kumasi Metropolis is not only entirely urban but accounts for a third of the region's population. The growth of industries and the large volume of commercial activity in and around Kumasi as well as the high migrant number may account partly for the relatively high urban population.

It has been estimated to have a daytime population of about 2 million. The population has grown rapidly over the inter-censal periods from 346,336 in 1970, 487,504 in 1984 to 1,170,270 in 2000. Based on these the census reports the estimated population growth rate as 5.47%. The city of Kumasi has

been planned with about twenty seven (27) markets to serve as trading centres and places of exchange within various communities. Some of these markets have been described as traditional community markets.

Population

According to Best and Kahn (1993, p.13), population is defined as “a group of individuals who have one or more characteristics in common that are of interest to the researcher”. Population is, thus, the group to which a researcher would like to make references from. For this study, the researcher chose students from the PSHSs, in the Kumasi Metropolis. The estimated population for this study is captured in Table 2.

Table 2: Estimated Population of PSHSs in Kumasi Metropolis

Names of PSHSs	Estimated Students Population
Anglican Senior High School,	2561
Asanteman Senior High School,	2101
Adventist Senior High School,	1943
Ghana Armed Forces Senior High School	1798
KNUST Senior High School,	1723
Kumasi Academy,	1956
Kumasi Girls Senior High School,	1955
Kumasi High School,	2801
Kumasi Senior High Technical School,	2235
Mmofraturu Girls Senior High School,	1924
Opoku Ware School,	2980
Osei Kyeretwie Senior High School,	1703
Prempeh College,	2905
Serwaa Nyarko Senior High School,	1820
St. Louis Senior High School,	1905
T.I. Ahmadiyya Senior High School,	1964
Total	34,274

Source: Ministry of Education (MoE) SHSs National Profile, (2016).

The study was carried out among PSHSs in the Kumasi Metropolis in the Ashanti region of Ghana. There are sixteen (16) public senior high schools listed in the Kumasi Metropolis. The total population consists of thirty four thousand, two hundred and seventy four students (34,274) from sixteen PSHSs in the Kumasi Metropolis. The target population was made up of ten (10) selection PSHSs in the Kumasi Metropolis.

Sampling Procedure

The sample size consists 320 students. The number was obtained with the help of Krejcie and Morgan's (1970) table because the population of thirty four thousand, two hundred and seventy four students (34,274) correspond to 320 from the table. The sample was used to guide the researcher in the technique used in sampling the respondents.

The sampling techniques used are stratified sampling, purposive and simple random sampling. In selecting the schools for the study, stratified sampling which falls under probability sampling method was used. Thus, all the PSHSs in the Kumasi Metropolis were stratified into two strata. Mixed schools in Kumasi formed one stratum, single sex schools forming another stratum. Using the lottery method, five PSHSs were then randomly selected from each of the two strata. Thirty two (32) respondents were selected from each mixed and single schools within the sampled schools. The schools comprised five mixed schools and five single sex schools. They are shown in Table 3

Table 3: Schools Selected for the Study

Names of SHSs	Type of School	Respondents Students
Anglican SHS	Mixed	32
Asanteman SHS	Mixed	32
Adventist SHS	Mixed	32
Ghana Armed Forces SHS	Mixed	32
KNUST SHS,	Mixed	32
Kumasi Girls SHS,	Single	32
Kumasi High School,	Single	32
Opoku Ware School,	Single	32
Prempeh College,	Single	32
St. Louis SHS	Single	32
TOTAL		320

Source: Field Survey, Akoto-Baako (2017).

Proportionate quota sampling was apportioned to the selected schools after which convenient sampling was employed to select 32 form three students from each of the schools.

Data Collection Instruments

In an attempt to elicit relevant information for the study, the researcher employed questionnaire as data collection instrument. A self-developed questionnaire was employed for the study. The instruments were developed in line with the literature. Four point Likert-type scales were used to register the extent of agreement or disagreement with a particular statement of attitude, beliefs or judgment (Tuckman, 1994). The four Point Likert-type scale will be

scored as: “Strongly Disagree” =1, “Disagree” =2, “Agree” =3, and “Strongly Agree” =4.

The questionnaire was divided into five (5) main sections and it contained thirty eight (38) items. Section A, (1-6) elicited background information on the various schools and respondents. They included: name of institution; gender; age, programme of study and number of students were in class. Section B (7-10) elicited information on how class size influenced students’ academic performance in PSHSs. Section C (11-19) dwelled on how large class size and psychological classroom environment affected students’ academic performance in PSHSs. Section D (20-31) was designed to elicit information on how large classes size and psychological classroom environment influence the manner in which teaching and learning were mediated in public senior high school. Section E (32-38) covered how large class size and psychological classroom environment can be managed to enhance good students’ academic performance in PSHSs. It was important to craft items of the questionnaire around issues that were central to the research because according to Bell (2008) they enable the researcher to gather the relevant data to answer the research questions and to achieve the objectives of the study. Mock examination scores of the four core subjects (Mathematics, English, Science and Social Studies) was obtained from the schools as the measure of students’ performance.

Pilot-Testing of Instrument

Bryman and Bell (2007), suggested a need to conduct a pilot study before the actual research in order to ensure that all the research instruments as a whole function well. I did the pilot study before carrying out the actual study

in Kumasi Metropolis in order to check the relevance of the instruments for the purposes of the research and the clarity of the items in the questionnaire. This was in order to do the following: eliminate ambiguities in wording; identify redundant questions and misunderstood items; and, to gain feedback on the validity of the instruments for the purposes of investigating guidance and counselling in schools.

