

# MANAGING THE EFFECTS OF LARGE CLASS SIZES ON QUALITY EDUCATION IN GHANA

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## **Managing the effects of large class sizes on quality education in Ghana**



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## ACRONYMS

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GNAT	Ghana National Association of Teachers
NAGRAT	National Association of Graduate Teachers
EFA	Education for All
FCUBE	Free Compulsory Universal Basic Education
GPS	Global Positioning System
INSET	In-service Education and Training
JHS	Junior High School
KG	Kindergarten
LCS	Large Class Size
MoE	Ministry of Education
PTA	Parent-Teacher Association
SHS	Senior High School
SMC	School Management Committee
UNESCO	United Nations Educational, Scientific and Cultural Organisation

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## **EXECUTIVE SUMMARY**

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### **Introduction**

In March 2017, the Ghana National Association of Teachers (GNAT) and National Association of Graduate Teachers (NAGRAT) contracted the National Centre for Research into Basic Education (NCRIBE), based at the University of Education, Winneba (UEW), to conduct a study on managing the effects of large class sizes on quality education in Ghana. The above teacher unions (GNAT & NAGRAT) are organisations of teachers in pre-tertiary educational institutions with offices in all regions of Ghana. Their missions focus on unifying all teachers in pre-tertiary educational institutions and to strive for better conditions of service and job security as well as enhance their professional status.

In general, the study aimed to identify actual class sizes as against the required size by education providers and policy makers. Further, the study also examined the possible causes and effects of large class sizes. Finally, this study identified possible ways of managing large class sizes in the Ghanaian education system from basic to secondary level.

### **Methodology**

This research adopted a mixed method approach which is a blend of both quantitative and qualitative methods. The rationale for the methods was to ensure a complete detail of the purpose of the study and also serve to complement and strengthen the weaknesses of one instrument with the other. Purposive sampling technique was employed to identify and select public schools with large class sizes across the 10 regions of Ghana. In all, a total of 571 respondents made up of head teachers, teachers and students from the basic and secondary levels of education participated in the study. Data were gathered mainly through questionnaires and interviews and recorded

digitally. Data retrieved from the database were checked to ensure that they were fully completed and consistent with the requirement of the study. Descriptive statistics such as averages, and percentages were generated from the data to enable the researcher to present the findings. In addition, frequency tables, graphs and charts were also employed for graphical representation. The qualitative data gathered mainly through audio recorded interviews were transcribed and to supplement the information gathered through the questionnaires. The transcribed data were organised in themes and analysed in accordance with the emerging themes.

## **Findings**

The findings as related to the objectives of the study revealed a number of key issues summarized below:

This study covered a total of 571 participants of which 27 are head teachers, 233 teachers and 311 students selected from primary schools, Junior High Schools (JHS) and Senior High Schools (SHS) from all ten regions of Ghana.

With respect to demographics, male teachers dominated across all levels of education – Primary 67%; JHS 72% and SHS 71%. Female participants were found to constitute 30% of head teachers – 33% at primary, 27% at JHS and 29% at SHS. On teacher qualifications, a Bachelor's degree was the highest qualification, with 38% of primary, 49% of JHS and 81% of SHS teachers holding a Bachelor's degree. Taking age into consideration, teachers were found to be youthful as over 70% were found in an age bracket of 26 and 40 years.

With regard to head teacher qualifications, 100% of SHS heads were Master's degree holders while only 36% of JHS and 22% of primary head teachers held a Master's degree. Majority of head teachers were found to be at least 41 years and above at all levels, primary (67%), JHS (82%) and SHS 100%).

At the primary level, the Northern region recorded the highest in large class size (84) with Ashanti the least (36). At the JHS level, Ashanti and Northern regions recorded the highest in large class size (63 each) with Greater Accra being the least (43). Northern region again recorded the highest large class size (96) at the SHS level and Eastern region being the least (42). In summary, Northern region recorded the highest large class size at all levels of education (Primary, JHS & SHS).

The findings revealed that rapid population growth and lack of school infrastructure such as classroom were the major factors leading to large class sizes in schools.

Based on the findings of the study, conclusions can be drawn that large class size have a negative impact on teachers' teaching, students' learning, classroom management, provision of timely feedback and effective use of teaching and learning materials. A large number of teachers (90%) also argued that students' achievements are affected as a result of the large class size. It is therefore not surprising to note that, both head teachers (81%) and teachers (86%) indicated that, they were not happy with their class size.

With regards to effects of large class on teachers' teaching, it was revealed that a higher proportion of head teachers (93%) and teachers (73%) were of the view that large class size limits teachers' ability to deliver quality instruction. Teachers stated that as a result of the large class size, a lot of energy is needed to be able to reach out to all individuals in the classroom. Head teachers supported their teachers' view by adding that large class size brings a lot of stress to teachers and does not allow effective delivery of instruction.

With respect to the effects of large class size on students' learning, a significant number of head teachers (89%) and teachers (85%) were of the view that, students are usually distracted by their colleagues when learning in a large class. Teachers indicated that students do not pay attention in overcrowded classrooms which leads to poor

performance. Majority of students (83%) preferred a smaller class size with the view that, they are not comfortable in their classrooms as a result of its size.

In relation to the effects of large class size on classroom management, majority of head teachers (85%) and teachers (87%) were of a strong opinion that the management and control of students become very difficult in a large class. This favoured the use of lecturing (84%) and whole class discussion (4%) by teachers and limits the use of learner-centred methods such as demonstration, group discussion and activity methods which are known to be more effective. Also, teachers are not able to monitor and supervise their students as their movement in class is restricted as a result of the overcrowding. Large class sizes were found to be characterized by noise making, bullying, stealing, quarrels, which becomes stressful for teachers to manage.

On the provision of timely feedback to students, a large proportion of head teachers (89%) and teachers (80%) were of the view that large class size limits teachers' ability to deliver specific feedback to all students in the classroom. They further revealed that, providing feedback to, and receiving it from students become more difficult as a result of large class size. Students confirmed that as a result of the large class size, feedback from teachers is usually delayed and sometimes does not happen at all.

To conclude, head teachers (96%) and teachers (86%) were of the view that large class size leads to the inadequacy of learning resources for an effective learning of students. The schools are not able to provide adequate teaching and learning materials (TLMs) which result in ineffective teaching and learning.

### **Recommendations**

Based on the findings, the following recommendations are made to the relevant stakeholders in the education sector:



- a. Provision of adequate school infrastructure especially classrooms in compliance with government standards.
- b. Training and recruitment of certified teachers to meet the required trained teacher-pupil ratio.
- c. In the short term, schools should be provided with adequate TLMs especially textbooks while improvement and provision of adequate infrastructure are made in the long term as a permanent solution.
- d. Workshops and INSET should be organized frequently for teachers and head teachers to make them competent in managing large class sizes.
- e. Teachers and their representatives should be actively engaged for the identification of the biggest challenges of large class size and how they can be overcome.
- f. Efforts should be made to increase the domestic resource base through a progressive tax policy to secure a reliable source of funding.

# 1 INTRODUCTION

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## 1.1 BACKGROUND TO THE STUDY

All over the world, studies indicate that large class sizes compromise quality education. Indeed, teachers are not only victims of the pedagogical shortcomings of large classes but also of the stress such conditions produce (Chingos, 2013).

In Ghana, several policies/interventions have been initiated over the years aimed at increasing enrolment. These interventions include capitation grants, school feeding programmes as well as the distribution of free school uniforms and exercise books among others (State of the Ghanaian Economy Report, 2014). This has resulted in increased enrolment without a corresponding increase in classrooms and relevant infrastructure.

The resultant large class sizes have become a growing problem which is impeding education quality. This is reflected yearly in the consistent decline in results in the standardized West African Examinations and has reached such alarming proportions that it has triggered a national wakeup call for action.

## 1.2 RESEARCH OBJECTIVES

The specific objectives of the study are as follows:

1. To identify actual class sizes as opposed to that required by education providers and policy makers.
2. To examine the possible causes of large class sizes.
3. To analyse the effects of large class sizes.
4. To propose possible ways of managing large class sizes.

### **1.3 SIGNIFICANCE OF THE STUDY**

The findings from this study will help policy makers, labour unions, educators and other advocacy stakeholders to identify the effects of large class sizes on quality education, and to institute measures on how it could be managed.

## 2 LITERATURE REVIEW

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### 2.1 INTRODUCTION

This chapter discusses the literature on large class sizes. The review explores the dominant themes of the study, that is, the possible causes of large class sizes, the effects of large class sizes on quality education, and the possible ways of managing large class sizes.

There appears to be ambiguity around the point at which a class can be termed too large or overcrowded to the extent that it negatively impacts on quality education. Although the issue of classroom conditions has gained prominence in recent times along with an ever increasing emphasis on quality, this is particularly applicable to developing countries (Benbow et al., 2007), Ghana being no exception. Indeed, the importance of class size to teaching and learning outcomes cannot be overemphasized, as Ehrenberg et al. (2001) affirm in their contention that it is a direct measure of the efficacy of teaching resources and the development of students.

Although not universally empirically proved, Monks and Schmidt (2010) argue that parents, teachers, school administrators and policy makers usually believe that smaller classes correspond to improvement in the learning outcomes of students. Concern expressed by instructors about how probable it is that a large class negatively affects student learning notwithstanding, several studies have shown mixed effects (either inversely related or not related at all) on learning outcomes. For instance, although the study of Ngoboka & Schultz (2002) focused on Higher Education and also not in the context of Ghana, they found no significant difference in student performance due to class size. It is therefore not surprising that they opined that large class size is more of an expectation than an issue of performance. This then calls for more school-specific empirical evidence to make a conclusive case in establishing the relationship between

these two variables (class size and students' academic performance). This research therefore sought to probe the possible causes, effects and strategies for managing large class sizes in Ghana.

## **2.2 ACTUAL VERSUS REQUIRED CLASS SIZE**

What constitutes a large class size varies in different contexts and Ngoboka and Schultz (2002) argue that the definition of the optimal class size remains a problem worth investigating. However, since teachers' judgment about such an ideal may be informed by previous experience and/or perception of what is realistic, Blatchford et al. (2003) opine that it is over-simplistic to precisely define the optimal class size. According to Benbow et al. (2007), a class may be termed large when the pupil: teacher ratio (PTR) exceeds 40: 1. Ehrenberg et al. (2001) however argue that class size is not the same as PTR, with the former referring to the actual number of students taught by a teacher at a particular time and the latter having to do with the global measure of the human resources brought to bear on children's learning. They are, therefore, of the view that PTR is always lower than the average class size. This seeks to explain why while the required PTR for basic schools in Ghana is 35:1, the actual class size is 40 and above. By contrast, a class size of 30 is considered large and in need of reduction in Western countries (Benbow et al., 2007). However, in the Ghanaian context, it varies in relation to the level of education under consideration. For instance, currently the ideal class size for kindergarten (KG) is determined to be 25 while that of primary school, junior high school (JHS) and senior high school (SHS) is 40.

