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Class Size And Academic Performance Of Students In Selected Nursing And Midwifery Training Colleges In The Central Region, Ghana

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ABSTRACT

Large class size is a big challenge in most public tertiary educational institutions in Ghana. This study investigated the impact of class size on the academic performance of students of selected Nursing and Midwifery Training Colleges in the Central Region of Ghana, and determined the extent to which large class size management techniques employed by tutors enhance academic performance of the students. The study employed the mixed methods research approach underpinned by the pragmatist paradigm. Specifically, the sequential explanatory mixed methods design was used for the study. For the quantitative phase of the study, stratified and simple random sampling techniques were employed to select 131 students, while census sampling frame was employed to involve all the 56 tutors. Also, 20 participants made up of 10 tutors (who were Heads of Departments) and 10 student leaders were purposively selected for the qualitative phase. Two related structured questionnaire (1 for the students and the other for the tutors) were used to gather data for the quantitative phase, while a semi-structured interview guide was employed for data collection at the qualitative phase. Descriptive statistics (mean, standard deviation) and inferential statistics (one-way between groups analysis of variance (ANOVA), and multiple regression) were used to analyze the data so as to answer the research questions at a significance level of p <0.05. The one-way between groups ANOVA was used to determine the effect of class size on academic performance and large classroom management techniques. The data gathered through the semi-structured interview was also used to support the quantitative results when necessary. The study revealed that class size had an effect on the academic performance of the students where students in small class size recorded higher performance than their peers in large class sizes. The study, therefore, concluded that classroom size significantly influence academic performance of students at all levels. The relationship between classroom size and academic performance was found to be inversely related. Students in large classrooms performed poorly, while students in small classroom size performed better academically. To ensure a more meaningful academic performance among the students, small class sizes are needed to improve the interaction between tutors and students. Based on this finding, the study recommended that it is pertinent that the management of the colleges studied pay attention to the class sizes so as to ensure good academic performance.

Keywords: Class size, students, tutors, academic performance, academic achievement, examination

INTRODUCTION

Large class size is one of the problems in the educational sector that developing nations have been grappling with (Anderson, 2000). Ghana, as a developing nation, is no exception and has

its own fair share of this problem at the pre-tertiary and tertiary levels of education. Most schools, colleges, and universities in Ghana have extremely large classes, which, some believe, are linked to lower test scores. The sight of large class at the Nursing and Midwifery Training Colleges appears to be a challenge to tutors, school authorities, and other stakeholders. The realities on the ground are that the student population far outweighs the facilities, infrastructure and staff of the colleges. Thus, the truth is that the provisions of facilities do not match the enrolment of the school. This situation has resulted into large class sizes in the school (Çakmak, 2009).

According to Benbow (2007), the growth of large classes in the developing world is as a result of global initiatives for universal education and rapid population growth. Naturally, in order to mitigate the effects of rapid population growth, there is the need to expand access to higher education through increasing funding. The seriousness of the problem is directly linked to the quality of teaching and assessment of students, and finally, the quality of nurses and midwives that are turned out onto the job market. This assertion is shared by other scholars, such as Anderson (2000), whose opinion of likely factors that are associated with class size and students' performance includes aspects directly connected to teaching. Indeed, large class size has become a big challenge to management of Nursing and Midwifery Training Colleges in Ghana. Awoyemi and Adetola (2006) observed that "the quality of provision in the institutions is clearly inappropriate as staff-student ratios become more difficult to manage" (p. 12).

According to Etsey, Amedahe and Edjah (2005), educators are interested in the progress of children especially as it relates to learning. The quality of education of a country can be identified by the examination results of its students (Ankomah, Koomson, Bosu & Oduro, 2005). Information relating to such progress can be gathered from evaluation reports on the child to ascertain the learning outcome. Academic performance, according to the Cambridge University Reporter (2003), is frequently defined in terms of examination performance. Academic performance is what a student is capable of achieving when tested or examined on what he/she has been taught (Otu-Danquah, 2002). Academic performance is affected by a number of factors including admission points, social economic status and class size.

Class-size has been identified as one of the determinants of academic performance of students. It has become a phenomenon often mentioned in the educational literature as an influence on a student's feelings and achievement, on administration, quality and school budgets. As school population increases, class sizes also increases, and the performances of students become an issue. The idea that the number of students within a class affects the student's academic performance, the teacher's classroom management, and the teacher's instructional methods have been discussed for decades (Smith, Molnar & Zahorik, 2003). Previously cited literature identified various class size effects on classroom management and classroom instruction. Larger class sizes result in less time being utilized for instruction due to more instances of student misbehaviour and off-task behaviour (Blatchford, Russell, Basset, Brown & Martin, 2007; Çakmak, 2009). 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 et al., 2007).

Class size affects classroom management, classroom instruction, and the academic achievement of the students (Finn, Pannozzo & Achilles, 2003; Smith et al., 2003). Blatchford, et al. (2007) and Cakmak (2009) found that larger classes are often cited as being harder for the teachers to maintain student discipline, resulting in the focus of the classroom environment being more on student behaviour than on student academic performance. Class size directly affects classroom instruction due to larger class sizes requiring teachers to utilize class time for

management tasks rather than for instruction. Also, class size directly affects classroom instruction through the interactions of the teachers with the students. Higher levels of interaction between students and teachers, as well as increased levels of student engagement within smaller classes, have been cited in numerous studies (Finn et al., 2003; Smith et al., 2003; Blatchford et al., 2007; Cakmak, 2009).

Duncanson (2003) pointed out that the lack of large spaces that students can self-select to work in forces the teacher to schedule all events in a one-size-fits all modality, focus on the delivery of general instruction to all students, and deal with one activity at a time. Large classes may allow students to be more disruptive, allow them to "hide" from participation, engagement, or even attendance, while small classes may more easily lend themselves to pedagogical activities that improve learning, such as hands on activities and student-faculty classroom interaction.

Cotton (2001) observed that a specific benefit associated with a small class size is higher students' performance. Wang (2000) suggested that teachers of smaller classes confront fewer discipline problems, cover subject matter in more depth, have more one-on-one contact with students and keep better track of student progress. According to Schneider (2002), small class sizes often encourage parental involvement, which benefits students and the entire community. Principals in Nursing Training Colleges also report that smaller classes have allowed them to establish and maintain better relationship with students, parents and families (Brophy, 2000). Nathan and Febey (2001) identified similar beneficial outcomes. They argued that smaller classes, on average, can provide a safer place for students; a more positive, challenging environment; higher achievement; higher graduation rates; fewer discipline problems; and greater satisfaction for families, students, and teachers..