Questions which were found to be ambiguous and those not suitable for the study were reconstructed. Other items which were found to elicit similar responses were either eliminated or reconstructed. The relevant corrections were made before the final administration of the questionnaire. The research instrument was pilot-tested among two (2) schools in Cape Coast Metropolis: St Augustine's College and University Practice SHS. The selected schools were comparable in terms of having similar characteristics as the target population because the sampled schools in the main study are made up of single and mixed schools. The schools were also noted for having large classes. The purpose of pilot testing was to discover any weakness in the instrument, check for clarity of the questions or items and also elicit comments from respondents that would assist in the improvement and modification of the instrument. Pilot testing was also to enable the researcher to detect any flaws in the administration of the research instrument.

Validity of the Instruments

Validity is the exactness and precision of deductions based on the findings from the research (Mugenda & Mugenda, 2003). The validation of the instruments will be carried out to check correctness of the data collection instruments during the pilot study. Wiersma (1995) emphasizes that pre-

testing of study instruments, before the actual study support criterion and construct validation of the tools. Criterion and construct validation were established through pre-testing the instruments used in the study. This checks the appropriateness of the data collection instruments.

In order to enhance the validity of the study, the questionnaire were given to my supervisors and for expert assessment. This ensured both face and content related evidence to the items and examine whether the items related to the research questions and also comprehensively cover the details of the study. Content validity will be ensured by effectively indicating the interests of the study (Fraenkel & Wallen, 2000). Comments were made on the language, clarity, relevance of the items, format, structure and content of the research instruments in order to deem it acceptable. Suggestions were made on rewording questions, adding questions, and deleting some irrelevant questions.

Reliability of the Instruments

Reliability reveals that when procedures of the study are repeated, the exact results are expected (Mugenda & Mugenda, 2003). A reliability test was carried out with the purpose of testing the consistency of the research instruments. The research instruments were improved by revising or deleting items. For reliability of the instruments, the instrument was pre-tested. The pre-test results were used to determine the reliability of the instruments with the Cronbach's Alpha measure of internal consistency. The Statistical Product for Service Solution (Version 22.0) was used for the computations. The obtained reliability was .791 (See Appendix B).

Data Collection Procedure

In conducting research, Creswell (2008) instructed researchers to seek or obtain permission from the authorities in charge of the site of the study because it involves a prolonged and extensive data collection. In order to deal with ethical issues like confidentiality, anonymity, consent and debriefing, the researcher applied for ethical clearance from Institutional Review Board, University of Cape Coast. An introductory letter was also collected from the Department of Education and Psychology to grant the researcher access to the study, this was to seek permission from head masters/mistress of all sampled PSHSs to carry out the study in their schools. When permission was granted, questionnaire was sent to students of the schools.

The researcher was personally present at each of the schools to administer the questionnaire. Administering the questionnaire personally offered the researcher the opportunity to explain to the respondents into details how to respond to the items on the questionnaire.

Data Processing and Analysis

The demographic variables from the questionnaire were primarily analysed using descriptive statistics where frequency and central tendency of respondents' responses were measured. Univariate analysis was conducted to gain descriptive statistics on each of the variables in this study. Descriptive statistics (frequencies and percentage) were calculated for age, gender, religion and type of school. The second section of the questionnaire was analysed using means and standard deviations for research questions, hypothesis 1 & 2 were tested using Pearson product moment correlation and the last hypothesis was tested using multiple regression. The analysis was

calculated using an alpha level of 0.05 to achieve statistical significance. The Statistical Package for the Social Science (SPSS) for Windows (2010) was the computer program used to analyse data for this study.

Chapter Summary

In this chapter, the research method was used to explain the research process, choices of methods and the direction of the study. I also discussed the approaches for data analysis. In addition to that I discussed the claims about the trustworthiness of the data collected in the research design, which was followed by a presentation of the responses of my research participants to the questionnaire.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The purpose of the study was to investigate how large class size and the psychological classroom environment influenced students' academic performance and also to determine the extent to which large class size and psychological classroom environment influence the manner in which teaching and learning was mediated in PSHS. The first part of this chapter describes the demographic characteristics of respondents. In the second part, the research findings are presented in four sections according to the research questions posed.

Preliminaries

In all, 320 questionnaires were distributed to students of the selected schools. The researcher ensured 100% return rate of the questionnaire. This presupposes that the entire 320 questionnaire that were distributed to the students were all filled and returned for analysis and discussion. The views of the respondents are presented in the section that follows.

Statistical Analysis of Demographic Data

This section of the questionnaire was designed to elicit the personal information of the students involved in the study. This included: their gender, age, and names of their various schools.

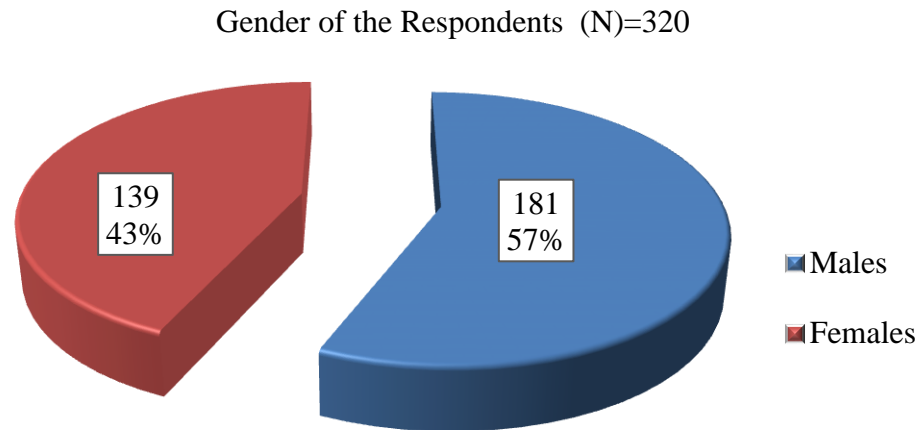


Figure 2: A Pie Chart Showing the Sex of the Respondents

Source: Field Survey (2017)