**Table 2.1 Actual versus Required Class Size**

Region	KG		Primary		JHS		SHS	
	Actual Class Size	Required Class Size	Actual Class Size	Required Class Size	Actual Class Size	Required Class Size	Actual Class Size	Required Class Size
Ashanti	47	25	36	40	34	40	44	40
Brong Ahafo	55	25	37	40	35	40	43	40
Central	47	25	37	40	33	40	42	40
Eastern	45	25	32	40	29	40	46	40
Greater Accra	44	25	51	40	47	40	45	40
Northern	91	25	47	40	50	40	59	40
Upper East	87	25	52	40	50	40	53	40
Upper West	77	25	42	40	37	40	47	40
Volta	58	25	34	40	30	40	35	40
Western	55	25	38	40	37	40	46	40
<b>Average Total</b>	<b>57</b>	<b>25</b>	<b>39</b>	<b>40</b>	<b>37</b>	<b>40</b>	<b>46</b>	<b>40</b>

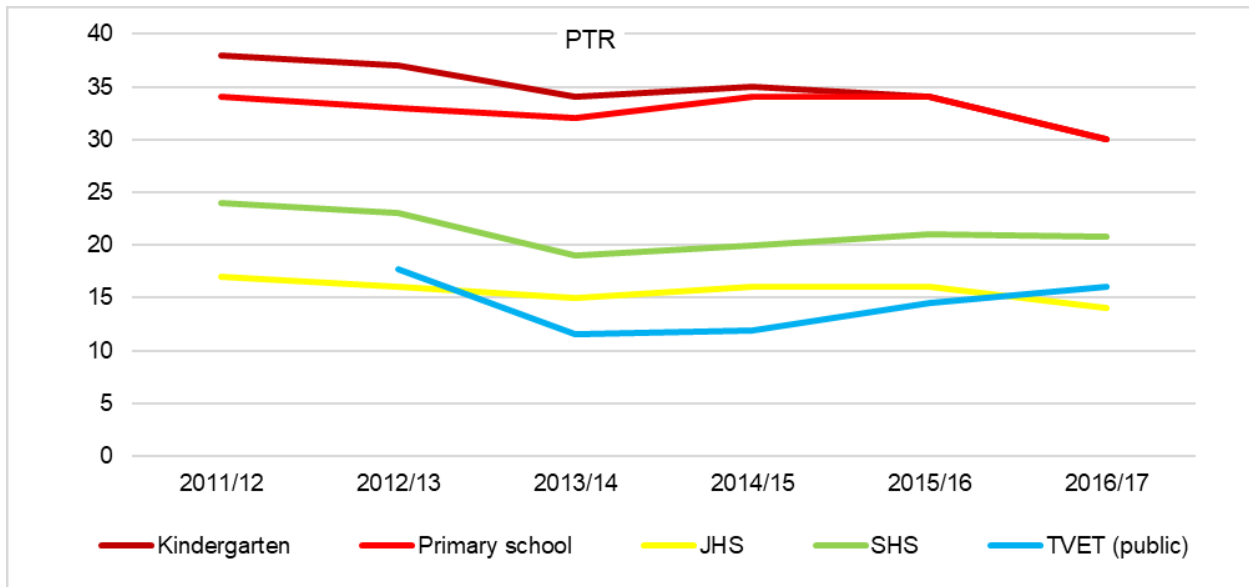
**Source: EMIS data (2014/15)**

It can be seen In Table 2.1 that with the exception of KG and SHS, where the actual class size exceeds the standard (by 32 and 6 students respectively), the other levels have class sizes which are below the standard by 1 and 3 students in primary and JHS respectively.

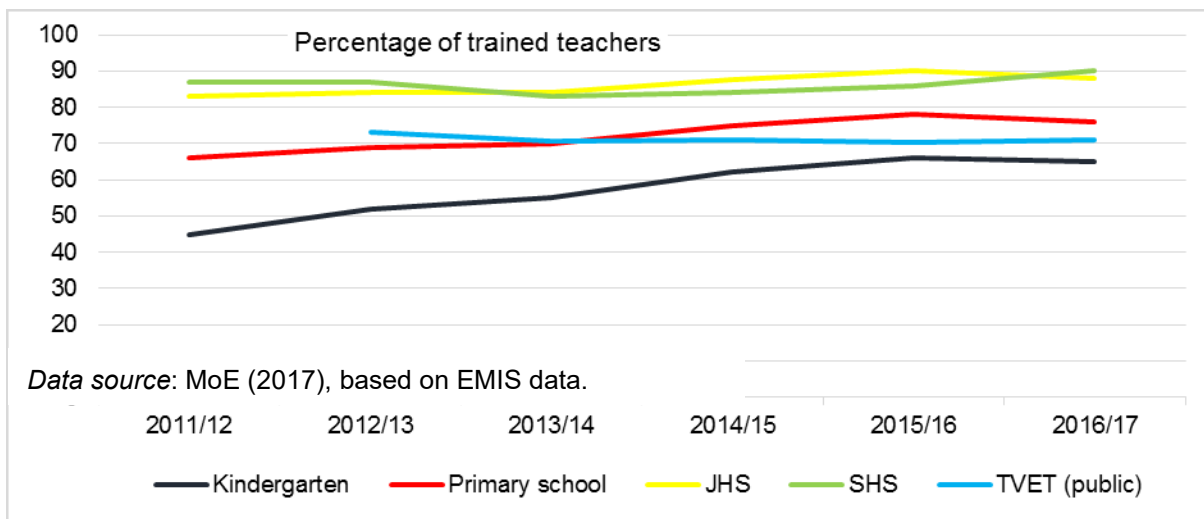
Figure 2.1 and 2.2 present the trends in Pupil-Teacher Ratios (PTRs) and Pupil-Trained Teacher Ratios (PTTRs) for 2011/12 to 2016/17.



**Figure 2.1 Trends in PTRs, 2010/11 to 2016/17**



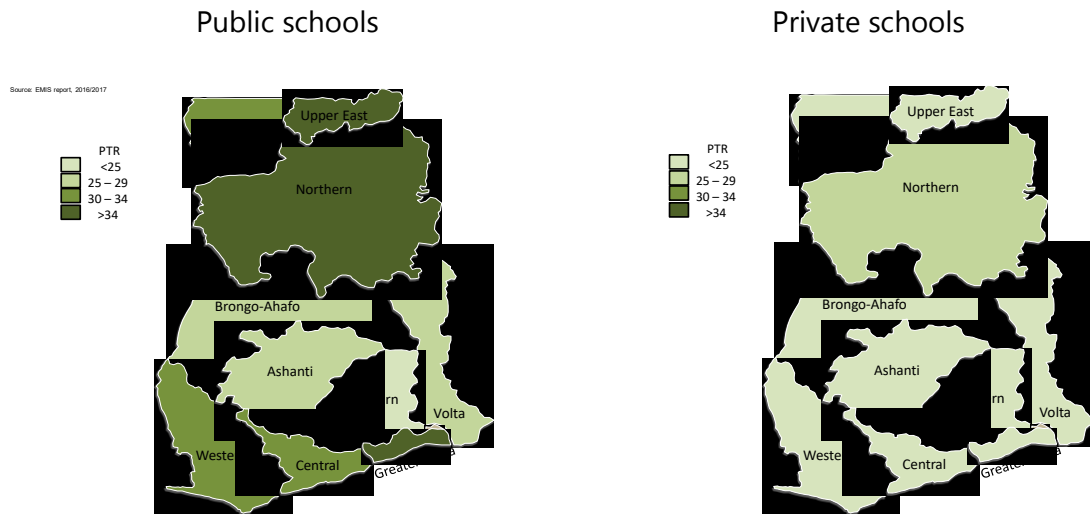
**Figure 2.2 Trends in percentage of trained teachers, 2010/11 to 2016/17**



*Data source: MoE (2017), based on EMIS data.*

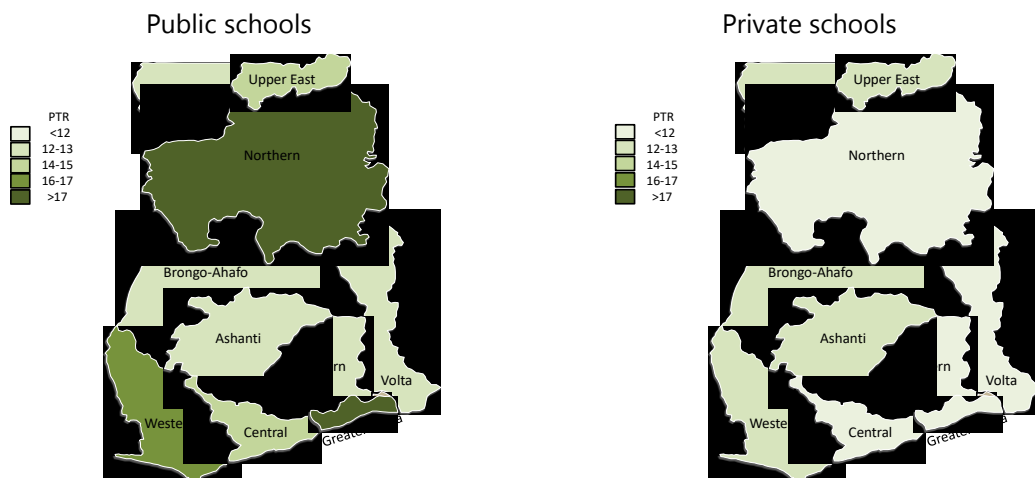
Also Figure 2.3 to 2.5 shows regional PTRs of basic secondary schools (public & private) for 2016/17 academic year. It reveals that while PTRs may be low in some areas, they are high in others.

**Figure 2.3: Primary school PTR by region, 2016/17**



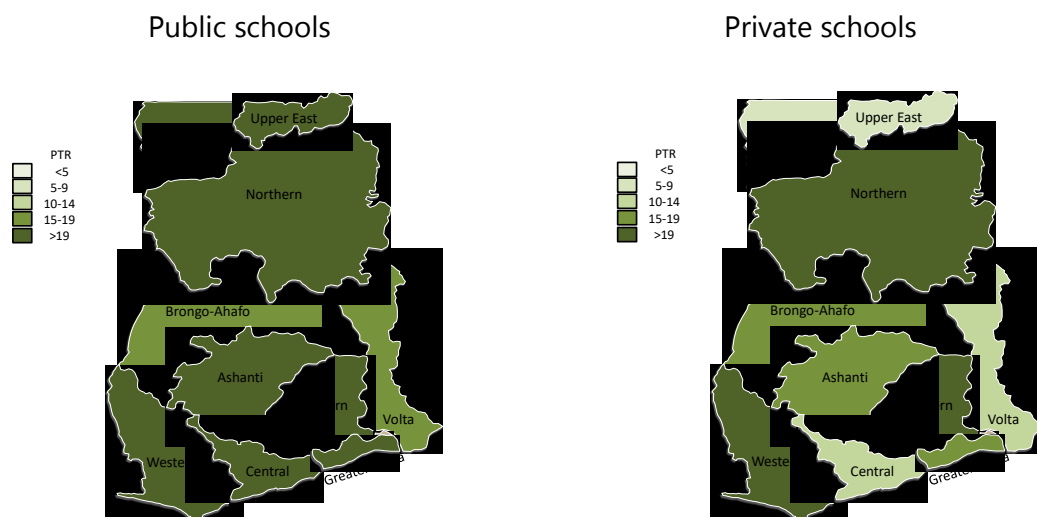
Source: EMIS report, 2016/17.

**Figure 2.4: Junior high school PTR by region, 2016/17**



Source: EMIS report, 2016/17.

**Figure 2.5: Senior high school PTR by region, 2016/17**



*Source:* EMIS report, 2016/17.

There are, however, some disparities at the regional level, with some regions having extremely large class sizes and others being below the national average. Although the national class size exceeds the required level at the KG level, Upper West, Upper East and Northern regions recorded alarmingly high class sizes with 52, 62 and 66 surplus students respectively. This suggests that schools in these regions have more than three classes combined in one classroom, the implications of which cannot be underestimated. With respect to the primary level, all but Upper East, Greater Accra, Northern and Upper West regions have class sizes complying with the standard. It is interesting to note that while Greater Accra has the lowest class size at the KG level, at the higher levels (JHS & SHS), is it second to Upper East region in terms of large classes. The picture presented at the JHS level is not significantly different from that of the primary. The exception here is the exclusion of Upper West region from those with large classes following its inclusion at the lower levels. Class size at the SHS level is highest in Northern (59), Upper East (53) and Upper West (47) regions.

Generally, it can be observed that Eastern region has relatively moderate class sizes at all levels, especially JHS where a class of less than 30 was recorded. However, a critical look

at the national and regional figures suggests that class size has an inverse relationship with the level of education, where class sizes tend to decrease at the higher levels of the basic education ladder. This is worth investigating to ascertain the factors that contribute to such a trend – whether enrolment or infrastructure related.