The need to determine whether a relationship exists between class size and student academic performance is one that can be traced back to the foundation of the educational system in America (Biddle & Berliner, 2002). Understanding if there is a relationship between the number of students in a classroom and the academic performance of the students is vital to educators. The decision of whether or not to decrease the number of students within the classroom to increase academic performance is one that is only confounded by the abundance of contradictory studies into the topic (Biddle & Berliner, 2002; Milesi & Gamoran, 2006). Hoxby (2000) found no statistically significant performance gains for students in smaller classes compared to students in larger classes. Inconsistent findings of class size studies create the need for additional studies.

At the Winneba Nursing and Midwifery Training College, for instance, the students' population currently stands at 1347, and the population of tutors is 22. The class size of students is between 200 and 400. This means that the student to tutor ratio is about 1:200 and 1:400 respectively. This clearly suggests that the classes are large, and the workload of tutors is relatively high. Large classrooms provide students with few opportunities to engage the tutors one-on-one in meaningful conversations. Stakeholders at all levels of education including those of Nursing and Midwifery Training Colleges need empirical data regarding the significance of the relationship between class size and academic performance.

School authorities in the Nursing and Midwifery Training Colleges have constantly express worry about the poor academic performance of students in the Nursing and Midwifery Licensing Examination. It was reported that a large number of students who sit for the licensing examination organized by the Nursing and Midwifery Council (NMC) fail on their first attempt (NMC Research Report, 2013). For instance, in 2011, 38.9% of the 3,223 students who

sat for the exams passed while 51.8% of the 2439 candidates who wrote the licensure examination in 2013 passed (NMC Research Report, 2013). This percentage pass is low as compared to the pass rate in the United States of America where 15% of nursing graduates taking the licensure examination for the first time fail while the national average success rate is 84.43% (Royal College of Nursing, 2012).

In 2013, the Nursing and Midwifery Council of Ghana tasked Wilmot, Kumfo, Danso-Mensah, Antwi-Danso and Kusi (2013) to investigate the possible factors that account for the poor performance of the nursing and midwifery trainees in the council's licensing examination. Major findings of the study involved school-related, tutor-related, and student-related factors as causes of the poor performance. However, the impact of class size was not given attention in the investigation.

Meanwhile, a perception exists among parents and teachers that large class sizes contribute to the abysmal performance of students of Nursing and Midwifery Training Colleges. Indeed, studies in Ghana have shown that class size impact academic performance of students. For instance, Kraft (1994) in his study of the ideal class size and its effects on academic performance in Ghana concluded that class sizes above 40 have negative effects on students' achievement. Studies in Ghana (Abdallah, Fuseini, Abudu & Nuhu, 2014)focused on large class size and students' academic performance in basic, secondary, and selected tertiary institutions. In the health institutions, especially in the Central Region of Ghana, little is known about whether large class size influences students' academic performance. This situation has created an empirical gap as to whether class size impacts students' academic performance among in the Nursing and Midwifery Training Colleges in the Central Region of Ghana. Accordingly, this research investigated the impact of class size on the academic performance of students of Nursing and Midwifery Training Colleges in the Central Region of Ghana. It study also sought to determine the extent to which large class size management techniques employed by tutors enhance academic performance of the students in Nursing and Midwifery Training Colleges in the Central Region of Ghana. To achieve these two-fold purposes, the following research questions were formulated to guide the study:

1. What is the effect of class size on students' academic performance in the Nursing and Midwifery Training Colleges in the Central Region of Ghana?
2. To what extent do large class size management techniques employed by tutors enhance the academic performance of the students in the Nursing and Midwifery Training Colleges in the Central Region of Ghana?

Hypotheses of the Study

The Following hypotheses were formulated and tested:

H_{O1}: There is no significant difference in students' academic performance due to class size in the Nursing and Midwifery Training Colleges in the Central Region of Ghana.

H_{A1}: There is a significant difference in students' academic performance due to class size in the Nursing and Midwifery Training Colleges in the Central Region of Ghana.

H_{O2}: Large class size management techniques employed by tutors do not enhance the academic performance of the students in the Nursing and Midwifery Training Colleges in the Central Region of Ghana.

H_{A2}: Large class size management techniques employed by tutors enhance the academic performance of the students in the Nursing and Midwifery Training Colleges in the Central Region of Ghana.

The issue of class size in relation to academic performance is an issue of great significance. This controversial topic has been researched for years, yet the plethora of studies devoted to

analyzing the influence of class size on student academic performance has only added to the conflict further (Brophy, 2000). Also, there are mixed results regarding the most effective class size. The findings of this study will provide educational leaders, including principals and tutors of Nurses and Midwifery training institutions, with the evidence needed to determine whether class size affects academic performance.

In analyzing the relationship between class size and academic achievement, it is also important to understand how class size affects teachers' instructional and classroom management techniques. A large student population could result in teachers being unable to facilitate learning through the inclusion of multiple instructional activities and content differentiation. The researchers hope that the outcome of this study would inform principals and tutors of nurses and midwifery training institutions on the effective class management techniques, and class size reduction strategies to enhance effective teaching and learning, and to increase academic performance of the students.

THEORETICAL FRAMEWORK

This study adopted the ecological theory by Bronfenbrenner (1979), and the attribution theory by Weiner (2000). Bronfenbrenner's (1979) theory defines complex "layers" of environment, each having an effect on a student's development. The ecological perspectives by Bronfenbrenner (1979) recognized that students' learning and developmental outcomes are linked to diverse interacting characteristics in their family and school (Chung & Steinberg, 2006; Benner, Graham & Mistry, 2008). Ecological systems look at a student's development within the context of the system of relationships that form his or her environment. Ecological theory presumes reciprocity in the micro and meso-systems. In some cases, the individuals or characteristics found within one ecological system may shape those found in another system (O'Connor & McCartney, 2007).

The ecological theory was adopted because of its link to academic performance. The theory is not only useful for describing the factors contributing to academic performance, but also for deepening understanding about the impact on academic performance. An ecological framework highlights the tensions that poor academic performance can generate within students' micro-systems, both between the teacher and student, where it creates management issues. This is because academic performance is dependent on a considerable time, place, resources, and social contexts in which to teach and learn; variations in these factors can either promote or hinder teaching and learning tasks which also influence academic performance in the long run.

The Nursing and Midwifery Training Colleges are educational systems which have the central or core business of teaching and learning targeted at training nurses and midwives who provide healthcare services to the Ghanaian public. As a system, they have inputs such as physical or infrastructural facilities (school plant including classrooms, libraries and laboratories), teaching and learning materials and equipment, and financial resources. These school resources are utilized by tutors, students, other personnel, and stakeholders of the colleges for its core business of teaching and learning. Hence, the quality and quantity of interaction between the physical and human resources would determine the quality of the products in terms of knowledge, skills and attitudes. These qualities could be measured through academic performance, and work performance or productivity in the world of work.