Figure 2 presents the pie chart on the gender of the respondents. The results revealed that male students were 181 representing 57% and female students were 139 representing 43%. This showed that there were more male students who took part in the study than females

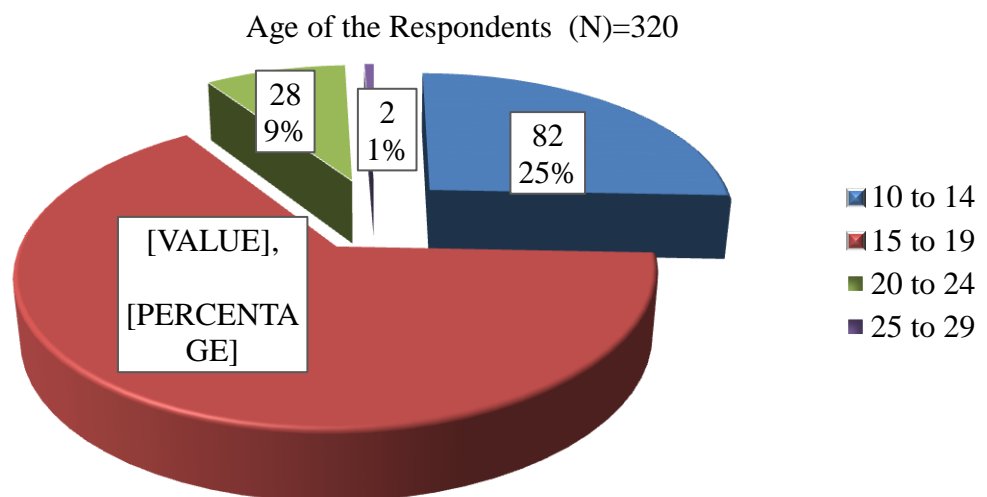


Figure 3: A Pie Chart Showing the Age of the Respondents

Source: Field Survey (2017)

Figure 3 also presents a Pie Chart of age distribution of the respondents. The figure shows that the majority of the students were within

the age range of 15 and 19. That is 208 of them representing 65%. Those students within the age range of 12 and 14 were 82 representing 25% of the students. Twenty-eight of them representing 9% were within the ages of 20 and 24. Only 2 of them representing 1% were within the ages of 25 and 29.

Propoprtion of mixed and single schools selected (N)=320

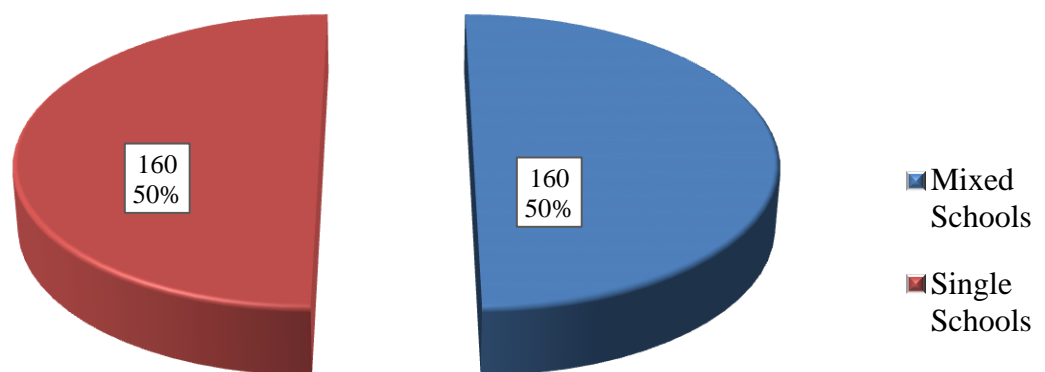


Figure 4: A Pie Chart Showing the Proportion of the Schools Selected

Source: Field Survey (2017)

Figure 4 presents the proportion of the mixed and single sex schools selected for the study. The results showed that there was equal number of schools that took part in the study.

Statistical Analysis of the Main Data

To achieve the purpose of the research questions and hypothesis, Descriptive Statistics (Means and Standard Deviations) and inferential statistics (Pearson Product Moment Correlation coefficient and multiple regression) were deemed appropriate for the analyses.

The findings are presented as follows.

Research Question One: How do large class size influence students’ academic performance in Public Senior High School?

Table 4: Means and Standard Deviation Analysis of How Class Size Affects Students’ Academic Performance in the Public Senior High Schools in Kumasi

S/n	Statement	N	Mean	Std. D
1	Large class size limits my ability to listen to daily instruction from my teacher.	320	2.63	1.48
2	Large class size limits my ability to participate in classroom activities.	320	2.59	1.12
3	Large class size affect my academic performance.	320	2.57	1.22
4	Large class size limits my learning opportunities.	320	2.76	1.43
5	MM/Std,D	320	2.64	1.31

Source: Field Survey (2017)

On a four-point Likert scale, the students were asked to indicate their levels of agreement or disagreement with statements concerning how class size influenced students’ academic performance. A mean score of 2.50 and above indicate positive responses while a mean of 2.49 and below indicate students’ negative responses. The test value was computed by adding all the scores on the Likert scale. That is Strongly Agree was scored as 4, Agree as 3, Disagree as 2 and strongly Disagree as 1. The test value was obtained by adding all the scores together (4 +3+2+1=10) and was divided by the four point Likert scale (10/4=2.5)

The purpose of this research question was to investigate and find out how class size influenced students' academic performance in Public Senior High School. The overall mean score (mean=2.64, SD=1.316 n=320) gave evidence to prove that class size influenced students' academic performance. The responses on the item "large class size limits my ability to listen to daily instruction from my teacher" produced a (mean =2.63, SD=1.48, n=320) which is greater than test value of 2.5. On the issue of whether large class size limited the students ability to participate in classroom activities, the (mean =2.59, SD=1.126, n=320) shows that indeed class size limited students ability to participate in classroom activities.