### **2.3 POSSIBLE CAUSES OF LARGE CLASS SIZES**

Commentators have differing opinions on the cause of large class sizes – ranging from the introduction of social intervention programmes to rapid population growth – especially in developing countries. For example, Benbow et al. (2007) are of the view that global initiatives for universal education and rapid population growth are the interrelated trends from which large class sizes in the developing world stem.

The benefits associated with education have resulted in the increasing call for improving access for all children. In 1990, a World Conference was held in Jomtien, to deliberate on how all children in the world might have access to education, the resultant initiative being christened “Education for All” (EFA). An approximately five to seven per cent increase in students enrolment in primary school in Thailand. Another meeting was held ten years later in the year 2000 in Dakar to assess progress made towards the achievement of EFA. The output of this conference was expressed in the need to meet such goals as expanded access to early childhood education, free and compulsory education, increased use of life-skills education, increased adult literacy, reduced gender disparity, and overall enhanced education quality (UNESCO, 2015). Following this, governments have made education access a key aspect of national development strategies. This is evident in Ghana through the development of policies aimed at eliminating all obstacles to EFA, such as Free Compulsory Universal Basic Education, the Capitation Grant and School Feeding Programme, Free School Uniforms and Sandals, and the current rollout of access to Free Senior High School.

Although efforts to increase education access are commendable, they do not necessarily imply improved education quality as the school system's capacity to accommodate more children may not be adequate. In situations in which capacity building is not commensurate with the increased enrolment accompanying such interventions, quality is inevitably compromised. Among such quality-related issues are PTR and the availability of teaching and learning materials and other infrastructure, of which classrooms themselves are not exempt. Thus, increased enrolment without provision of the necessary additional classrooms is a key contributing factor to large class sizes.

## **2.4 EFFECTS OF LARGE CLASS SIZES**

Target 4.1 of the United Nations Sustainable Development Goals (SDGs) seeks to among other things, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes by 2030 (UN, 2015). It is clear from this target that issues of equity and quality are core to its attainment. The Incheon Declaration and Framework for Action for the implementation of the SDG 4 in 2015 estimated that, 59 million children of primary school age and 65 million adolescents of lower secondary school age were still out of school in 2013. Accordingly, more than 50% of about 250 million primary-school-aged children, whom have spent at least four years in school, cannot read, write or count well enough to meet minimum learning standards (UNESCO, 2015). It therefore imperative to give due consideration to conditions and nature of classrooms in other to promote effective teaching and learning.

It is undeniably true that several factors other than class size influence student achievement. However, class size itself may affect learning in two important ways – quantitatively (the number of students accommodated by a classroom) and qualitatively (the composition of students in the class). With regard to quality, Ehrenberg et al. (2001) believe that students in classes that are heterogeneous in terms of ability may learn

more or less than their counterparts in classes that are fairly homogeneous. This implies that size alone is not sufficient to determine learning outcomes without paying attention to class composition.

In terms of quantity, teachers are faced with several challenges whenever attempts are made to teach in overcrowded classes. The Student Teacher Achievement Ratio (STAR) project conducted in Tennessee, USA (1985–89) proved beyond doubt how class size affects student performance (Benbow et al., 2007). From this project, it was found that teachers who had small classes (less than 20 students) experienced an environment conducive to clear and focused instruction, used different instructional techniques to accommodate various learning styles, included incentives and rewards to promote learning, encouraged high standards of classroom behaviour, had high expectations of students, and maintained excellent personal interaction with students.

Moreover, a study in the UK by Blatchford et al. (2005) found that larger classes could lead to students playing a passive role. They further revealed that students in large primary classes were more likely to be listening while the teacher did all the talking. However, in relatively smaller classes, students were more likely to interact with teachers in an active and sustained way. This was a consistent finding at both the beginning and end of the primary stage (4/5 and 10/11 years).

Large class sizes have been found to affect several areas of teaching and learning, such as teaching practice, student learning, and learning resources. With regard to teaching practice, a large class has been identified as affecting instructional time and classroom management. It seems likely that the larger the class, the more time teachers are obliged to spend on procedural matters (such as checking student attendance, marking exercises etc.,) and the less time there is available for instruction and dealing with individual students. This is supported by a number of studies which have found that student discipline and control tends to be more problematic in large classes and more



of an intrusion into the teaching and learning process (e.g. Blatchford & Mortimore, 1994; Glass et al., 1982). In sharp contrast, smaller classes tend to be quieter and more easily managed (Borden & Burton, 1999). Bourke (1986) also found that in large classes, more non-academic instruction becomes necessary. On the other hand, it emerged that there was less need for critical comments from teachers and less difficulty in classroom management in smaller classes. A theoretical and empirical case is developed by Fin et al. (2003) to ascertain that effective student engagement is the key element that explains why smaller classes lead to better attainment.

Teachers with large classes usually have limited time to effectively deliver subject content to students (Benbow et al., 2007). This is due to the need to devote time to other activities such as behaviour and task management. Teachers also tend to devote more effort to whole-class activities at the expense of those that pay attention to individuals (Monks & Schmidt, 2010). Ehrenberg et al. (2001) corroborate this through their finding that large class size is likely to affect the amount of time a teacher attends to individual students and their specific needs rather than the group as a whole. They go on to argue that teachers with small classes are usually in a better position to assign more writing exercises, provide more feedback on written work, use open-ended assessment techniques, and encourage more discussion. The position of Blatchford et al. (2003) is therefore credible when they state that more teaching takes place in smaller classes and less in larger ones. This assertion derives from a study which showed that children in smaller classes were more likely to be the focus of the teacher's attention through one-to-one interaction. Conversely, a large class often leaves the teacher with no other option but to divide students into groups during discussion time, rely on passive lecturing, give fewer assignments, and require fewer or no written papers (Ngoboka & Schultz, 2002). This is coupled with teachers' difficulty in getting to know their students personally, thereby making it more difficult to factor individual needs into pedagogical preparation and delivery.

In addition to the implications for instructional time, a small class is easier to manage than a large one due to the crowding and unruly behaviour associated with the latter. As well as more teacher time-on-task and learning support, Blatchford et al. (2003) agree that smaller classes are easier to manage. Teachers may also be more highly motivated when in charge of a small class. According to Finn et al. (2003 cited in Benbow et al., 2007), there is a sense of community in a small class and this boosts teachers' morale and enjoyment of their work, which, in turn, increases their productivity. As Blatchford et al. (2003:718) state, "It may also affect a teacher's professional satisfaction and enthusiasm".

A study by (Hoxby, 2000) was conducted to identify the effects of class size on student achievement. The findings revealed that, class size does have an effect on students' academic achievement.

Students are also affected by class size in terms of engagement, behaviour and retention. Students in small classes are likely to have a higher degree of interaction with their classmates and teachers (Blatchford et al., 2003) as well as academic engagement in the learning process. Finn (2003 cited in Benbow et al., 2007) attests to this in stating that such students become more socially and academically engaged, which, in turn, increases academic achievement. However, Blatchford et al. (2003) are of the view that although smaller classes may perform better academically, they may not necessarily be sociable.

Nevertheless, students in large classes have been found to participate less, especially in class discussion, since the failure to do so does not make any significant impact on the progress of activities. Active participation in class activities promotes learning and social behaviour which results in the high probability of retention in smaller classes. In this regard, Monks and Schmidt (2010:7) state that "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”.

Students are more distracted in larger classes than smaller ones, which makes it harder for them to concentrate (Blatchford et al., 2003). Ehrenberg et al. (2001) also agree about the potential effects that large class size could have on how much is learned by students. This, they argue, could be associated with how students interact with each other, usually resulting in more or less noise and disruptive behaviour, which invariably affects the kinds of activities the teacher is able to promote.

Learning resources (teaching and learning materials) have been proven to be a vital component that drives teacher performance and student learning (Etsey, 2005). Of the challenges posed by large classes, a peculiar one relates to the quality and quantity of learning resources available to each student. Hanushek (1995 cited in Benbow et al., 2007) states that, shortages in this regard are particularly acute in developing countries and a lack of such resources invariably results in the failure to achieve the aims of lessons.

Furthermore, immediate teacher feedback has also been identified as another challenge for teachers of large classes. UNESCO, 2006 asserts that a major difficulty in teaching large classes is finding ways to provide feedback to, and receive it from, students. Feedback helps students see how well they are doing and whether they have understood the lesson. Consequently, the more feedback the teacher provides, the better, because it will not only help them but also the teacher. This is because feedback is a useful tool that helps the teacher to reflect on his or her teaching and can go a long way to help develop his or her personal teaching style (Black, 2000).

The above literature suggest that large class size affects several areas of teaching and learning such as teaching practice, student learning and learning resources. While

teachers mostly encounter difficulties in managing the classroom towards effective teaching, students on the other hand suffer largely in terms of effective feedback. Students were also found to participate less in a large class size which affect their academic achievement in the long term.

## **2.5 POSSIBLE WAYS OF MANAGING LARGE CLASS SIZES**

Although the issue of large class size is a common phenomenon in Ghana, teachers who undergo teacher education are trained in classroom management with no due reference to large classes in particular (Etsey, 2005). This means that they are underprepared to face the challenges they face when they meet such classes. This shortcoming notwithstanding, Benbow et al. (2007) identify small group discussion, peer tutoring, and shift teaching as some strategies teachers can adopt to manage large classes. Overcrowded classrooms can be reduced through an increase in qualified teachers and adequate facilities (sufficient classrooms and learning resources), although these will come at a high cost. For example, the total cost of reducing class size in line with EFA was estimated in 2015 at \$9 billion annually – requiring an approximately 4% increase in the education expenditure of sub-Saharan African countries (Benbow et al., 2007). However, although reducing class size plays a contributory role in the significant improvement of student learning outcomes (Monks & Schmidt, 2010), this does not seem to be a practicable short-term solution for Ghana due to the huge financial implications of such an undertaking. It is therefore essential for government to pursue long-term local resource mobilisation such as progressive tax policies to address the funding challenges.

As mentioned earlier, Ghanaian teachers are seldom specifically trained to meet the challenges associated with large classes. For this reason, Benbow et al. (2007) cite a number of education projects that have been implemented to address this issue in developing countries through the provision of in-service education and training (INSET).

Blatchford et al. (2003) also consider it a worthy cause to design initial and continuing teacher training programmes which aim at equipping teachers to adjust to such contextual features as class size. Through such programmes, teachers are exposed to effective ways of managing large classes. Among these strategies are the use of small groups, student-to-student support and mentoring, employment of the most effective teachers for larger classes, use of volunteers and teaching assistants, team teaching, and shift instruction (Stanley & Porter, 2002).

## **2.6 CONCLUSION**

Although class size is not the sole driver of teaching and learning performance, it is one of the simplest variables that is relatively easy for policy makers to manipulate (Ehrenberg et al., 2001). However, in spite of the perception of education stakeholders about the effects of large class size on student learning, it is difficult to reach any definite conclusions due to the paucity of evidence. The effects of large class sizes are not peculiar to the pre-tertiary education sector but also applicable to higher education. In their study on the impact of large class sizes on outcomes in higher education, Monks and Schmidt (2010) suggest that if student outcomes are to be improved there is a need to reduce the ratio of students to each faculty member. With increasing population of school age children in Ghana and a declining educational expenditure especially at the basic school levels (Lecleque, Ananga, Sue, Dankwa, 2017), it seems students at the lower education levels are more prone experience the negative effects of large classes. Blatchford et al. (2003) indicate how differences in class size have the strongest effect on younger children. Through their interviews with teachers, Blatchford et al. (2003) identified a need for education research to provide a vital source of evidence to support their (teachers') conviction that the case for small classes is indisputable. It is therefore worth conducting a study to determine the issues relating to the effects of class size on quality teaching and learning in Ghanaian schools.