CONCEPT OF ACADEMIC PERFORMANCE

Educational performance is normally attributed to three major factors namely: ability, aspiration and opportunity which are closely interrelated (Addae-Mensah, 2000). According to

Otu-Danquah (2002), academic performance is what a student is capable of achieving when he is tested on what he/she has been taught. It is how well a student meets standards set out to be attained in an educational institution. This implies that academic performance is determined after the student has been taught specified courses of academic studies or curriculum.

According to Adams and Hayes (2001), academic performance really means three things:

a. The ability to study and remember facts,
b. Being able to study effectively and see how facts fit together to form larger patterns of knowledge and being able to think for oneself in relation to facts and thirdly,
c. Being able to communicate knowledge verbally or writing it down on paper.

Some researchers believe that the student characteristics, their living and learning environments and instructional activities contribute to students' performance (House, 2002). Studies by Diaz (2003), Hijaz and Naqvi (2006) indicated an association between performances of students and the role of different factors such as family, teacher, school environment and personal profile of the students. Academic performance in the context of this study refers to academic achievement in test and examination scores of students at the end of semester examinations.

CONCEPTS OF CLASS SIZE

Michaelsen (2007) defined class size as the number of students for whom a teacher is primarily responsible for during a school year. Adeyemi (2008) defined class size as an educational tool that can be described as an average number of students per class in a school. Class size, according to Ehrenberg, Brewer, Gamoran and Willms (2001), refers to the actual number of pupils taught by a teacher at a particular time. These definitions imply that class size is the number of students per teacher in a class, that is, student to tutor ratio. This ratio is a tool that can be used to measure performance of the education system, and work productivity.

Scholars attempt to differentiate between class size and student-teacher ratio. Class size refers to the actual number of pupils taught by a teacher at a particular time (Sparks, 2010). Thus, the student-teacher ratio is always lower than the average class size, and the discrepancy between the two can vary, depending on teachers' roles and the amount of time teachers spend in the classroom during the school day. Student-teacher ratio data can be used to examine the relationship between schooling outcomes and student-teacher ratios, but this relationship is likely to be weaker than the relationship between schooling outcomes and class size, as class size is more closely linked to learning. The class size could be large or small. However, Sparks (2010) noted that class can be said to be large when the student number is more than 25. Studies have shown that class size is an important factor that affects student's performance (Jepsen & Rivkin,2009).

Large is a relative word and large classes have been variously defined by practitioners from different teaching and learning contexts. Rivkin, Hanushek and Kain (2005) argue that even though numbers may be necessary for defining large classes, number alone is not sufficient to arrive at a shared definition, even within one country. This suggests that large class size is defined not only by number of students but by several additional factors. For instance, a large class in Western context such as the United States(US) or United Kingdom(UK) may be considered small by both teachers and learners in most teaching-learning contexts in Africa (British Council, 2010). The British council further reveals that large class can vary from 22 in US elementary schools to up to 150 in an African classroom. Jones (2007) proposes that the ideal size for a student-centered language class is probably 12. United States Agency for

International Development (USAID) reports that in the Western countries class size of 30 is considered large which needs to be reduced. These include physical conditions in the classroom such as the amount of space available, and the availability of resources.

Hayes (1997) stated that there is no quantitative definition of what constitutes a large class, as people's perception of this varies from context to context. Large class size in the context of this study means a large number of students (over 100 students) in a given classroom. In some private language schools a class with 20 students may be perceived large. In Lancaster University project, an average number of the large class is around 50 (Coleman, 1989), while in China, large class generally refers to that of holding 50-100 students or more, which to some foreign teachers, may be super large. It can be seen that in different context or culture, people have different degrees of tolerance of class size. As Ur (1996) concludes, what is relevant to the class considered as large one is how the teacher perceives the class size in the specific situation, regardless of the exact number of the students in it. Therefore, large class is one with more students than the teacher prefers to manage and available resources can support. From this point of view, large classes usually are considered to pose problems for teachers.

EFFECT OF CLASS SIZE ON ACADEMIC PERFORMANCE

The effect between class size on academic performance has been a perplexing one for educators. Studies have found that class size affects academic performance where students who were found in smaller class size performed better than those in large classes (Swift, 2000). Small class sizes often encourage better interaction between the teacher and students which benefits students in terms of high performance (Schneider, 2002).Cotton (2001) in a study observed that specific benefit associated with smaller class sizes are higher student achievement, especially in test scores. Nathan and Febey (2001) identified similar beneficial outcomes. They argued that smaller class sizes, on average, can provide a safer place for students, a more positive and challenging environment, higher achievement, higher graduation rates, fewer discipline problems, and greater satisfaction for families, students, and teachers.

Fabunmi and Okore (2000) also revealed that class-size is a major factor of performance in Secondary School Certificate Examination (SSCE) where they observed that students in small class sizes recorded better test scores than those in large class sizes. Wang (2000) suggested that teachers of smaller classes confront fewer disciplinary problems, cover subject matter in more depth, have more one-on-one contact with students and keep better track of student progress which eventually lead to higher academic performance than their colleagues in large classes. School principals also report that smaller classes have allowed them to establish and maintain better relationship with students, parents and families and resulted in better academic performance (Brophy, 2000). In large classes, Duncanson (2003) noted that the lack of large spaces that students can self-select to work forces the teacher to schedule all events in a one-size-fits all modality, focus on the delivery of general instruction to all students, and deal with one activity at a time which result in low academic performance.

Students have indicated that schools with smaller class sizes perform better academically than schools with larger class sizes. Jencks and Phillips (1998) reviewed a substantial number of randomized experiments which suggested that smaller classes raise test scores. Large classrooms provide students with few opportunities to engage the teacher on one-on-one basis for meaningful conversation. Kraft (1994) concluded that, class sizes above 40 have negative effects on students' achievement. In criticizing large class-size in schools, Weinstein (1979) stated that large group of individuals who are packed so closely together for so many hours cannot be expected to perform at peak efficiency on difficult learning tasks and to interact harmoniously.

Class size directly affects classroom instruction, requiring teachers to utilize class time for management tasks rather than for instruction. Class size directly affects classroom instruction through the interactions of the teachers with the students. Higher levels of interaction between students and teachers as well as increased levels of student engagement within smaller classes have been cited in numerous studies as an indicator for high academic performance(Blatchford et al., 2007; Çakmak, 2009). From teacher survey and interview data, Pedder (2006) cited that teachers felt they were able to be more effective in smaller classes due to the increased opportunities for individual student feedback and more individualized student attention.