The results further gave evidence that large class size influenced students' academic performance. The (mean=2.57, SD=1.22, n=320) showed that students' academic performance was influenced by the large class size. Finally, on the learning opportunities of the students, the results show that large class size limited their learning opportunities. The (mean=2.76, SD=1.43, n=320) which is more than the test value of 2.5 gives evidence to those effects.

The findings of the present study confirms the work of Blatchford, Bassett, Goldstein and Martin, (2003); Blatchford, Russell, Bassett, Brown, and Martin, (2007); Cakmak (2009) and Finn and Achilles, (1999) who also found out that larger class sizes resulted in less time being utilized for instruction due to more instances of student misbehaviour and off-task behaviour and this leads to low academic performance of students. Also, the study is in line a with study of Blatchford al et., (2007) who argued that large class limited students ability to participate in classroom activities and a lack of

adequate physical space with which to control student behaviour and to implement non-traditional instructional strategies is also a problem in large classes and leads to low academic performance of students.

Kornfeld (2010) findings showed that large class size had a critical influence on students' academic achievement, because there were significant differences between students who were educated in classes nearly twice as large as other classes. Kornfeld (2010) concluded that there was a difference in terms of academic achievement with the exception of 10th grade Maths scores, students in smaller classes performed better than students in larger classes.

Agyemeng (2009) agreed that teacher quality and the teacher student relationship impact noted on students' achievements. Agyemeng (2009) study showed that students in the smaller class improve teacher quality include: high quality professional development; regular and focused teacher collaboration and strong supervision of students in class. All schools can deliberately foster strong relationships between teachers and students.

Research Question Two: How do psychological classroom environment affect students' academic performance in Public Senior High School?

Table 5: Means and Standard Deviation Analysis of how Psychological Classroom Environment Affect Students' Academic Performance in the Public Senior High Schools in Kumasi

S/n	Statement	N	Mean	St. D
1	The classroom environment supports cohesiveness.	320	2.53	1.50
2	The classroom environment supports participation.	320	2.52	1.11
3	Our classroom is favourable for forming groups to help corporative learning for academic success.	320	2.74	.832
4	I feel left alone during lesson period.	320	3.25	.826
5	My classroom environment supports positive involvement of students' ideas during classroom activities.	320	2.06	1.08
6	My classroom environment is safe for students to participate and ask questions.	320	2.01	1.10
7	Teachers encourage us when we have difficulties during lessons.	320	2.02	.710
8	Teachers communicate learning goals to us.	320	2.5	.434
9	Teachers' emphasis learning process instead of learning products during lessons.	320	2.02	.710
10	Mean of Means	320	2.58	1.24

Source: Field Survey (2017)

The rationale behind this research question was to examine how psychological classroom environment influence students' academic performance in the Public Senior High Schools. From Table 5, the overall mean (mean=2.58, SD=1.24, n=320) gives the general picture that

psychological classroom environment has a great influence on students' academic performance. Most of the responses to the items produced mean scores that were greater than the test value of 2.5. For example, to find out whether the student classroom was favourable for forming groups to help corporative learning for academic success, the results (mean=2.74, SD=.832, n=320) show that psychological classroom environment affected students ability to form groups to help corporative learning for academic success.

Again, the study showed that psychological classroom environment made students to feel alone during lesson period. The results (mean=3.25, SD=.826, n=320) which is more than the test value of 2.5 confirm this fact. The researcher again elicited from the students whether their classroom environment supported positive involvement of students' ideas during classroom activities. The results (mean=2.06, SD=1.08, n=320) which is less than the test value of 2.5 shows that indeed psychological classroom environment did not support students' positive involvement of ideas during classroom activities. The respondents further gave evidence (mean=2.01, SD=1.10, n=320) that their psychological classroom environment did not make students safe to participate and ask questions.

The present study gives ample evidence to the work of Miller and Cunningham (2011) that for students to enhance their perceptions of feeling supported as a class participant, they need to be supported by good psychological environment. That notwithstanding the above empirical evidence, Miller and Cunningham, 2011; Patrick, Ryan and Kaplan (2007) also found that there is a strong, positive relationship between students' level of motivation and engagement and their perceptions of the classroom

environment as being socially supportive when students' have a good psychological environment.

In comparing the results from earlier studies, the results of both Glass and Smith's (1979) and Biddle and Berliner's (2002) meta-analyses showed a consensus that short term exposure to psychological classroom environment generated gains in student achievement. Other researchers, such as Slavin (1990), have suggested that smaller classes with good class environment have only moderately positive effects over larger class sizes. Even then, according to Slavin, these moderately positive effects were only seen in students that experienced substantially smaller class sizes with good psychological classroom environment (e.g., a class reduction from 25 to 15 students) for three or more consecutive years.

Research Question 3: How do class size and psychological classroom environment influence the manner in which teaching and learning is mediated in Public Senior High School?

Table 6: Means and Standard Deviation Results of how Class Size and Psychological Classroom Environment Influence the Teaching and Learning in Public Senior High Schools in Kumasi

S/n	Statement	N	Mean	Std. D
1	Your classroom support positive motivation.	320	2.01	.704
2	Students perceive classroom environment as being socially supportive.	320	1.76	.430
3	Student receives emotional support from teachers.	320	2.26	1.08
4	Student receives encouragement from teachers.	320	2.02	.710
5	Teachers encourage students to talk and share ideas in class.	320	1.52	.878
6	Students are given immediate feedback when they need direction to proceed.	320	2.00	.000
7	Class size affects the pace of lessons in class.	320	2.24	1.09
8	Teachers are able to identify students who have difficulties in understanding the main ideas of a lesson.	320	2.52	1.11
9	Large class size increase the time teacher spent on handling non-instructional tasks.	320	2.23	.837
10	Teachers spend a lot of time controlling students rather than teaching.	320	1.99	.713
11	Teachers are able to assess the instructional needs of students.	320	2.53	1.12
12	Teachers able to assess to emotional need of students.	320	2.52	1.11
13	Mean of Means	320	2.13	.817

Source: Field Survey (2017)

The objective for this research question was to find out whether the combination of class size and psychological classroom environment influenced the manner in which teaching and learning were mediated in the Public Senior High Schools. To realise this objective, means and standard deviations were computed for the items. The responses from the students produced a mean score of (mean=2.13, SD= 0.817, n=320) which means that class size and psychological classroom environment did not influence the manner in which teaching and learning were mediated in the selected Public Senior High Schools.