## 3 METHODOLOGY

### 3.1 INTRODUCTION

This chapter discusses the methodology adopted for the study. It explains the research design, sample and sampling technique, data collection instruments, and data collection procedures and analysis. Finally, it discusses the ethical considerations and limitations of the study.

### 3.2 RESEARCH DESIGN

This study adopted a mixed methods approach being a blend of both quantitative and qualitative methods. The rationale for this strategy was to ensure that the aims of the study were fully addressed and also that the weaknesses of one instrument were complemented and strengthened by the other. This is important because it increases both the reliability and validity that are vital in measuring a concept. The quantitative aspect was designed to gather data on class sizes. The qualitative study on the other hand enabled the researcher to obtain in-depth information on the effects of large class sizes on quality education (Creswell, 2012). The targeted population included head teachers, teachers and students from both basic and secondary schools.

This study was guided by the following research questions:

1. What are the actual class sizes in Ghanaian schools as compared to the required?
2. What are the possible causes of large class sizes in Ghanaian schools?
3. To what extent does large class size affect the quality of education in Ghana?
4. How can the problems of large class size be managed for quality education in Ghana?

### **3.3 POPULATION, SAMPLE AND SAMPLING TECHNIQUE**

Purposive sampling was employed to identify and select schools with large class sizes across the 10 regions of Ghana. First, data from the Education Management Information System (EMIS) department of the Ministry of Education (MoE) were used to calculate class sizes in all 216 districts in the 10 regions of Ghana. EMIS data provides information on the number of classrooms and total enrolment of students at the district level from which class sizes were calculated. Districts with large class sizes were identified and selected on the basis of EMIS data. To further sample those schools with large classes, the research team drew on support from the two teacher unions - GNAT and NAGRAT whose membership at the district and school level provided relevant information for identifying the large class schools. Leadership of these two unions, requested their members working in schools through the country to furnish them with list of schools with large class. From the list of schools provided, the schools included in the study were sampled.

From the list of schools given, 1 primary, 1 Junior High and 1 Senior High School was selected in each district of the districts found in the EMIS data to have large class size. Overall, an average of 60 participants consisting of head teachers, teachers and students were targeted from each district across the 10 regions. This brought the total targeted sample to 600. However, only 571 participated fully in the study (refer to Table 2.2). This sample size was considered manageable, considering the short period within which the study was conducted. This is consistent with the opinion of Best and Kahn (1995:19) that, the "ideal sample size" must be "large enough" to be representative of the population from which the "researcher wishes to generalise and small enough to be selected economically".

**Table 2.2 Sampled population**

National		GNAT			NAGRAT					
		2			2					
		Primary			JHS			SHS		
Region	District	Head teachers	Teachers	Students	Head teachers	Teachers	Students	Head teachers	Teachers	Students
Northern	Savelugu/ Nanton		6	12	1	5	14	1	6	8
Upper West	Jirapa	1	6	15	1	6	13	1	7	11
Upper East	Builsa North	1	7	14	1	7	14	1	21	9
Ashanti	Asokore Mampong	1	6	3	1	5	9		9	10
Brong Ahafo	Sunyani	1	6	15	1	5	15	1	10	8
Easter	Kwahu North (Afram Plains)	1	8	10	1	7	14	1	6	10
Central	Cape Coast	1	6	8	1	7	13	1	16	10
Western	Shama Ahanta East	1	8	15	1	7	15	1	5	11
Greater Accra	La Nkwantanang Madina	1	8	4	1	7	3			
Volta	Nkwanta North	1	7	15	1	7	15	1	10	10
<b>Total</b>		<b>9</b>	<b>68</b>	<b>111</b>	<b>10</b>	<b>63</b>	<b>125</b>	<b>8</b>	<b>90</b>	<b>87</b>

Source: Field data (2017)

### 3.4 INSTRUMENTS FOR DATA COLLECTION

The methodological approach to the study is mixed methods, quantitative and qualitative; as a result, research tools associated with qualitative and quantitative were combined to collect data. Thus, for the purpose of this research, structured questionnaires were used to collect quantitative data whiles the qualitative study employed a semi-structured interview guide to gather information on the effects of



large class size on quality education. The instruments covered five major areas as follows:

- a. Socio-demographic characteristics
- b. Identification of actual class sizes as opposed to required class size
- c. Causes of large class sizes
- d. Effects of large class sizes on quality education
- e. Possible ways of managing large class sizes

### **3.5 VALIDITY AND RELIABILITY**

Based on the research questions the questionnaire items were developed from the concepts and literature that were reviewed for the study, after which the face validity of the items were established by the researchers by first giving the questionnaire to senior colleagues to read and provide comments for further review. According to Bryman (2008:152), when a researcher “develops a new measure” s/he must “establish that it has face validity”. In other words, s/he should be able to ascertain that the measure or items “reflect the content of the concept in question”. Based on the comments the researchers revised the items in line with comments provided by the experts to improve their quality by rewording and taking out all ambiguous phrases and words that made them unclear.

### **3.6 DATA COLLECTION PROCEDURE**

A digital data collection approach was employed in this study where data were collected through electronic devices (e.g., phones and tablets) rather than the paper-and-pen/pencil forms. The researcher engaged an IT service provider known as TECHAiDE to design an android application to be used for the purpose of the data collection. The application is called POIMAPPER Plus and can be assessed from Google Play store. The selected technology combined several device functions into one: global positioning system (GPS) locator, photo capture and data capture. To reduce data entry errors and

ensure mastery of the process, data collectors received a special training by an IT specialist. Both questionnaires and interview guides data were collected electronically and transfer automatically into a single database in real time.

Permission was sought and the necessary data were gathered electronically using the questionnaires and interview guides by means of mobile phones and tablets. The questionnaires and interview guide were administered to head teachers, teachers and some selected students from the selected basic and secondary schools. While head teachers and teachers responded to both questionnaires and interview guide, students on the other hand responded to only interview guide.

### **3.7 METHODS OF DATA ANALYSIS**

All the retrieved questionnaires and interviews from the database of the digital application were checked to ensure that they were fully completed and consistent with the requirements of the study. The questionnaires were transferred into Microsoft Excel and Statistical Package for the Social Sciences (SPSS) version 20 and analysed. Descriptive statistics such as averages and percentages were generated from the data to enable the researcher present the findings. In addition, frequency tables, graphs and charts were also used for graphical representation of the data. The qualitative data were gathered mainly through the interviews which were transcribed and narrated in words to supplement the information gathered through the questionnaires. Thematic analysis was employed to analyse the qualitative data.

### **3.8 ETHICAL CONSIDERATIONS**

This study considered a number of ethical issues. According to Creswell (2014), ethics provide a researcher with a guide to moral conduct and prevent scientific misconduct.

Every effort was made to protect the best interests of participants by ensuring that collected data were used for research purposes only. First, an official letter from GNAT/NAGRAT was delivered to selected schools in the various districts and permission to conduct the study was sought from head teachers.

Second, participation in the study was voluntary and confidentiality was guaranteed. Thus, to uphold confidentiality and anonymity, information disclosed by participants, including the names of their schools, were made anonymous to prevent identification of participants. This was implemented by the use of codes in place of participants' names.

### **3.9 LIMITATIONS OF THE STUDY**

For a study of this nature, it would have been appropriate to include every school with large classes in all districts. However, given limitations of finance and time, the study was restricted to one primary, JHS and SHS from each sampled district. Aside this, some participants were unwilling to participate in the research. Another limitation of the study is some headteachers and teachers' lack of knowledge about what is considered as the required class size. Headteachers and teachers have been teaching classes with large sizes for over the years and they appear to have no awareness that the size of their classes are above the expected. Such instances could influence the information provided. In spite of such anticipated problems, the information gathered was cross-checked to ensure that quality and authenticity were maintained.

## 4 FINDINGS AND DISCUSSION

### 4.1 INTRODUCTION

This chapter presents both quantitative and qualitative analyses and interpretation of the data. The analyses was carried out to achieve the objectives of the study, thus the presentation of findings of the study structured was based on the four main objectives in the study which sought to identify the actual class size as against the required by education providers and policy makers, examine the possible causes of large class size, analyse the effects of large class size and finally, to propose possible ways of managing large class sizes. The demographic data of participants is first presented in the next section.

### 4.2 FINDINGS

#### 4.2.1 Demographic data of participants

This study covered a total of 571 participants of which 27 are head teachers, 233 teachers and 311 students. The participants were selected from public primary schools, Junior High Schools and Senior High Schools from all ten regions of Ghana. Tables 4.1 and 4.2 give detailed information of head teachers and teachers who have teaching experience for not less than a year.

**Table 4.1 Profile of Head Teachers**

Profile	Primary		JHS		SHS		TOTAL	
Sex	Freq	%	Freq	%	Freq	%	Freq	%
Male	6	67	8	72	5	71	19	70
Female	3	33	3	27	2	29	8	30
<b>Total</b>	<b>9</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>7</b>	<b>100</b>	<b>27</b>	<b>100</b>
<b>Age</b>								
26-30	0	0	1	9	0	0	1	4

<b>31-35</b>	1	11	0	0	0	0	1	4
<b>36-40</b>	2	22	1	9	0	0	3	11
<b>41 and over</b>	6	67	9	82	7	100	22	81
<b>Total</b>	<b>9</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>7</b>	<b>100</b>	<b>27</b>	<b>100</b>
<b>Qualification</b>								
<b>Diploma</b>	1	11	0	0	0	0	1	4
<b>Bachelors</b>	6	67	7	64	0	0	13	50
<b>Masters</b>	2	22	4	36	6	100	12	46
<b>Total</b>	<b>9</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>6</b>	<b>100</b>	<b>26</b>	<b>100</b>
<b>No. of Years as Head</b>								
<b>Less than 1</b>	0	0	0	0	1	17	1	4
<b>1 to 5</b>	7	78	5	46	3	50	15	58
<b>6 to 10</b>	1	11	5	46	2	33	8	30
<b>11 to 15</b>	0	0	1	9	0	0	1	4
<b>16 to 20</b>	1	11	0	0	0	0	1	4
<b>Total</b>	<b>9</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>6</b>	<b>100</b>	<b>26</b>	<b>100</b>

**Source: Field data (2017)**

From Table 4.1, the sex composition of the head teacher participants is dominated by males at all levels (Primary 67%, JHS 72% and SHS 71%). In total, female participants constituted 30% of head teachers surveyed. This could be attributed to the socio-cultural belief that places men as leaders. With regards to the age of the head teachers, none of the participants was found below the age of 26. In total, majority (81%) of the head teachers were 40 years old and above followed by those within the age bracket of 36-40 years old.

In view of the head teachers' qualifications, 100% of SHS heads held a Master's degree. On the other hand, Bachelor's degree holders dominated at JHS and primary levels. Head teachers with a Diploma qualification were only found at primary schools. The data show a positive correlation between qualification and level of school – as the level of institution increases, the level of qualification also advances. To know the effectiveness and validity of the response from the head teachers, their experience in administrative duties as heads were enquired. Through all levels, majority of the

participants were found to have 1-5 years of experience as head teachers followed by 6-10 years' experience.