In essence, large class size directly impacts the quality of teaching and instruction delivery and students' learning outcomes. Large class sizes increase the possibilities for mass failure and make students to lose interest in school. This is because large class size do not allow individual students to get attention from teachers which invariably lead to low reading scores, frustration and poor academic performance.

EFFECT OF CLASS SIZE MANAGEMENT TECHNIQUES ON ACADEMIC PERFORMANCE

Classroom management implies controlling the classroom environment to achieve meaningful learning (Akabue,1991). Ihebereme (2010) opined that classroom management refers to the methods and strategies a teacher uses to maintain a conducive environment for pedagogical delivery. However, observation shows that teachers can hardly manage their classrooms well so as to create a conducive teaching-learning environment because of the pressure of large classes. Students distract themselves as well as teachers thereby affecting the teaching learning process negatively. In a study conducted by Osim (2009) concluded that teachers' task performance will improve if there are sufficient qualified teachers to match the over-populated schools.

Reducing class sizes without any attention to teacher qualifications and performance might reduce the positive effects on students' achievement levels, given the associations that have been found between teacher qualifications and children's learning (Burchinal, Peisner-Feinberg, Pianta & Howes, 2002). However, the implementation of smaller classes has been found to reduce teacher stress levels, which is important for teacher consistency and retention (Hattie, 2005). In effect, it is possible that class size reduction might boost student achievement more over time as teachers remain in their classrooms.

Many studies on teaching large classes in China explored the principles and strategies of teaching in such situations based on the understanding of the challenges and advantages of large class. For example, Wang (2000) explored the practical strategies through a longitudinal case study in order to meet the challenges of teaching college English reading course in large class, including how to strengthen communication and cooperation; how to apply multimedia instruction efficiently; how to enhance creative teaching; how to organize learner-centered discussions and activities; and how to strengthen the management of the students sitting at the back.

These challenges are mostly caused by pedagogical or management-related problems, so developing an instructional strategy like proper use of multimedia can solve these problems. The experiment of the use of multimedia instruction finally proves to be successful and encouraging.

Blended learning formats which use a combination of face-to-face learning and varying levels of technology are being implemented to address a number of large class issues. A number of

case studies of blended learning models in large courses provide a discussion of implementation benefits and challenges (Oliver &Trigwell, 2006).

Another study explored the implementation of a specific technology to address a particular large class issue such as student communication and interaction, providing a discussion of benefits and challenges based on qualitative feedback from students and faculty (Bezuidenhout, 2009). In a relatively recent analysis of impact on student outcomes, Bloemhof and Livernois (2011) tested the effectiveness of a hybrid teaching technology in an introductory economics course, the results of which indicated that student learning outcomes were better than those in a traditional lecture-based course. The teacher has to make a decision about what course structure to use. There are four basic choices and each has its special challenge to making that option works effectively(Johnson & Johnson, 2007, pp. 1-2):

1. Complete lecture: Keep the class as one large class, and keep the lecture as the main teaching/learning activity. The three big challenges here are (a) making the lecture very interesting, (b) finding ways to incorporate active learning, and (c) managing the logistics of papers, examinations, and grades.
2. Part lecture/part breakout sections: In this option, the students meet part of the time as one large class and part of the time in smaller discussion or lab sections. This is the main idea of the communicative approach.
3. All multiple sections: In this option, there is no large lecture class, only multiple smaller sections, taught either by full-time faculty and/or teaching assistants. This has the benefit of smaller classes, which eliminates most of the problems of student anonymity and passivity. This can be noticed in the scientific specialties at laps.
4. One large class, structured around small group learning: In this option, the class remains together as one large class, as in 'option 1'. Nevertheless, the dominant teaching/learning activity is a carefully structured small group work, not lectures (Michaelsen, 2007, p. 2). This approach has several benefits: (a) it eliminates the problems of student anonymity and passivity, (b) minimizes the logistics challenge, and (c) keeps staffing costs at a minimum. It does require a teacher who knows how to use small groups and can solve the problems involved in using this in large-class settings. Technically, teachers have to be capable of using microphones and data show properly to make their students hear and see clearly. Inadequate use of such classroom equipment may lead to the lack of interest and involvement of the students in the classroom learning.

One of the techniques of managing large class is in-class exercise (Ali, 2001). As the teacher lectures on a body of material or go through a problem solution, instead of just posing questions to the class as a whole and enduring the ensuing time-wasting silences, he/she occasionally assigns a task and gives the students anywhere from 30 seconds to 5 minutes to come up with a response. Anything can serve as a basis for these exercises, including the same questions he normally asks in lectures and perhaps some others that might not be part of his current teaching. Whichever approach the teacher uses for the exercises (individual, pairs, groups, or think-pair-share), at least at some time, he/she calls on groups or individuals to present what they came up with (Ali, 2001). If the teacher is unable to do this, students will have little incentive to work on the exercises when he assigns them. Group exercises have the added benefit of giving students an opportunity to meet and work with one another, a good first step toward building a sense of community. The principal benefit of these exercises is that they get students acting and reflecting.

METHODOLOGY

This study employed the mixed methods approach underpinned by pragmatism. Specifically, the study employed the sequential explanatory design which consists of two distinct phases: quantitative followed by qualitative (Creswell & Plano-Clark, 2007).The sequential explanatory design is characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data (Creswell, 2009) in two consecutive phases within one study. In this design, a researcher first collected and analyzed the quantitative (numeric) data. The second phase was the qualitative which built on the first phase, quantitative, and the two phases were connected in the intermediate stage in the study. The qualitative (text) data were collected and analyzed second in the sequence and helped to explain or elaborate on the quantitative results obtained in the first phase. The rationale for this sequential explanatory mixed methods design was that the quantitative data and the subsequent analysis provided a general understanding of the research problem. The qualitative data and the analysis refined and explained those statistical results by exploring participants' views in more depth (Creswell, 2005).

The target population of the study was made up of all tutors and students of public Nursing and Midwifery Training Colleges at Ankaful, Twifo Praso, and Dunkwa-On-Offin. The Central Region was chosen for this study because the average class size of the region in the Nursing and Midwifery Training Colleges were far above the national norm of (Tertiary Education Statistics Report, 2015). The accessible population for this study was 1,866, comprising 1810 students and 56 tutors of the public Nursing and Midwifery Training Colleges. The tutors were selected for the study because they had clear understanding of the class size, and the students because it was their numbers in class that was the focus of the study, and it was their performance that constituted the dependent variable. The distribution of the population across the colleges is represented in Table 1.