From Table 6, response to item whether classroom supported positive motivation, the results show that (mean=2.01, SD=.704, n=320) class size and psychological classroom environment does not promote and support positive motivation in classroom. Students perceive classroom environment as being socially supportive produced a (mean=1.76, SD= .430, n=320) which is less than the test value of 2.5 confirms the fact that class size and psychological classroom environment does not allow students have socially supportive classroom activities. On whether students receive emotional support from teachers, it was reveal that (mean=2.26, SD= 1.08, n=320) due to the class size and psychological classroom environment students did not receive any emotional support from teachers.

Table 6 further shows that teachers did not encourage students to talk and share ideas in class. To confirm this, the item produced a mean of (mean=1.52, SD=.878, n=320) which showed that classes size a psychology that class size and psychological classroom environment in the Public Senior High Schools does not allow and encourage students to talk and share ideas in

class. On the issue of whether large class size increase the time teacher spent on handling non-instructional tasks, the results reveals (mean=1.99, SD=.713, n=320) that class size and psychological classroom environment in the Public Senior High Schools makes it difficult for teachers to control students to maximize learning.

The findings are consistent with the findings of Miller and Cunningham, 2011) that teachers who run respectful classrooms are in turn more respected by their students, and students believe that these teachers also hold higher learning expectations. Teachers are encouraged to focus more on the learning task than on the outcome or grade assigned at the end of the task, although this becomes much more difficult if the emphasis in education is placed on accountability and high-stakes testing and this classroom management and psychological environment

Kobina (1998) asserted that smaller class size influence the way and manner a teacher will be able to deal with the psychological needs of students. Because with smaller class the teacher will be able to concentrate on the needs of students that is; psychological, personal, emotional and social aspect of the student. In support of this statement, Agyemeng (2009) believed that a smaller class size leads to good psychological classroom environment which can help students to perform well academically than students in large classes where arrangement in class causes distress to them. A qualitative study by Owusu-Ansah (2014) suggested that teachers struggle as class sizes escalate which affect student academic and psychological needs in classroom.

Research Question 4: How can class size and psychological classroom environment be managed to enhance good students' academic performance in Public Senior High School?

Table 7: Means and Standard Deviation results of How Class Size and Psychological Classroom Environment Be Managed to Enhance Good Students' Academic Performance in Public Senior High School in Kumasi

S/n	Statement	N	Mean	St. D
1	By the support teachers give to students.	320	2.78	1.29
2	Through professional development of teachers.	320	2.52	1.11
3	Through the enhancement of reduced class size.	320	2.52	1.11
4	Employing more teachers in the class to reduce the work load of a regular teacher.	320	3.00	2.22
5	Enrolling according to the space that can hold the number of students in the class.	320	2.52	1.11
6	Teachers making it a priority to give students time to work together when the teacher is not directing them (teaching strategies)	320	2.78	1.29
7	I prefer clustering student's desks or use tables so they can work together (classroom environment)	320	2.00	1.22
8	MM/Std.D	320	2.58	1.34

Source: Field Survey (2017)

This research question sought to find out how class size and psychological classroom environment can be managed to enhance good students' academic performance in Public Senior High Schools. The overall

mean score of (mean=2.58, SD=1.34, n=320) gives the indication that there are many factors that can be put in place to help to enhance and manage psychological classroom environment in schools. A few of them such as support teachers can give to students produced (mean=2.78, SD=1.29, n=320) This shows that support teachers give to students can serve as one of the key factors that can be put in place to manage psychological classroom environment in schools.

Furthermore, the results showed that employing more teachers in the class to reduce the work load of a regular teacher can help in managing psychological classroom environment in schools. The item produced (mean=3.00, SD=2.22, n=320) confirming the fact that it can serve as a measure to manage psychological classroom environment in schools. With regards to the item whether teachers making it a priority to give students time to work together when the teacher is not directing them (teaching strategies) can help in managing psychological classroom environment in schools. The mean score (mean=2.78, SD=1.29, n=320) which is more than the test value of 2.5 gives evidence to that fact that it is one of strategies to manage class size.

On the contrary, some of the items show that they cannot help in managing psychological classroom environment in schools. For example, on the issue of “I prefer clustering students’ desks or use tables so they can work together (classroom environment)” it was revealed the results (mean=2.00, SD=1.22, n=320) which is less than test value 2.5 shows that it cannot help in managing psychological classroom environment in schools. Kobina (1998) explained that managing class size helped improve students’ academic

performance because class teachers have attention for each student in classroom.

Qaiser and Ishtiaq (2014) concluded that proper arrangement of classroom environment plays a remarkable role in making instructional process more effective and establishes an atmosphere favourable and encouraging to learning. The quality of the physical classroom setting significantly affects academic achievement of the students. Physical facilities in classrooms ensure effective and successful teaching learning process. Students get more information from their teachers in well facilitated classrooms and consequently they show good performance. On the other hand, if students feel uncomfortable in classroom then they will fail to get more information from their teachers.

Research Hypothesis One

H₁: There is no statistically significant relationship between class size and Psychological classroom Environment.