**Table 4.2 Demography of Teachers**

<b>Profile</b>	<b>Primary</b>		<b>JHS</b>		<b>SHS</b>		<b>TOTAL</b>	
	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>
<b>Sex</b>								
<b>Male</b>	19	28	38	60	62	69	119	54
<b>Female</b>	49	72	25	40	28	31	102	46
<b>Total</b>	<b>68</b>	<b>100</b>	<b>63</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>221</b>	<b>100</b>
<b>Age</b>								
<b>20-25</b>	5	7	4	6	1	1	10	4
<b>26-30</b>	12	17	19	28	6	7	37	16
<b>31-35</b>	17	24	20	30	20	22	57	25
<b>36-40</b>	9	13	14	21	38	43	61	27
<b>41 and over</b>	28	39	10	15	24	27	62	27
<b>Total</b>	<b>71</b>	<b>100</b>	<b>67</b>	<b>100</b>	<b>89</b>	<b>100</b>	<b>227</b>	<b>100</b>
<b>Qualification</b>								
<b>Certificate</b>	10	14	3	4	0	0	13	6
<b>Diploma</b>	31	44	26	38	2	2	59	26
<b>HND</b>	2	3	1	1	1	1	4	2
<b>Bachelors</b>	27	38	33	49	73	81	133	58
<b>Masters</b>	1	1	5	7	14	16	20	9
<b>Total</b>	<b>71</b>	<b>100</b>	<b>68</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>229</b>	<b>100</b>
<b>No. of years as teacher</b>								
<b>Less than 1</b>	0	0	0	0	0	0	0	0
<b>1 to 5</b>	22	32	28	42	21	24	71	32
<b>6 to 10</b>	14	20	20	30	32	36	66	29
<b>11 to 15</b>	14	20	9	14	22	25	45	20
<b>16 to 20</b>	8	12	2	3	6	7	16	7
<b>20+</b>	11	16	7	11	8	9	26	12
<b>Total</b>	<b>69</b>	<b>100</b>	<b>66</b>	<b>100</b>	<b>89</b>	<b>100</b>	<b>224</b>	<b>100</b>

**Source: Field data (2017)**

Table 4.2 presents the demography of the teachers surveyed. In terms of sex composition of Teacher participants, primary teachers were dominated by females (72%) whereas the males lead the females at the junior high and senior high schools with a difference of 20% and 38% respectively indicating that at the Basic level female teachers dominate but their dominance shrinks as the educational level increases. In terms of

age, most teachers on average, were found in their youthful ages (26-40 years). Interestingly, the data on teachers at the primary had a slight digression from the average scope of the teachers' data. Here, 39% of the teachers were found to be above 41 years.

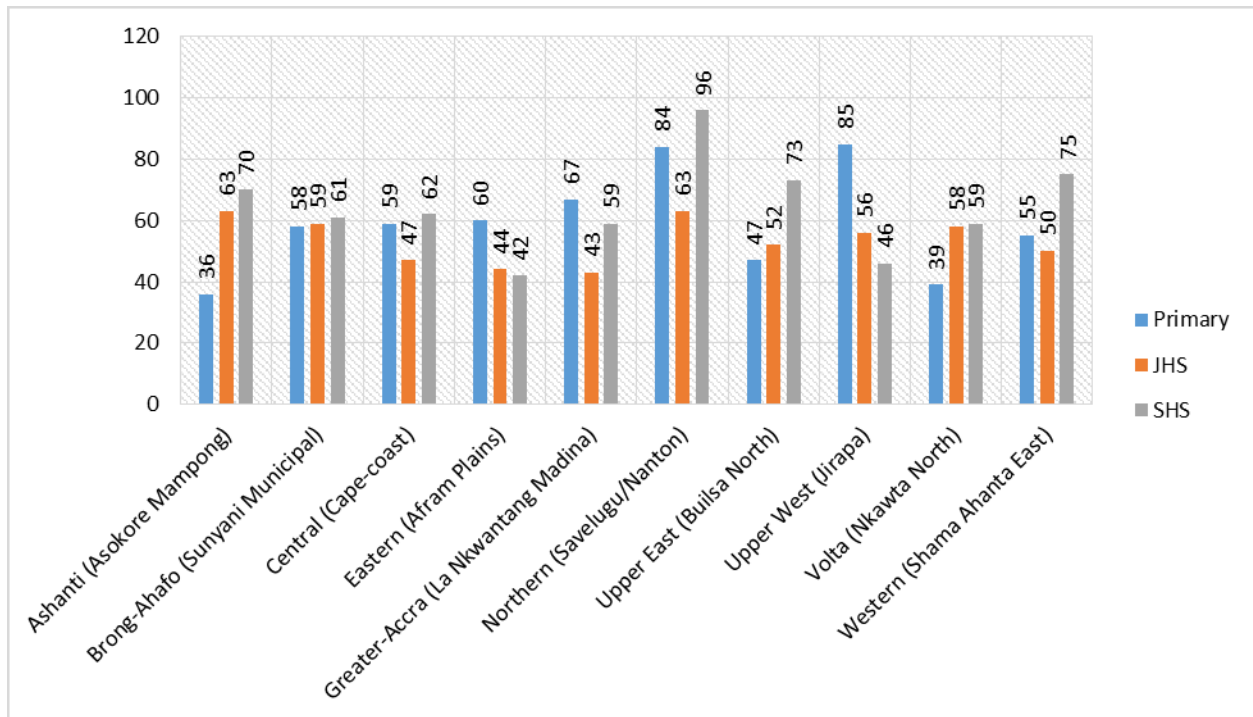
The academic qualification of the teachers when investigated, demonstrated a high number of teachers (58%) being Bachelor's holders on average. At the primary level, the case is different from the average data on teachers' qualification. Most of the teachers at the primary level were seen to have Diploma (44%) followed by Bachelors holders (38%). It is worth noting that, the basic requirement of certified teacher in Ghana is Diploma certificate. However, teachers after their initial training may pursue higher degrees but not necessarily in education. This is mostly so in the secondary schools where subject teachers dominate. Therefore the qualification to masters degree level may not necessarily be in pedagogy but in the subjects they teach.

To gather information on the effects of class size on both teachers and students, the experience of the teacher is very crucial since veteran teachers have been in the system have had different classes with different class sizes, their information can be very accurate. None of the teachers had taught for less than a year across all the educational levels. At the primary level, a majority (84%) of the teachers had taught within 1 to 20 years with the remaining 16% having more than 20 years teaching experience. This is the case for JHS and SHS teachers where teachers with over 20 years' experience constitute 11% and 9% respectively. It is important to note that, over the years teaching in large classes has become the norm in Ghana. As such, teachers are often unable to see large class size as having any effect on their work. Some teachers do not seem to even know what the required class size in Ghana.

## 4.2.2 Actual class size as opposed to that required by education providers and policy makers

This section discusses actual class sizes observed on the field. Nationally, the class which is termed ideal and beyond which a class is termed large is 40 for primary, JHS and SHS respectively. The findings on large class size are presented in Figure 4.1.

**Figure 4.1 Actual class size in sampled district**



**Source: Field data (2017)**

Figure 4.1 displays the average class sizes of the schools sampled in every region. With regards to primary level, it is evidently clear that with the exception of Ashanti and Volta regions having class sizes below 40, the other regions exceed the ideal class size. Upper west recorded the highest number of students per class (85) followed by Northern



region (84). Interestingly, Upper East region which is surrounded by these two regions (Northern and Upper West) had a class size above the ideal but was moderate as compared to the other two regions in the northern sector. On average, the regions found in the middle belt of the country, excluding Ashanti Region recorded class sizes higher than the ideal. Eastern Region had an average class size of 58 with Brong-Ahafo region having plus two ahead of Eastern region. Greater Accra region on the other hand, had average class size of 67 at the primary level which places it as the third region with large class size.

Regarding JHS class population, none of the regions recorded an ideal class. Ashanti and Northern regions recorded same number of class size (63) which is the highest. Brong-Ahafo and Volta regions were the next highest recorded regions with large class size. On average, the class size for all regions was 54. It is surprising that Greater Accra, which recorded 67 students in per class at the primary level, had an average JHS class size of only 43 whereas Ashanti recorded the opposite trend (primary 36 and JHS 63).

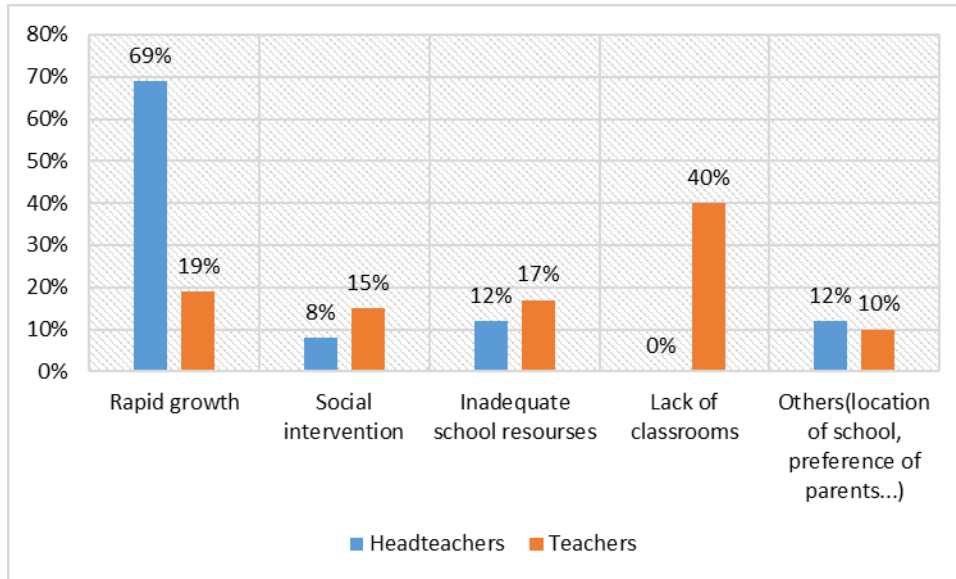
At the SHS level, although, none of the regions fell within the ideal class size (40), Eastern and Upper West regions (42 and 46 respectively) were not far from the line drawn for a class to be ideal. It is obvious that Northern region alarmingly digresses from the ideal class (with an excess of 56).

#### **4.2.3 Possible causes of large class sizes**

Participants were probed about what were perceived to be the causes of large class sizes in their various schools. Several views were gathered which basically centred on rapid population growth, social intervention, inadequate school resources, and lack of classrooms.

A graphical presentation of the findings is provided in Figure 4.2.

**Figure 4.2 Causes of large class sizes**



**Source: Field data (2017)**

Large class sizes were found to be influenced by four main factors namely; rapid population growth, social intervention programmes, inadequacy of resources in schools and lack of classrooms. Head teachers and teachers had varied opinions regarding the causes of large class sizes. While the former believed that large class sizes were as a result of rapid population growth, the latter saw the major contributing factor to be lack of classrooms. Although majority of teachers (40%) viewed lack of classrooms as playing an influential role in large class sizes, head teachers were of a contrary view as none consented to this assertion. In addition to the above mentioned causes of large class size, it emerged that other factors also were key. These are: the performance of schools, location of schools, and the quality of education provided.

Students also when interviewed, mentioned what they perceived as the causes of large class sizes. Notwithstanding the numerous opinions shared, paramount among them were such responses as; the popularity of the school, location of the school, social intervention programmes particularly free education, and quality education provided in the school as evidenced in students' performance. In this regard, some respondents also

indicate: "Large due to the good name of the school"; "Large because of the quality education given in the school"; "Large because the school is popular"; "Large because of the good performance of the school"; "Free education"; and "Performance of students and location of the school".

These pull factors in schools have contributed to expansion in enrolment. This, coupled with inadequate space (classrooms) to accommodate the increasing numbers has generated the incidence of large class size in schools. These responses seem contradictory to the challenges of large class sizes and might require further interrogation in future research to understand why students and parents will prefer schools with large class sizes.

In response to the question *what are the causes of large class size in Ghanaian Schools?* Similar ideas were shared by teacher representatives within the two teacher unions (GNAT & NAGRAT) as shown in Box 4.1.

**Box 4.1:**

The Government policy of Free Compulsory Universal Basic Education enjoined all children of school going age to be in school. This coupled with a growing population and a non-corresponding expansion in school infrastructure has led to the large class sizes in the few available schools. ***Participant 1.***

Population growth, Government policies: e.g. Free and Compulsory basic education, Unavailability of schools in the new developing areas, Lack of classroom furniture, i.e. tables, chairs, desks. ***Participant 2.***

Free and Compulsory Basic Education and recently the implementation of the free SHS, Proximity to the available school in the community, Lack of school infrastructure and limited classrooms. ***Participant 3.***

Government policies on education i.e. FCUBE, School feeding programs, capitation grant. ***Participant 4.***

#### 4.2.4 Effects of large class sizes

This part of the study aimed at analysing the effects of large class size from the view point of head teacher, teacher and student participants. Head teachers, teachers and students were interrogated through the questionnaires and/or the interview to share their views on large class size.