Table1: Distribution of the study population

College	Male		Female		Total	
	Tutors	Students	Tutors	Students	Tutors	Students
Ankaful	8	184	13	454	21	638
Twifo Praso	6	176	11	444	17	620
Dunkwa-on Offin	8	117	10	435	18	552

Source: College Statistics (2017)

In all, 187 study participants, comprising 131 students and 56 tutors were selected for the quantitative phase of the study. The choice of 187 participants, which represent 10% of the target population, was based on Dornyei's (2007) assertion that between 1% and 10% of a study population gives a magic sampling fraction. According to Dornyei (2007), "unfortunately, there are no hard and fast rules in setting the optimal sample size; the final answer to the 'how large/small?' question should be the outcome of the research considering several broad guidelines" (p. 99). Other researchers further justified a sample size of 10% of a study population as representative of the population (Krecjie & Morgan, 1970). Based on these expert suggestions, 10% of the target population of 1,886 was used for the study. Thus, the total sample size for the quantitative phase of the study was 187 respondents.

Stratified random sampling technique was used in selecting the students. The 1810students were categorized into strata comprising college such that there were 638, 620, and 552 students in Ankaful, Twifo Praso, and Dunkwa-On-Offin respectively. The percentages of the students in each college to the total population of 1810 were calculated, and it was revealed that Ankaful students constituted 35%, 34% for Twifo Praso, and 31% for Dunkwa-On-Offin.

After determining the required sample sizes for each level, simple random sampling was used to select the individuals. A simple random sampling is a process of selecting a sample from a population in a way that every different possible participant of the desired size has the same chance of being selected (Devore & Peck, 2005). The students were chosen using the lottery approach of simple random sampling. In this approach, pieces of paper which equaled the total number of study units (sampling frame) in each college were designed by the researchers. For Ankaful College, for instance, the researcher designed forty-six(46) pieces of paper which had the inscription "Yes" while the other remaining pieces of paper were captioned "No". The pieces of paper were folded, and put in a box. The box was turned over and over again to ensure that the pieces of paper were well mixed to guarantee that each student had an equal opportunity of being selected. The students were required to pick the pieces of paper at random during a briefing session. Students who picked a piece of paper which had 'Yes' response were enrolled as participants for this study. This sampling process or procedure was repeated for students in the other colleges. The random selection ensured that each student had an equal chance of being selected, and this is required for generalization of the results to the target population as noted by Creswell (2009). Thus, 46(35% of 131) students were selected from Ankaful, 44 (34% of 131) Twifo Praso, and 41 (31% of 131) students from Dunkwa-On-Offin. Also, census sampling frame was employed to involve all the 56 tutors of the three (3) colleges in the quantitative phase of the study.

Scholars argue that sample size in qualitative studies is usually small and based on information needed and large volume of data collected (Polit& Beck, 2010). Therefore, 20 participants made up of 10 tutors who were Heads of Departments and 10 student leaders were purposively selected for the qualitative phase. These participants were drawn from the 187 respondents who took part in the quantitative phase of the study.

A structured questionnaire was employed to elicit information from the students. A questionnaire could be described as a document that consists of a number of questions printed or typed in a definite order on a form or set of forms. The questionnaire items were close-ended where there was a clear structure, sequence and focus for all participants (Cohen, Manion & Morrison, 2008). One major advantage of using the questionnaire were that it was faster for collecting data from a large sample over a short period of time.

Section 'A' of the questionnaire elicited data on the effect of class size on students' academic performance in the Nursing and Midwifery Training Colleges in the Central Region of Ghana to answer the first research question and the test the first hypothesis, while Section 'B' collected data on the large class size management techniques so as to provide answers to the second research question which sought to investigate the extent to which large class size management techniques affected academic performance of the students, and to test the second hypothesis. The questionnaire contained on a five-point close-ended Likert- scale items such that strongly agree (SA) = 5, Agree (A) = 4, Neutral (N) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The resp0ondents were required to tick only one option of each item in the questionnaire to reflect their views.

To elicit additional information to supplement the questionnaire data, the a face-to-face semi-structured interview was employed. The interview guide was designed to explore the major quantitative findings in-depth. The participants were expected to reflect on their lived experiences in teaching and learning in large class size. This helped the researchers to obtain deeper insights about the research problem. An interview guide allows flexibility in asking follow-up questions. Secondly, the researchers, through the instrument, got the opportunity to

seek clarification by probing and expanding the responses of interviewees to ascertain their feelings and experiences (Kusi, 2012).

Validity refers to the extent to which the research instrument serves the use for which it is intended (Seidu, 2007). Two types of validity were established in this study and these were face and content validity. Face validity was of the instrument was established by giving the instruments to colleagues lecturers at the Department of Educational Administration and Management of the University of Education, Winneba (UEW) for scrutiny. Their comments and suggestions were considered for review of the items. The content validity of the instruments was ensured by experts in the area of educational administration and management, who scrutinized the items for their suitability. All the necessary corrections in the items were made and declared valid by the experts. For example, the statement "Teaching and learning is difficult when students are noisy in large classes in teaching and learning" was corrected as "Teaching and learning are difficult when students are noisy in large classes", and "Student cannot effectively learn when they do practical activities in overcrowded classrooms" was rephrased as "Students cannot effectively learn when they do practical activities in overcrowded classrooms".

Joppe (2000) defined reliability as the extent to which results are consistent over time and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. To ensure the reliability of the instrument, it was pre-tested. Pre-testing of research instruments refers to testing the instruments on a small sample of respondents to identify and eliminate potential problems (Malhotra & Birks, 2007). In essence, it involves a trial test of the instruments to identify and remedy challenges that might occur during the actual study. The pre-test was carried out in the Cape Coast Nursing and Midwifery Training College. This college was chosen because it is located in the Central Region and has similar characteristics with the colleges involved in the study. The pre-testing involved 19 respondents comprising 5 tutors and 14 students. This sample size for the pre-test test was within Cooper and Schilder's (2011) rule of thumb that 10% of the sample should constitute the pre-test. In this study, the sample size was 187, therefore, 10% of this sample size led to the choice of 19 participants for the pre-test. The rationale for the pre-test was to check the validity and reliability of the instruments.

The questionnaire was administered once to the respondents, and the data were entered into the Statistical Product for Service Solutions (SPSS) version 20.0 to determine the reliability coefficient (r) in order to establish the internal consistency of the instrument. The internal consistency of the instrument was tested using Cronbach's alpha reliability analysis. The result of the analysis indicated a Cronbach alpha of 0.671 which was deemed reliable.