Table 8: Correlation between Large Class Size correlate and Psychological classroom Environment

Variables		Large Class Size	Psychological Class Environment
Large Class	Pearson Correlation	1	.691 [*]
Size	Sig. (2-tailed)		.000
	N	320	320
Psychological Class	Pearson Correlation	.691 [*]	1
Environment	Sig. (2-tailed)	.000	
	N	320	320

* Correlation is significant at the 0.05 level (2-tailed).

Source: Field Survey (2017)

As a way of achieving the purpose of the study, the researcher tested the hypothesis to find out whether there is a statistical significant relationship between large class size and psychological classroom environment. To materialise this, correlation was computed among the two variables (Large class size correlate and psychological classroom environment). The general results from the findings reveal that large class correlated with Psychological classroom Environment and the results shows that there is a statistically significant relationship between the variables. That is $r = .691$, $p < 0.05$, $n=320$, Sig. =.000, 2-tailed).

Research Hypothesis Two

H₂: There is no statistically significant relationship between class size and Academic Performance

Table 9: Correlation between Classroom Interaction and Academic Performance

Variables		Classroom	
		Interaction	Academic Performance
Classroom	Pearson Correlation	1	.749*
Interaction	Sig. (2-tailed)		.000
	N	320	320
Academic	Pearson Correlation	.749*	1
Performance	Sig. (2-tailed)	.000	
	N	320	320

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Field Survey (2017)

Furthermore, the researcher again sought to determine the relationship between large class size and classroom interaction. To realise this, a correlation was deemed appropriate to test the hypotheses that there is no statistically significant relationship between class size and classroom interaction. Therefore, Pearson's product moment correlation was computed between the two variables (large class size and classroom interaction). The general results from the findings reveal that large class size correlate with classroom interaction and the results prove there is a statistically significant relationship between the variables. That is $r = .749$, $n=320$ $p < 0.05$, $\text{Sig.} = .000$, 2-tailed). That is to conclude that large class size is highly correlated with students' academic performance in the selected schools.

The findings from the present analysis complement the studies of Blatchford et al., (2007), Cakmak, (2009), Finn and Achilles (1999). In their studies, class size was found to highly correlate with students' academic performance. To further support the empirical evidence with the present study, the finding is consistent with that of Blatchford et al., (2007) and Deutsch (2003). In their study it was concluded that lack of physical space to separate disruptive students and to use different types of instructional activities had influence on students' academic performance. They further asserted that larger student populations prevented teachers from being able to interact with their students as much as they would in smaller populations. The studies of Egelson et al., (1996), Finn et al., (2003), and Halback et al., (2001) findings also confirm current findings that large classroom size serves a factor that contribute to an increase in classroom management issues.

Research Hypothesis Three

H₂: There is no statistically significant among large class size, psychological classroom environment and class interaction and academic performance of students.

The researcher again sought to find out which of these variables (large class size, psychological classroom environment and class interaction) predict academic performance. To achieve this, Multiple Regression was deemed appropriate for the computations. Table 10 presents the results.

Table 10: Descriptive Statistics of the Study variables

Variables	Mean	Std. D	N
Large Class	10.80	3.561	320
Psychological classroom Environment	20.91	6.160	320
Classroom interaction	19.45	7.441	320

Source: Field Survey (2017)

Table 10 presents the Descriptive Statistics of the study variables. The Table shows that Psychological classroom Environment recorded the highest mean and Standard Deviation of (M=20.91, SD= 6.160) respectively. This was followed by Classroom Interaction with the mean and standard deviation of (mean=19.45, SD=7.441). Large class size recorded the lowest mean and standard deviation of (mean=10.80, SD= 3.561). From the analysis, one could conclude that psychological classroom environment predicted students' performance than all the other variables. However, the researcher further conducted regression analysis to give more statistical conclusions

Table 11: Model Summary of the Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.807 ^a	.652	.648	10.492	.652	197.01	3	316	.000

a. Predictors: (Constant), Classroom interaction, large class size, psychological classroom environment;

b. Dependent Variable: performance

Table 11 also contains three SPSS model summary for the correlations. It is clear from the above correlations that $R = 0.807^a$, R Square = 0.652, and Adjusted R Square = 0.648. Three of the independent variables are statistically significant that is (p -value = 0.000) with a df of 316 This clearly shows that the greatest best predictors of the dependent variable are classroom interaction, large class size and psychological classroom environment

Table 12: Multiple Regression Analysis of the Variables

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	30.722	3.237		9.491	.000
	Large Class Size	-.555	.171	-.112	-3.236	.001
	Psychological classroom	1.590	.117	.554	13.563	.000
	Classroom Interaction	.731	.096	.307	7.621	.000

a. Dependent Variable: performance

Source: Field Survey (2017)

Table 12 presents the SPSS Coefficients Model for the different variables. It also contains the correlations for the independent variables (large class size, psychological classroom environment and classroom interaction). All the three independent variables are statistically significant: Large class size (p-value = 0.001), Psychological classroom environment (p-value = 0.000) and Classroom Interaction (p-value = 0.000). When evaluating the standardized beta values, the greatest influences upon the dependent variable are in the following order: Psychological classroom (beta = 0.554), Classroom Interaction (beta = 0.307), and Large Class size (beta=-0.112). The findings lend support to the evidence of Heshong Mahone Group's (2003). Their study found that many factors affect classroom environment, however, psychological classroom have much influence

Chapter Summary

In summary, the study revealed that class size influenced the academic performance of students in Public Senior High School in the Kumasi Metropolis. Again, it was found out that psychological classroom environment to a large extent influenced the academic performance of students. To determine the relationship between class size and psychological classroom environment, it was discovered that there was a strong significant positive relationship between class size and psychological classroom environment. It was also found out that there was significant positive relationship between class size and classroom interaction. However, among all the tested variables, psychological classroom was identified to have the highest predictor of students performance (beta = 0.554) which was followed by classroom interaction (beta =0.307), and large class size (beta=-0.112).