#### Head teachers

Figure 4.3 Head teachers' satisfaction of the class size in their schools

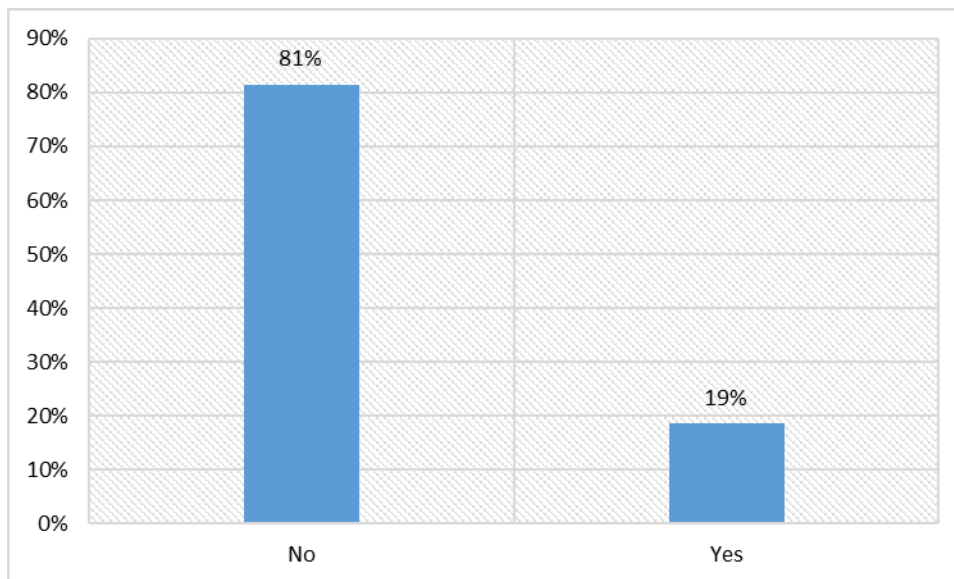


Figure 4.3 displays head teachers' satisfaction of the class sizes in their schools. A significant number (86%) of head teachers were of the view that they were not satisfied with the sizes of the classes in their schools. Head teachers were further queried to state their reasons for their dissatisfaction. They gave various reasons why they are not satisfied with their class sizes. Most of them explained the effects of large class sizes on quality education. They noted:

*Attention to every individual is very difficult and thus, large classes in the primary school is a problem* (Head teacher, Eastern Region)

*The teachers can't perform to my satisfaction* (Head teacher, Western Region)

*The class size does not allow teachers to effectively attend to all students and identify their problems* (Head teacher, Brong-Ahafo Region)

*Teacher is unable to give special individual attention and it also makes assessment difficult* (Head teacher, Upper East Region)

Head teachers' responses point to the fact that their dissatisfaction with their schools' class sizes stemmed largely from teachers' inability to effectively respond to students' individual needs.

## Teachers

**Figure 4.4 Teachers' satisfaction of class size in their schools**

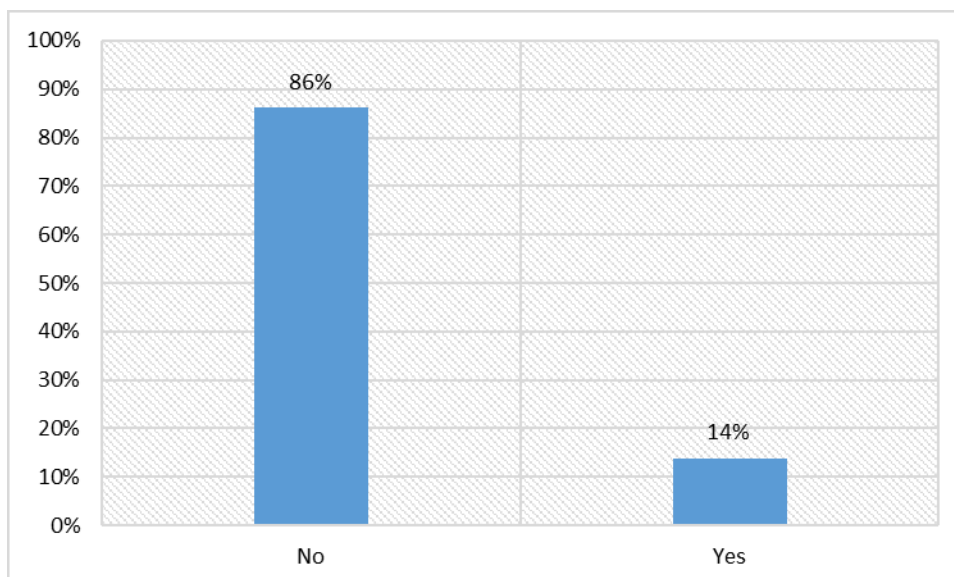


Figure 4.4 illustrates teachers' satisfaction of the class sizes in their schools. A significant proportion (86%) of teachers mentioned that they were not satisfied with the sizes of their classes. Teachers were further probed to state why they were not happy with the class sizes. Like the head teachers, they gave various reasons why they are not satisfied with their classrooms. Most of them explained the effects of large class sizes on quality education. They mentioned:

*Much attention is not paid to individual students* (Teacher, Eastern Region)

*It disrupts my lessons. Moreover, conducting and marking of exercises become difficult*  
(Teacher, Ashanti Region)

*It is difficult to help very weak students* (Teacher, Brong-Ahafo Region)

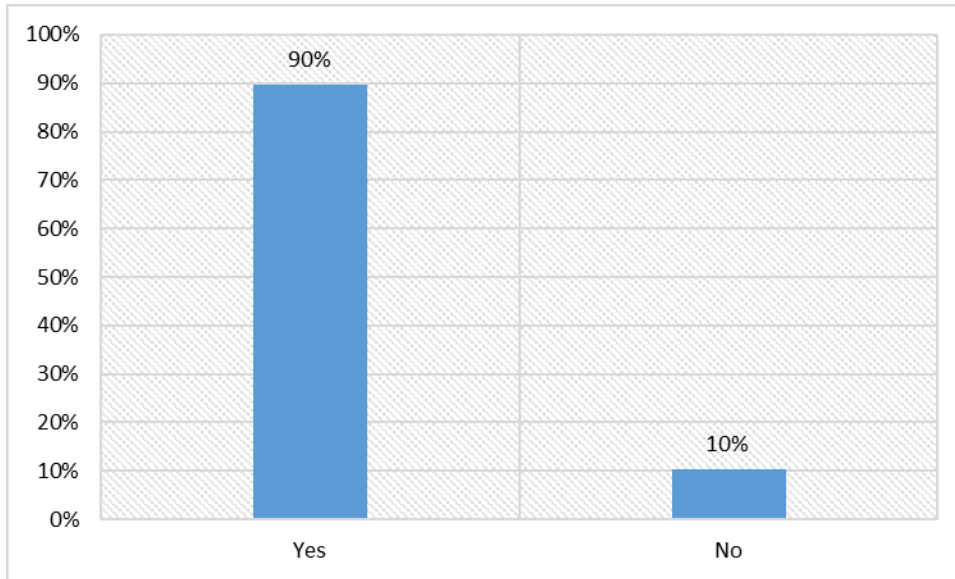
*Difficult to mark assignments due to large number of class and tedious in teaching because others are slow learners* (Teacher, Upper East Region)

*It gets tiring to get the best out the students* (Teacher, Western Region)

*I am not able to supervise my students effectively. The class is always noisy and difficult to control and also I can't move around in the classroom* (Teacher, Upper West Region).

Sharing in the opinions of their head teachers, teachers' views suggest that they had limited time for their students, hence making it difficult to identify and pay attention to their individual academic needs. Again, the large class sizes had implications on teachers' assessment and classroom management.

**Figure 4.5 Effects of large class size on students' achievement**



The study further enquired from teachers if they believe large class sizes have any effect on students' academic performance. Figure 4.5 reveals that majority (90%) of teacher participants were of the opinion that large class sizes have a negative impact on the quality of teaching and learning, hence affect students' overall academic performance. This outcome confirms the findings of Hoxby (2000) which revealed that the size of the class has an effect on students' achievement. Upon further deliberation, teachers explained how large class size affects students' academic performance. They stated:

*Because they are many, there is lack of control and the students who are serious are even distracted by the non- serious ones* (Teacher, Eastern Region)

*The large class size inhibits the delivery of quality teaching* (Teacher, Ashanti Region)

*It makes it difficult to conduct practical especially in ICT due to inadequate resources* (Teacher, Brong-Ahafo Region)

*It is difficult to meet student's individual learning needs* (Teacher, Volta Region)

*Due to the size of the class, I am unable to attend to all students because I have students who are slow learners* (Teacher, Upper East Region)

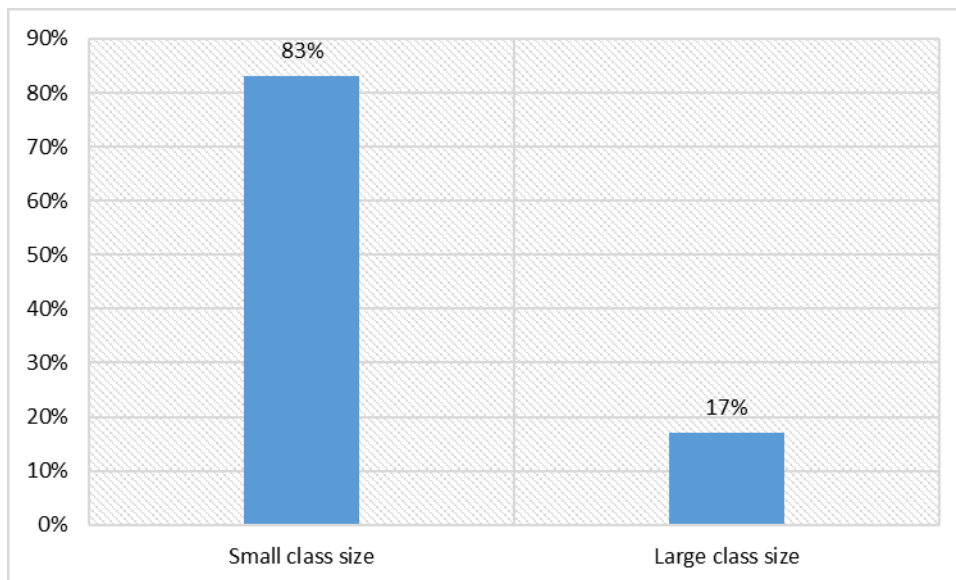
*It is extremely difficult to give feedback to students in large class sizes. Equally most students are not able to reach us (Teacher, Western Region)*

*Some students take advantage of the large class and become truants. This is because, they are not easily identified in a large class (Teacher, Central Region)*

Students' academic performance was particularly noted to be affected by the size of classes as indicated by teachers. In addition to the challenge it presents teachers in managing their classes and delivering specific feedback to their students, large class sizes were identified to encourage truancy. Again, it emerged that it had an effect on the quality of education provided as teachers were limited in delivering quality instruction in the face of inadequate resources, all taking a toll on students' academic achievement.