The data was analysed according to the research questions of the study. Descriptive statistics (mean, standard deviation) and inferential statistics (one-way between groups analysis of variance (ANOVA), and multiple regression) were used to analyze the data so as to answer the research questions at a significance level of $p < 0.05$. The one-way between groups ANOVA was used to investigate the effect of class size on academic performance and large classroom management techniques. The data gathered through the semi-structured interview was also used to support the quantitative results. Specifically, direct quotations from the participants were used to support the quantitative results when necessary. To attribute statements or comments to the tutor interviewees, they were given the serial numbers T-1 to T-10, where 'T' represents Tutor, while the student interviewees were given serial numbers S-1 to S-10, where 'S' represents Student.

PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

Impact of class size on academic performance of the students

This research question investigated the effect of class size on the academic performance of the students. There were four categories of class size which included less than 100, 100-199, 200-299, and 300-399. A one-way between groups ANOVA was employed to analyze the data, and the results are shown in Table 1.The one-way between groups ANOVA results in Table 1 showed that there was a significant difference in the academic performance of Level 100 students across the class sizes [F (3, 111) = 98.2, p<0.05]. Similarly, the results revealed a significant difference in the academic performance for Level 200 [F (3, 111) = 49.4, p<0.05] and Level 300 [F (3, 111) = 16.1, p<0.05] students based on the class sizes. Furthermore, the results showed that generally, class size affected the academic performance of the students in the colleges [F (3, 111) = 109.8, p<0.05]. These results implied that class size had an effect on the academic performance of the students.

Table2: ANOVA results for the effect of class size on academic performance

Level	Class Size	Mean	St. Dev		Sum of Squares	Df	Mean Square	F	Sig.
100	<100	76.00	0.59	BG	3415.7	3	1138.6	98.2	0.00
	100-199	74.93	1.97	WG	1287.2	111	11.6		
	200-299	68.33	1.67	Total	4702.9	114			
	300-399	59.61	1.50						
	Total	69.97	2.42						
200	<100	72.22	2.33	BG	1866.7	3	622.2	49.4	0.00
	100-199	72.38	2.93	WG	1397.3	111	12.6		
	200-299	67.43	1.85	Total	3264.0	114			
	300-399	60.83	1.06						
	Total	68.58	0.35						
300	<100	70.56	1.56	BG	1264.6	3	421.5	16.1	0.00
	100-199	70.64	2.68	WG	2909.8	111	26.2		
	200-299	66.67	2.46	Total	4174.4	114			
	300-399	61.11	1.55						
	Total	67.56	1.05						
OAP	<100	72.93	2.30	BG	2089.8	3	696.6	109.8	0.00
	100-199	72.65	2.53	WG	704.1	111	6.3		
	200-299	67.48	1.44	Total	2793.9	114			
	300-399	60.52	1.24						
	Total	68.70	1.95						

Source: Field Data, 2017

Note: BG (Between Groups); WG (Within Groups)

Although there could be differences in the academic performance of students across the different levels, however, since the overall picture depicts that class size affected academic performance significantly (p<0.05) for all levels, stakeholders in education need to pay attention to the building of more infrastructure to ameliorate the problem. Rationally, the results contradict the ecological theory espoused in this study, which states that students' learning and development are considered within the context of system of relationship that forms his or her environment (in this research, the classroom environment).

To determine where differences were found among the class sizes, a post hoc analysis was carried out using the Tukey HSD test and the results showed that among the Level 100 students, students performed best where the class size was less than 100 (M=76.00, SD=0.59) than those in 200-299 (M=68.33, SD=1.67) and 300-399 (M=59.61, SD=1.50) class sizes whiles there was no difference in academic performance between students where the class size was

less than 100 (M=76.00, SD=0.59) and 100-199 (M=74.93, SD=1.97). The results further showed that students in the class size of 200-299 performed significantly higher (M=68.33, SD=1.67) than those in a class size of 300-399 (M=59.61, SD=1.50). For Level 200 students, the results revealed that those in a class size of less than 100 obtained highest performance (M=72.22, SD=2.33) than those in 200-299 (M=67.43, SD=1.85) and 300-399 (M=60.83, SD=1.06), and those in 200-299 class size did better (M=68.33, SD=1.67) than those in a class size of 300-399 (M=59.61, SD=1.50).

Similar pattern of performance was noticed for Level 300 students where those in a class size of less than 100 recorded highest performance (M=70.56, SD=1.56) than those in 200-299 (M=66.67, SD=2.46) and 300-399 (M=61.11, SD=1.55) class sizes, and academic performance between students in 200-299class size did better (M=67.43, SD=1.85) than those in 300-399 (M=61.11, SD=1.55). Overall, the results showed that students performed best where the class size was less than 100 (M=72.93, SD=2.30) than those in 200-299 (M=67.48, SD=1.44) and 300-399 (M=60.52, SD=1.24) class sizes; those in 100-199 class did better (M=72.65, SD=2.53) than those in 300-399 (M=60.52, SD=1.24) class size. Based on the multiple comparison results, it was established that the academic performance was better in smaller class sizes than larger class sizes. Based on these results, the null hypotheses that "There is no significant difference in students' academic performance due to class size in the Nursing and Midwifery Training Colleges in the Central Region of Ghana" was rejected while the alternative hypothesis that "There is a significant difference in students' academic performance due to class size in the Nursing and Midwifery Training Colleges in the Central Region of Ghana" was accepted.

The interview data gathered the views of the participants on the effect of large class size on the academic performance of the students. Expressing his views, a tutor had this to say:

> *Yes, I think the size of the class has greatly affected the academic performance of the students. The size of the class determines the extent of interaction between the tutor and the students. When the class size is small, it promotes better communication between the tutor and the students, and the tutor is able to address the learning difficulties of each student. On the other, in large class size like we have in this college, it limits the exchanges between the tutor and the students, and the tutor is unable to attend to individual learning needs (T-3).*

The comments above showed that large class size prevented the students and tutors from effectively communicating with each other. It could be inferred from these assertions that because of the large size of the class, the tutors were unable to ascertain the challenges of the students and offer solutions to them. Another participant remarked:

> *I hardly get the chance to ask questions in class because I don't catch the eye of the tutors during lessons. I sometimes feel the need for further clarifications on issues, but due to the large class, the tutor may not see me even when I rise on my feet. I often leave the lecture hall with aspects of the lesson not clear to me, and this could be quite frustrating. If the size of the class were much smaller, it could help me to get my concerns to the tutors for possible solutions. As a result, it affects my learning and leads to low performance(S-1).*