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter presents a summary of the findings of the study as well as the conclusions, recommendations and suggestions for further research. Thus, the chapter focuses on the implications of the findings from the study for policy formulation. The recommendations are made based on the key findings and major conclusions arising from the study.

Summary of the Study

The study investigated how large class size and the psychological classroom environment affect students' academic performance. Again, the researcher sought to determine the extent to which large class size and psychological classroom environment influenced the manner in which teaching and learning is mediated in Public Senior High School in the Kumasi Metropolis. The survey design was adopted for the study. This shows that the study employed quantitative approach through the use of questionnaire. In all, there were 320 respondents who took part in the study.

Quantitative data analysis was performed using the Statistical Products and Service Solutions (SPSS). Both descriptive and inferential statistical tools were used in order to analyse the data, and also answer the research questions. To find out the influence of class size and psychological classroom environment on students' academic performance, the mean, standard

deviation, multiple linear regression as well as the Pearson's product moment correlation were used to perform the analyses of the data collected.

Key Findings

The first objective of the study was to investigate how class size influenced students' academic performance in Public Senior High School. The following major findings were revealed:

1. The majority of the respondents believed that class size influenced students' academic performance.
2. However, almost all the respondents were of the view that when they were grouped in smaller classes it enabled them to participate in classroom activities.
3. Finally, respondents were of the view that large class size limited students' learning opportunities.

How the psychological classroom environment influenced students' academic performance was examined as the second objective. The key findings that emerged from this objective were that:

1. The majority of the respondents gave a general picture that psychological classroom environment had a great influence on their academic performance.
2. The study revealed that when a classroom environment is favourable, students are able to form groups to help corporative learning for academic success.
3. The study showed that psychological classroom environment does not support students' positive involvement of ideas during classroom activities.

How class size and psychological classroom environment influenced the manner in which teaching and learning is mediated was the focus of the third objective. The following are the major findings that emerged:

1. Generally, there was a positive correlation between class size and psychological classroom environment in the manner in which teaching and learning was mediated in Schools.
2. The study revealed that large class size and a poor psychological classroom environment did not promote and support positive motivation in the classroom.
3. It was shown that teachers operating in large class size and poor psychological classroom environment did not encourage students to talk and share ideas in class.
4. The study revealed that large class size made it difficult for teachers to control and handle non-instructional tasks of students to maximize learning.

How class size and psychological classroom environment is managed to enhance students' academic performance was examined as the fourth objective.

The key findings that emerged from this objective were that:

1. The majority of the respondents believed that teacher support in the classroom can help improve academic performance.
2. The study showed that employing more teachers and the building of more classrooms can reduce the work load of the teacher and also help in creating a good psychological classroom environment in schools.

3. Teachers making it a priority to give students time to work together when the teacher is not directing them (teaching strategies) can help in managing psychological classroom environment in schools.

Findings from the Research Hypothesis

The results from hypothesis 1 revealed that large class size statistically correlates with Psychological classroom Environment

The results of hypothesis showed that there was a positive correlation between large class size and students' classroom interaction. That is to conclude that large class size is highly correlated with classroom interaction in the selected schools.

Further results gave ample evidence that among all the three variables (Classroom Interaction, Large Class Size and Psychological classroom Environment), Psychological classroom Environment had more influence on pupil's academic performance (beta = 0.554) followed by Interaction (beta = 0.307), and lastly Large Class size (beta=-0.112).

Conclusions

Educational leaders need effective academic strategies to increase student academic performance. Effective education depends on the class size and the psychological classroom conditions that students are experiencing. Reduced class sizes and providing good psychological classroom environment is one method that some previous research have suggested as being able to increase student academic performance (Smith, Molnar, & Zahorik, 2003). However, the study revealed that smaller were class size and good psychological classroom environment found to be a good way of increasing students' academic performance. For instance, its supervisors/teachers have

time to provide good educational delivery such as class exercise, assignment and good interaction between teachers and students. On the side of students, the study found that when students were in stress free classroom, they are able to concentrate and form groups for discussion which can improve their academic performance. In relation to the class size and psychological classroom environment, it is concluded that teachers found it difficult to control or handle non-instructional tasks of students to maximize learning in class.

Recommendations

Based on the findings of the study, the following recommendations have been made:

For Practice:

1. The study revealed that small class size and good psychological classroom environment were better for academic performance and so teachers and head teachers should make sure they conform to the required teacher to student ratio of 1:40 by the Ghana Education Service.
2. Teachers should create an enabling environment for students to participate in classroom activities.
3. Teachers should emphasize learning as a process instead of learning being product during instructional periods.

For Policy:

4. The finding of this study showed that students perform well in smaller class size and good psychological classroom environment. With this the government should employ more teachers and build more

classrooms to solve the problem of large class size in senior high schools in Ghana.

5. The monitory division of Ghana Education Service should put measures in place to ensure that schools do not admit more than their facilities can contain.

Suggestions for Further Research

The following are suggested for further studies

1. The current study is limited in scope because it was based on only some selected Senior High schools in the Kumasi Metropolis. To make the study more representative and the results generalisable for the whole country, there is the need to replicate this study among population groups using larger geographic areas.
2. The study employed questionnaires as the sole instrument for data collection, therefore further studies could include observation and interviews to give more practical and realistic evidence.

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APPENDICES

APPENDIX A

QUESTIONNAIRE FOR STUDENTS

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATION STUDIES

FACULTY OF EDUCATIONAL FOUNDATIONS

Department of Psychology and Education

This questionnaire seeks your opinion on the topic: **Perceived Influence of Large Class Size and Psychological classroom Environment on Students' Academic performance in Kumasi Metropolis.** The purpose of the study is in investigate how large class size and the psychological classroom environment influence students' academic performance. Again, the researcher sought to determine the extent to which class size and psychological classroom environment influence the manner in which teaching and learning is mediated in public senior high schools. The study forms part of my academic work. In order for the study to be successful, your participation will be highly appreciated.