## Students

**Figure 4.6 Students' preferred choice of class size**



The study further revealed that a large proportion (83%) of Ghanaian students prefer a relatively smaller class size as illustrated in Figure 4.6. Students gave several reasons for their choice of a smaller class size. Among such include:



*Small size is better because when we are many in the class, the teachers have to go over and over to make everyone understand so we are not able to finish the syllabus* (Student, Ashanti Region)

*I prefer a smaller class because our teacher will be able to have enough time to explain to our understanding. Also he will be able to mark our exercise books on time* (Student, Western Region)

*Small, because in small class size there is reduced noise and disturbances from class members* (Student, Upper West Region)

*Small, because with large class size the teacher is not able to attend to all the students and also makes it easier for the teacher to control students* (Student, Northern Region)

*Small class will make us comfortable to learn effectively without having to share desk with any other person* (Student, Eastern Region)

Box 4.2 illustrates the views of teachers' representatives from the two teacher unions (GNAT & NAGRAT) on the effects of large class size on teaching and learning in Ghanaian schools

**Box 4.2:**

Overcrowding in the classrooms making it difficult for the teacher to supervise students work which will ensure identification of students with learning challenges; Challenges with class management on the part of the teacher; Pressure on teaching and learning materials in an already limited availability of teaching and learning materials in our schools; Health risk due to over-crowding in the poor ventilated classroom making the classrooms uncomfortable for the T&L in our tropical humid conditions; Pupils assessment cannot be effectively done and teaching tends to be teacher centred instead of pupil centred. **Participant 1**

It is affecting the health of teachers; Poor performance; It does not encourage teachers to give out their best; Class control is difficult; Poor classrooms [not spacious.] **Participant 2**

It encourages rote learning; It does not encourage adequate class exercises and activities; It ensures poor class control/management on the part of the teachers; Class assessment tends to be difficult **Participant 3**

Lack of individual attention to students or pupils; Inability to give a lot of exercises; Work overload on the teacher. **Participant 4.**

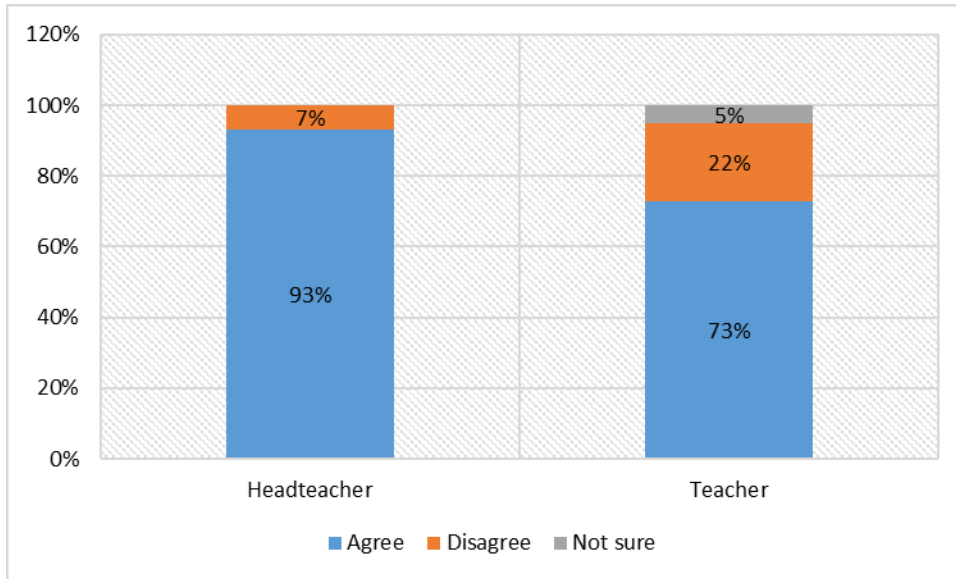
In order to have the conducive environment devoid of distractions, students' views suggested their preference for smaller class sizes. In reflection of their head teachers and teachers' opinions, students preferred smaller class sizes in order to promote effective student-teacher interactions and classroom management.

**4.2.4.1 Effects of large class size on teachers' teaching**

Benbow et al. (2007) found out that teachers are faced with several challenges when teaching in overcrowded classes. It was also revealed in the literature that, students in large classes were more likely to be listening while the teachers did all the talking (Blatchford et al., 2005). Results from this study revealed that, a higher proportion of

head teachers (93%) and teachers (73%) are of the view that large class size limits teachers' ability to deliver quality instruction. This is illustrated in Figure 4.7.

**Figure 4.7 Large class size limits teachers' ability to deliver quality instruction**



This study sought the views of head teachers and teachers on the effects of large class sizes on teaching. They revealed in an interview that:

*"Of course effective teaching cannot be achieved in classes where student population is very high. It brings a lot of stress on the teacher and does not allow teachers' delivery to be effective"* (Head teacher, Northern Region)

*"Large class size results in poor class control, difficult to give exercises and mark them on time"* (Head teacher, Upper West Region)

*"It promotes generalisation, few smart students determine the phase of the class and also less tests are given for assessment"* (Teacher, Upper West Region)

*“Very negative effects for instance, in a large class, my movement is restricted therefore I can't see what is happening at the back”* (Teacher, Northern Region)

*“The large class size is making teaching very stressful for us. A lot of energy is needed to be able to reach out to all students in the class”* (Teacher, Volta Region)

*“Since the class is large, it is difficult to monitor the progress of my students which results in majority of them not paying attention. At the end of the day, it affects their performance”* (Teacher, Western Region)

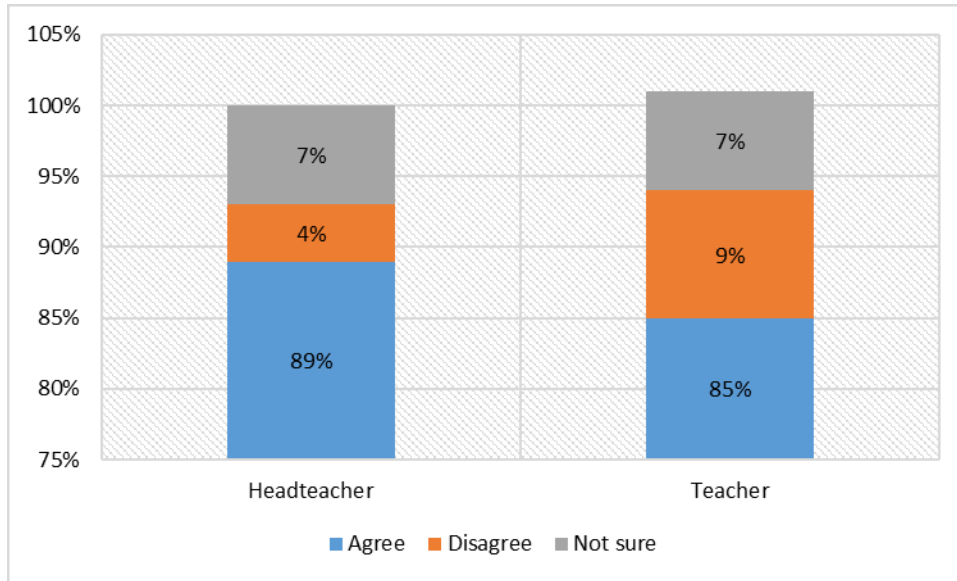
*“There is more workload on teachers as a result of the large class size”* (Teacher, Greater-Accra Region)

In expressing the limitation large class size places on teaching quality, both teachers and head teachers appeared to agree on the stress it puts on teachers due to the increased work load and teachers not factoring all students' needs into lesson delivery as the main concerns.

#### ***4.2.4.2 Effects of large class size on students' learning***

Blatchford et al. (2003) reported that, students are more distracted in larger classes than smaller ones, which makes it harder for them to concentrate and affect the learning process. Figure 4.8 shows the opinions of head teacher and teachers on the effect of large class size on students' learning. The results show that significant number of head teacher (89%) and teacher (85%) participants were of the view that, students are usually distracted by their colleagues when learning in a large class.

**Figure 4.8 Students are distracted by their colleagues in a large class size**



During the interview section, head teachers and teachers across the sampled schools in the country, shared their views on the effects of large class sizes on students' learning. They remarked:

*"The weaker students suffer and draw back the progress of the class"* (Head teacher, Ashanti Region)

*"Difficult to attend to all students making it difficult for some people to understand due to individual difference"* (Head teacher, Upper East Region)

*"The students themselves are not comfortable when crowded like that in a classroom taking in to consideration their health. It surely does not allow effective learning on the part of the students"* (Head teacher, Northern Region)

*"Students are mostly paired three to a desk when it not supposed to be so. There can never be effective learning because they are not comfortable in the classroom"* (Head teacher, Volta Region)

*"Students don't pay attention leading to poor performance"* (Head teacher, Upper West Region)

*"I can't have interpersonal relationship with my students. This makes it difficult for them to give me feedback"* (Teacher, Western Region)

*"Students with special needs in the class are left unattended to"* (Teacher, Ashanti Region)

*"Some students sit too close to the board, thus affecting their vision"* (Teacher, Upper East Region)

*"The class is always over crowded which makes the class too warm and uncomfortable for effective learning"* (Teacher, Eastern Region)

*"The students who are outspoken dominate the class while the timid ones are left not taken care of"* (Teacher, Upper West Region)

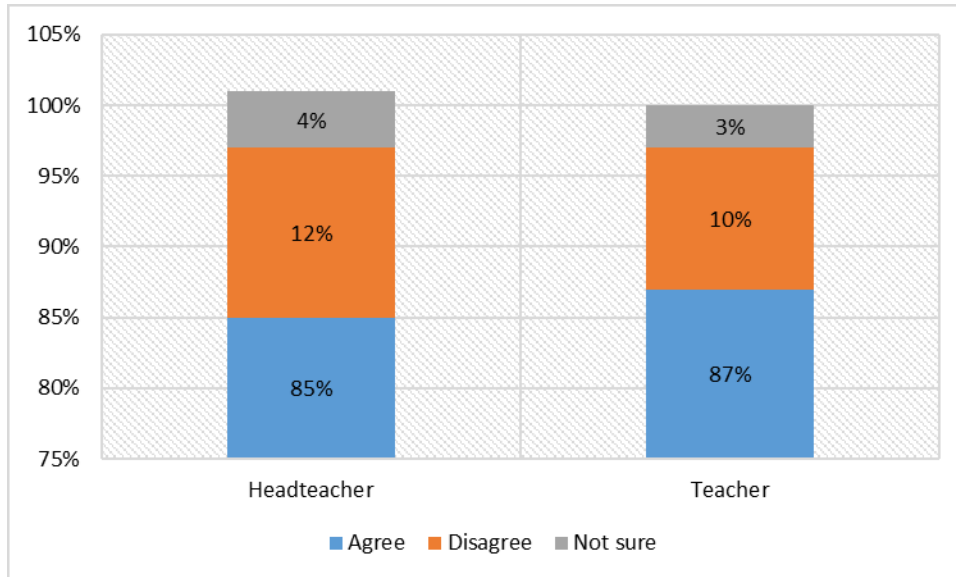
The views shared by teachers and head teachers reveal that students are also affected by the large nature of their class sizes. It is evident that students face discomfort when in large classes which in turn affects their health and consequently their academic performance. Students, particularly the weaker and disadvantaged ones, are usually left unattended to and in instances where they are, they tend to slow down the pace of teachers' lesson delivery. Furthermore, in large classroom settings, already disadvantaged students suffer most because the teacher is unable to give the needed attention (Zyngier, 2014). The general performance of students faces a threat due to large class size.

#### **4.2.4.3 Effects of large class size on classroom management**

Ehrenberg et al. (2001) revealed through their findings that class size is likely to affect the amount of time a teacher attends to individual students and their specific needs

rather than the group as a whole. Thus in a large class size, classroom management becomes very difficult for teachers. As shown in Figure 4.9, majority of head teachers (85%) and teachers (87%) were of a strong opinion that the management and control of students become very difficult in a large class.