These assertions support the earlier views that large class size deprives the students the opportunity to ask questions and seek for further explanations on lessons under discussion. One of the tutors further explained that:

> *Teaching and learning in large classes is difficult and ineffective. The class is always noisy and control of students is a challenge. Due to the noise, some of the students, especially those who sit at the back of the class hardly hear what is being taught. Some*

> *of the students stand throughout the lesson because of inadequate seats, and taking of notes becomes a problem. The end result of all these is that, performance is adversely affected (T-2).*

From the excerpt above, it is observed that large class size posed class control challenges for tutors, and deprives students the opportunity to sit comfortably for lessons due to inadequate chairs. A student lamented that lack of formative assessment due to large class size caused poor academic performance in the colleges:

> *In my view, large class size is one of the major causes of poor performance in my college. We don't get regular feedback from the tutors on our learning because they complain about the large number of students. Marked quizzes and projects are either not returned or they are brought late. Also, class exercises are not given. Therefore, we find it difficult to track our learning progress (S-4).*

The views of the participants showed that the size of the class affected the academic performance of the students. It can be inferred that there was a negative relationship between class size and academic performance where large class size led to low performance, and small class size resulted in high academic performance.

The results of the study on research question one revealed that class size had an effect on the academic performance of the students where students in small class size recorded higher performance than their peers in large class sizes. Therefore, the study concluded that the size of the class was directly linked to the academic performance of the students. This result was consistent with previous studies (Swift, 2000; Cakmak, 2009) which found that class size affects academic performance where students who were found in smaller class sizes performed better than their peers in large classes. Other researchers also discovered similar pattern of academic performance for students in large and small class sizes and offered reasons for the differences in the students' performance. Schneider (2002) observed that small class sizes often encourage better interaction between the teacher and students which benefits students in terms of high performance.

In essence, the small size of the class fostered better communication between the teacher and the students where the teacher clarified issues which the students might not be clear with. On their part, Nathan and Febey (2001) noted that smaller class sizes provides a safer place for students, a more positive and challenging environment with fewer discipline problems. Pedder (2006) further discovered that teachers feel they are more effective in smaller classes due to the increased opportunities for individual student feedback and more individualized student attention. From these observations, it was realized that small class sizes offer a congenial environment devoid of discipline problems, and better teacher-student interface that stimulate learning, and lead to high academic performance. Therefore, students who study in large class sizes in the nursing training colleges are at risk for low academic performance.

Extent to which do large class size management techniques employed by tutors enhanced academic performance of the students

The question investigated the degree to which large class size management techniques improved the academic performance of the students. The management techniques identified in the study include in-class exercises, cooperative learning, blended learning formats, and technology enhanced instruction, and the results are showed in Table 3.

Table 3: Model summary results for large class size management techniques and academic performance

Model	R	R^2	ΔR^2	SE of the Estimate	Change Statistics: R2 Change	F Change	df1	df2	Sig. F Change
1	0.620[a]	0.384	0.369	0.524	0.384	25.142	4	161	0.000

a. Predictors: (Constant), In-class Exercises, Cooperative Learning, Blended Learning Formats, Technology Enhanced Instruction
b. Dependent Variable: Academic Performance

In Table 2, the multiple regression results showed that there was a positive and strong correlation between the predictors (In-class Exercises, Cooperative Learning, Blended Learning Formats, Technology Enhanced Instruction) and academic performance (R=0.620). The information disclosed that all the large class size management techniques contributed 38.4% variance to academic performance. It is evident from the results that there was about 1.5% difference in the population variance [R^2 (0.384) - ΔR^2 (0.369)]. The ANOVA test results in Table 2 showed that the multiple regression was significant [F (4, 161) =25.142, $p<0.05$]. This implied that together, the large class management techniques were good predictors of academic performance of the students.

Table 4: ANOVA results for large class size management techniques and academic performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.600	4	6.900	25.142	0.000[b]
	Residual	44.184	161	0.274		
	Total	71.783	165			

Source: Field Data, 2017
a. Dependent Variable: Academic Performance
b. Predictors: (Constant), In-class Exercises, Cooperative Learning, Blended Learning Formats, Technology Enhanced Instruction

The study further examined the contribution of each of the large class size management techniques to academic performance, and the results were shown in Table 3.

Table 5: Multiple regression results for large class size management techniques and academic performance

Model		Unstandardised Coefficients: B	SE	Standardized Coefficients: Beta	t	Sig.	Collinearity Statistics: Tolerance	VIF
1	(Constant)	1.152	0.340		3.389	0.001		
	1	0.343	0.071	0.425	4.825	0.000	0.493	2.027
	2	0.208	0.084	0.230	2.486	0.014	0.446	2.242
	3	0.060	0.103	0.048	0.583	0.561	0.562	1.780
	4	0.029	0.075	0.030	0.384	0.702	0.646	1.549

Source: Field Data

a. Dependent Variable: Academic Performance

Note: 1 cooperative learning; 2 Technology enhanced instruction; 3 Blended learning formats; 4 In-class exercises

The results in Table 3 showed that the contribution of cooperative learning ($\beta=0.425$, $t=4.825$, $p<0.05$), and technology enhanced instruction ($\beta=0.230$, $t=2.486$, $p<0.05$) made significant contribution to academic performance while the contribution of blended learning formats

(β=0.048, t=0.583, p>0.05), and in-class exercises (β=0.030, t=3.384, p>0.05) did not contribute significantly to academic performance. In essence, the analysis established that a point increased in the use of cooperative learning and technology enhanced instruction would boost academic performance among the students by 0.425 and 0.230 scores respectively. Implicitly, academic performance among the students would improve if the conditions for cooperative learning and technology enhanced instruction are enhanced. Therefore, the null hypothesis that "Large class size management techniques employed by tutors do not enhance the academic performance of the students in the Nursing and Midwifery Training Colleges in the Central Region of Ghana" was rejected while the alternative hypothesis that "Large class size management techniques employed by tutors enhance the academic performance of the students in the Nursing and Midwifery Training Colleges in the Central Region of Ghana" was accepted.