(Terms and conditions of the agreement)

You are assured of your anonymity and your response to the questions shall be treated with confidentiality.

Please do NOT discuss your answer with anyone else. Tick [] or supply an appropriate response where applicable. Kindly be dispassionate about your responses.

Section A: Background characteristics

- 1) Name of institution:
- 2) Gender: A) Male [] B) Female []
- 3) Age A) 10-14 B) 15-19 C) 20-24 D) 25-29
- 4) Religion: A) Christian B) Muslim C) Traditional
- D) Other
- 5) Course of Study:
- 6) How many student are in your class:

SECTION B: Influence of large class size on students’ academic performance

INSTRUCTION: Please tick [√] as appropriate as possible. Strongly Agree

(SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

SIN	Statement	SA	A	D	SD
7	Large class size limits my ability to listen to daily my teacher.				
8	Large class size limits my ability to participate in activities.				
9	Large class size affects my academic performance.				
10	Large class size limits my learning opportunities.				

SECTION C: Influence t of psychological classroom environment on students' academic performance.

INSTRUCTION: Please tick [] as appropriate as possible. Strongly Agree

(SA), Agree (A)

Disagree (D), and Strongly Disagree (SD)

S/N	Statement	SA	A	D	SD
11	The classroom environment supports cohesiveness.				
12	The classroom environment supports participation.				
13	Our classroom is favourable for forming groups to help learning for academic success.				
14	I feel left alone during lesson period.				
15	My classroom environment supports positive involvement students' ideas during classroom activities.				
16	My classroom environment is safe for students to ask questions.				
17	Teachers encourage us when we have difficulties during lessons.				
18	Teacher communicates learning goals to us.				
19	Teachers emphasis learning process instead of learning during lessons.				

SECTION D: Influence of class size and psychological classroom environment on teaching and learning

INSTRUCTION: Please tick [] as appropriate as possible. Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	Statement	SA	A	D	SD
20	Your classroom support positive motivation.				
21	Students perceive classroom environment as being socially. Supportive				
22	Students receive emotional support from teachers.				
23	Students receive encouragement from teachers.				
24	Teachers encourage students to talk and share ideas in class.				
25	Students are given immediate feedback when they need direction to proceed				
26	Class size influences the pace of lessons in class.				
27	Teachers are able to identify students who have difficulties in understanding the main ideas of a lesson.				
28	Large class size increase the time teacher spent on handling non- instructional tasks.				
29	Teachers spend a lot of time controlling students rather than teaching.				

30	Teachers are able to assess the instructional needs of students.				
31	Teachers able to assess to emotional need of students.				

SECTION E: Management of class size and psychological classroom environment to enhance students' academic performance

INSTRUCTION: Please tick [√] as appropriate as possible. Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

SIN	Statement	SA	A	D	SD
32	By the support teachers give to students.				
33	Through professional development of teachers.				
34	Through the enhancement of reduced class size.				
35	Employing more teachers in the class to reduce the regular teacher.				
36	Enrolling according to the space that can hold the students in the class.				
37	Teachers making it a priority to give students time to together when the teacher is not directing them strategies)				
38	I prefer clustering student's desks or use tables so together (classroom environment)				

SECTION F: Influence of Classroom interaction on students' academic performance

INSTRUCTION: Please tick [] as appropriate as possible. Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

S/N	Statement	SA	A	D	SD
20	Effective classroom interaction makes teaching and learning easier				
21	Effective classroom interaction bring about cohesiveness in the classroom				
22	Effective classroom interaction promotes participation				
23	Effective classroom interaction encourage collaboration in the classroom				
24	Effective classroom interaction allows for feedback.				
25	Effective classroom interaction encourage teacher-students relationship				
26	Effective classroom interaction encourage students-students relationship				

APPENDIX B

RELIABILITY TEST RESULTS

Case Processing Summary

		N	%
Cases	Valid	30	88.2
	Excluded ^a	4	11.8
	Total	34	100.0

Reliability Statistics

Cronbach's Alpha	N of items
.791	34

APPENDIX C

ETHICAL CLEARANCE LETTER

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD



UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/ucc.edu.gh/17/12

Your Ref:

Date: 15.03.17

Chairman, CES-ERB
Prof. J. A. Omotosho
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Vice-Chairman, CES-ERB
Prof. K. Edjah
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Secretary, CES-ERB
Dr. (Mrs.) L. D. Forde
lforde@ucc.edu.gh
0244786680

Dear Sir/Madam,


**ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH
STUDY**

The bearer, Mr Hansen Akoto - Baako Reg. No. ED/PPE/15/0003 is an M.Phil /Ph.D student in the Department of Educational Psychology, College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He/She wishes to undertake a research study on the topic Perceived influence of large class size and psychological class environment on students' academic performance.

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed the proposal submitted by the bearer. The said 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/her study. The ERB would be grateful if you would give him/her the necessary assistance that may be needed to facilitate the conduct of the said research.

Thank you.
Yours sincerely,


Dr. (Mrs.) Linda Dzama Forde
(Secretary, CES-ERB)

APPENDIX D

INTRODUCTORY LETTER

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

Telephone: 233-3321-32440/4 & 32480/3
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Email: edufound@ucc.edu.gh



UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

15th June, 2017

TO WHOM IT MAY CONCERN

LETTER OF INTRODUCTION
MR. AKOTO-BAAKO, HANSEN

We confirm that the above-mentioned name is an M.Phil. Educational Psychology Student at the Department of Education and Psychology, UCC.

Currently, he is at the theses stage writing on the topic "*Perceived influence of large class size and psychological class environment on student's academic performance*".

The Department would be very grateful if you could assist him with any information he may need.

Thank you.

Yours faithfully,

Georgina Nyantakyiwaa Thompson
(Principal Administrative Assistant)
For: Head