The interviews were conducted to find out the extent to which the large class size management techniques used by the tutors improved the academic performance of the students. The data were organized under four themes: cooperative learning, technology enhanced instruction, blended learning formats, and in-class exercises. In responding to the question, a student commented that:

> *Yes, I think group work has really helped me to improve upon my learning and performance. We are put into groups, and each of the groups is given a task to perform and presentations are done in class. The group work offers me the opportunity to learn from my mates, and lessons that were not clear to me in class are discussed. The group work provides me the chance to discuss my learning difficulties with my colleagues who offer assistance to overcome such challenges. In fact, group work has really helped me to improve on my performance(S-6).*

A tutor supported these claims thus:

> *I use the group work technique to manage large class size, and I am certain it has helped to enhance the academic performance of the students. The size of my class is so large that I cannot engage the students on one-to-one basis. The option available to me is the use group work to make sure that everybody participates in the learning process. Even though there are challenges associated with the group work like non-participation of some group members, the group work has helped the students boost the performance (T-9).*

The above extracts proved collaborative learning among the students was a major technique applied to manage the large class size which has helped to improve the academic performance of the students. The assertion hinted that non-participation of some group members was a challenge to the group work technique. On the part of the tutors, the use of technology influenced the academic performance of the students. This claim was contained in comments by another tutor as below:

> *Some of us try to use technology in our teaching which is yielding results greatly. The technology involves the use of laptops, projectors, and microphones in our teaching and learning process. These technologies help to capture the attention of the students no matter the size of the class, and they can see and hear what is being delivered to them [students]. Some of us give out the presentation slides to the students to guide them in making notes and for references. In my opinion, this strategy has assisted the students to improve on their performance (T-5).*

The views above showed that the use of technology has helped the students to maximize their leaning and performance. A student supported the claim that technology is used to enhance teaching and learning which led to better academic performance as below:

> *Some of our tutors use projectors and other gadgets to facilitate teaching and learning. These have been useful, especially when the class size is large. However, most of the tutors do not use these technologies because they lack the necessary knowledge and skills in their usage. Besides, the technologies are inadequate for the tutors. As a result, very few of the tutors use gadgets to enhance teaching and learning (S-7).*

Similarly to the above observations, a tutor noted that:

> *Most of my colleagues lack the necessary expertise in the use of modern technology in instruction. Knowledge and skills in the use of technology need to be updated frequently because technology changes often. The development of technology in our part of the world is recent, and some of the tutors did not get the opportunity to learn the use of technology in instruction as part of their training. Couple with the limited number of technologies in the college, most tutors lack the requisite knowledge and skills in using them (T-2).*

The comments above implied that there were challenges in the use of technology in instruction. These challenges include lack of expertise in the use of technologies among the tutors, and inadequate technological tools for tuition.

From the results on research question two, it was revealed that even though management techniques influenced academic performance, cooperative learning and technology enhanced instruction were critical large class size management techniques boosted academic performance of students. The finding of this study supported the outcome of previous study carried out by Michaelsen (2007) who discovered cooperative learning through group work improved the academic performance of students who learnt in large class sizes. It was therefore inferred from these results that cooperative learning offered the students to learn from each other, promoted better interaction among the group members, and reduced discipline challenges. The effect of technology enhanced instruction on the academic performance of students has been supported by empirical evidence (Bezuidenhout, 2009; Bloemhof & Livernois, 2011). For instance, Bezuidenhout (2009) noted that the use of technology in large class sizes enhanced student communication and interaction with the teacher, and led to high academic performance. Bloemhof and Livernois (2011) also investigated the effectiveness of technology in an introductory economics course, and the results indicated that student learning outcomes were better than those in a traditional lecture-based course.

CONCLUSIONS AND RECOMMENDATIONS

The study concluded based on the statistical evidence that students in all levels in small classrooms performed better academically than their counterparts in very large classes. The study therefore can conclude that classroom size significantly influence of academic performance of students at all levels. The relationship between classroom size and academic performance was found to be inversely related. Students in large classrooms performed poorly while students in small classroom size performed better academically. The implication is that tutors of the large classes are unable to communicate lessons effectively to students, while the students in large classes are unable to ask questions in class. To ensure a more meaningful academic performance among the students, small class sizes are needed to improve the interaction between tutors and students. It is therefore pertinent that the management of the

colleges studied pay attention to the class sizes as pertained in their colleges to ensure good academic performance.

The study concluded the decisions relating to planning, implementation, and evaluation of lessons need to revolve around the students. This conclusion was informed by the finding that the students preferred making teaching and learning student-centred, effective assessment of learning, effective use of teaching and learning materials, and effective class management were critical to overcome the challenges of large class size in the colleges. The study, therefore, recommended that the tutors of the colleges studied should adopt teaching approaches that focus on learners, provide prompt feedback to students, and make teaching real through the use of relevant teaching aids to boost academic performance of the students. Also, the tutors could design their instructions in a manner to encourage students to support each by sharing ideas and assisting each other.

IMPLICATIONS OF THE STUDY FOR ADMINISTRATORS AND MANAGERS OF THE COLLEGES

The study made insights relating to the effect of large class size on the academic performance of students in the Nursing and Midwifery Training Colleges in Central Region of Ghana, which have implications for the administrators and manager of the schools. The study has shown that class size negatively affected the academic performance of the students. This finding implies that the principals of the colleges and other stakeholders who are in-charge of admissions of students need to take into cognizance the resources available in the colleges and the number of students to be admitted into the colleges. For instance, the number of tutors, furniture, and classrooms must be considered so that the required number of students is admitted to match these resources. If the number of students outstrips the resources available, it would lead to poor academic performance of the students.

Also, the findings of the study entreat the management of the colleges to find out ways to manage their large class sizes for effective teaching and learning to enhance academic performance of the students. This implicitly becomes necessary because the students have already been admitted, and teaching and learning is in progress in the colleges. The students who are currently enrolled in the colleges are at risk in terms of academic performance because of the large classes in which they learn. Effective measures should, therefore, be put in place to manage these classes for better academic performance.

Moreover, the study's findings have implications for guidance and counselling of the students. The students need to be assisted to be aware of the challenges of large class sizes, and the dangers they pose to quality teaching and learning, and their academic performance. This would help the students to eschew behaviours such as indiscipline and noise making during lessons that affect the quality of instruction as well as their academic performance. The counselling would also be geared at the need for cooperative learning and how this could be effectively implemented. The Guidance and Counselling Coordinators should guide the students in the formation and sustenance of learning groups to enhance their academic performance. Finally, the management of the colleges should solicit support of the Parent-Teacher Associations in the provision of resources to the colleges to reduce the burden of large class size and to improve academic performance.

LIMITATIONS OF THE STUDY

The report of the study was based on the self-report of the participants by using structured questionnaires and semi-structured interview guides, which could represent their subjective opinions. Even though the researchers attempted to reduce the degree of subjectivity by

triangulating data through multiple sources, it could not be guaranteed that the information provided in the study was the true reflection of the reality in the colleges. However, the multiple methods used in the study were meant to eliminate the extent of subjectivity. Also, the sample for study was relatively small, making it inappropriate to generalise the findings to all the Nursing and Midwifery Training Colleges in Ghana with large class size problems.

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