**Figure 4.9 Large class size makes it difficult to manage and control students**



Some head teacher and teacher participants shared their views during an interview. They stated:

*“Classroom management becomes a lot difficult because some recalcitrant students will always hide among the numbers to distract attention and slow down academic work during lesson hours”* (Head teacher, Eastern Region)

*“Teachers find it difficult managing large class sizes because even movement within the classroom are not easy to them. Managing a class happens where a teacher can have a fair idea about what each student is doing in the classroom which is not possible in a large class size”* (Head teacher, Northern Region)

*“Classrooms are crowded and makes movement very difficult so the teacher is not able to walk around and monitor students during teaching. This makes it difficult to control the class”* (Teacher, Ashanti Region)

*“Arrangement of students in the classroom is poor. There is not enough spaces between the desks so it becomes difficult to reach all the students”* (Teacher, Eastern Region)

*“Supervision of students becomes very difficult due to the poor sitting arrangement in the class as a result of the class size”* (Teacher, Upper West Region)

*“There are always disputes to settle as a result of bullying, stealing, quarrels in the class”* (Teacher, Greater-Accra Region)

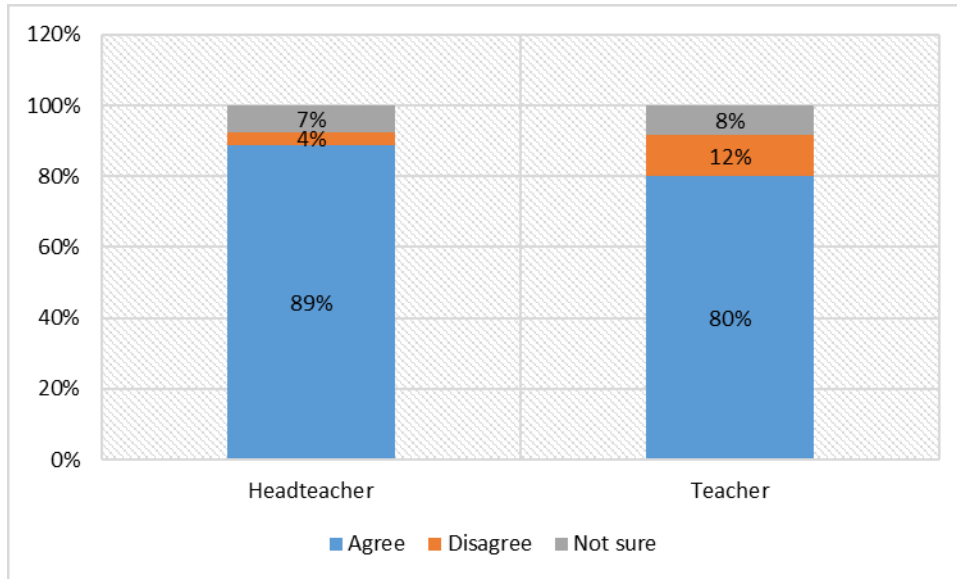
Teachers and head teachers again expressed a great deal of concern on how large class sizes affect classroom management. Noteworthy issues that emerged were how teachers’ movement in class, supervision of individual students and promoting discipline were hindered as a result of large class size.

#### ***4.2.4.4 Effects of large class size on teachers’ provision of timely feedback to students***

Black (2000) observed that feedback is a useful tool that helps teachers to reflect on their teaching and help develop their personal teaching style to meet the needs of the learners. However, in a report released by UNESCO (2006), revealed that providing feedback to, and receiving it from students becomes more difficult as a result of large class size. As indicated by Figure 4.10, the study shows a large proportion of head teachers (89%) and teachers (80%) are of the view that large class size limits teachers’ ability to deliver specific feedback to all students in the classroom.



**Figure 4.10 Large class size limits teacher' ability to give feedback to all students**



During an interview with head teachers and teachers, they admitted to facing challenges in the provision of effective feedback to their students. In same manner, the students are unable to give or receive feedback from their teachers. Both head teacher and teacher participants noted:

*“Large class sizes as I indicated, does not allow me to give timely feedback to my students because when I give an exercise it takes time for me to finish the marking”* (Head teacher, Northern Region)

*“Feedback is usually delayed and sometimes doesn’t happen at all”* (Head teacher, Western Region)

*“Teachers are unable to give the required number of exercises and those that try are unable to assess them on time”* (Head teacher, Volta Region)

*"A teacher may not be handling only one class and each class is large, it becomes difficult to provide feedback on time"* (Teacher, Ashanti Region)

*"It takes time before feedback is given, because of the size of the class. Sometime we use easier forms of assessments such as multi choice"* (Teacher, Greater-Accra Region)

*"We are unable to give the required number of exercises and assignments. This also affects the quality of the assessment of students"* (Teacher, Central Region)

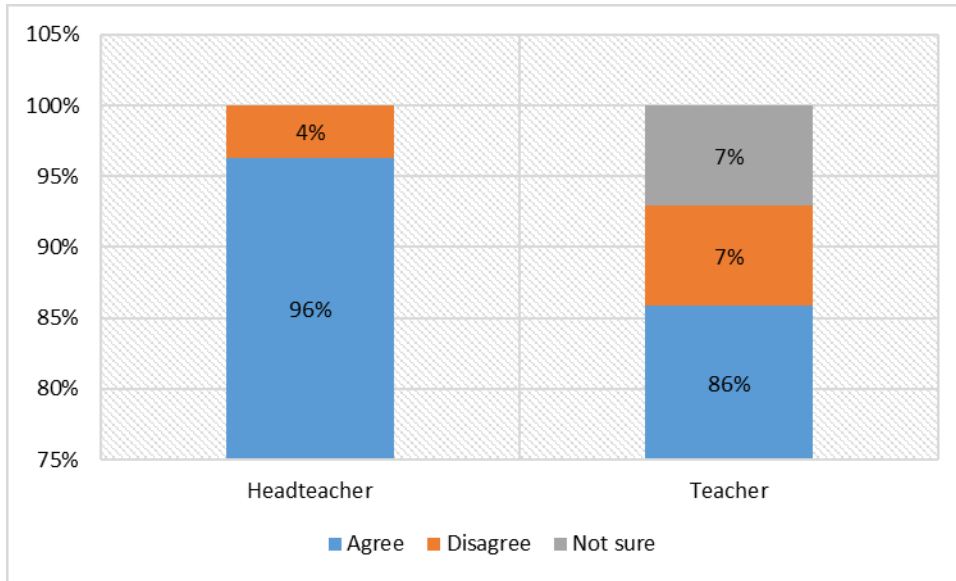
*"Because of the large size of the class, we are unable as teachers to evaluate the students adequately after lessons"* (Teacher, Northern Region)

Regarding their ability to deliver specific feedback to students, teachers and head teachers voiced out how large class sizes had grave implications on student assessment. One common way of giving feedback to students was through exercises that were given and marked. In this wise, teachers hardly gave feedback to their students and in cases where this is done, it is usually delayed.

#### ***4.2.4.5 Effects of large class size on teachers' effective use of TLMs in instructional delivery***

The study also sought to seek participants' opinion on the effective use of TLMs in instructional delivery. Etsey (2005) identified learning resources as a vital component that drives teacher performance and student learning. She further stated that, large class size poses a peculiar challenge to the quality and quantity of learning resources available to each student. Results from the study presented in Figure 4.11 presents that, a large number of head teachers (96%) and teachers (86%) believed that large class size leads to inadequate of learning resources for an effective learning of students.

**Figure 4.11 Provision of inadequate equipment and/or technological resources**



In an interview with head teachers and teachers, they admitted the frustration involved in using inadequate TLMs in the teaching and learning as a result of the large class size. They noted:

*“It is always difficult for the students to practice and if they do, only few of them do practice due to inadequate TLMs as a result of the large class size”* (Head teacher, Eastern Region)

*“The large class size makes it difficult to conduct practical especially in ICT due to inadequate resources and infrastructure for students to use”* (Teacher, Brong-Ahafo Region)

*“TLMs are extremely inadequate. For instance, during reading, the textbooks are not enough for all to use at a time which results in some students being idle while lesson is going”* (Teacher, Western Region)

*“Most students do not get access to the TLMs and this makes it difficult for them to understand the lesson”* (Teacher, Volta Region)

*“Teaching and learning becomes ineffective in the sense that, the TLMs may not be enough for them and may not be visible to those that the back”* (Teacher, Central Region)

The teacher unions (GNAT & NAGRAT) leadership share the view that, teacher are not equipped to manage large class size. Their views were illustrated in Box 4.3.

**Box 4.3:**

The best way to engage pupils and manage large class size is through child centred teaching and learning methodologies. This method requires spacious classrooms for the teacher to supervise. These are not available, teachers are left with very limited choices of teaching methodologies in the face of large class sizes where TLMs are limited; Teachers are not well equipped to deal with large class sizes– because it is seen as a normal situation. **Participant 1**

Large class sizes in most parts of the country has been accepted as normal hence teachers have not been adequately equipped or prepared to handle it. In-service trainings, workshops and symposiums must be organized on regular basis for teachers to attend. **Participant 3**

The increase in student numbers, if commensurate with increased TLMs, could minimize the effects of large class size on school resources and teaching and learning. However, this is not the case as participants showed great concern on how TLMs were inadequate for all students, obviously due to the large class sizes. This takes a toll on effective teaching and learning.

Moving forward, all these findings have serious policy implications that need to be address in order to improve the quality of education in the country. The next section

discusses the possible ways of managing large class size from the view point of head teachers, teachers and students that participated in the study.

#### **4.2.5 Possible ways of managing large class sizes**

The main rationale of this part of the study was to identify possible ways to minimize the impact of large class size. Literature revealed that, teachers who undergo training learn how to manage their classrooms but not necessarily large classes (Benbow et al., 2007). On whether workshops are organized to train in-service teachers on how to manage a large class, both teachers (81%) and head teachers (78%) responded negatively.

Many teachers faced challenges in the classroom like lack of resources such as books, seats, adequate space, and other necessary materials, as indicated in the previous section (effects of large class sizes).

Through an interaction with teachers, views were sought on the possible ways of managing the effects of large class size. In response to the question ***“What do you suggest are the possible ways of managing a large class?”*** both head teachers and teachers mentioned the organisation of workshops and in-service training for teachers, the use of appropriate teaching methods and strategies such as discussion and a student-centred approach, the construction of school infrastructure, and the training and recruitment of more teachers into the system.

For instance, teachers suggested various strategies such as peer tutoring and the adoption of suitable teaching methods such as activity and discussion methods to engage all students. Teachers stressed the importance of student independence in curbing the effects large class sizes could have on the quality of education. Some teachers noted:

*“The use of activity method of teaching will reduce the effects of large class size on students”* (Teacher, Central Region).

*"I encourage peer tutoring and group discussion among my students"* (Teacher, Brong-Ahafo Region).

*"I assign leadership roles among the students to manage their peers and use grouping during class assignments and homework"* (Teacher, Eastern Region).

*"I establish small class size within the large class size by setting up pairs and groups so that I only have to assist the groups rather than many individuals. In this way I deal with impacts of large class"* (Teacher, Greater-Accra Region).

The views of teachers were further confirmed when they were asked what teaching methods they frequently used. The result revealed that over 80% used discussion most often as a result of having to teach large classes.

Various head teachers interviewed during the study also shared similar views as those of their teachers. Head teachers felt the need to draw upon a range of management strategies in the classroom. Responding to the question **"Which of these strategies do you and your teachers use?"** some head teachers and teachers noted:

*"My teachers adopt student-centred strategies to capture and maintain the interest of students during lesson delivery"* (Head teacher, Upper West Region).

*"Teachers sometimes assign students to small groups and assign tasks to them. This ensures that no child is left behind in the class"* (Head teacher, Greater-Accra Region).

*"I encourage my teachers to adopt a student-centred approach to get all students involved in the teaching and learning"* (Head teacher, Western Region).

*"We practice positioning weaker students in the front seats and giving them more attention"* (Head teacher, Upper East).

The views of head teachers and teachers corroborate the findings of Benbow et al. (2007), who identifies small group discussion, peer tutoring, and shift teaching as some of the strategies teachers can adopt to manage large class sizes.

Additionally, teachers felt the need to provide more school infrastructure, training and recruitment of more teachers as additional measures to manage the effects of large class sizes:

*"Government must provide enough infrastructure before initiating some social interventions"* (Teacher, Northern Region).

*"I think the best way should be the provision of more classrooms and teachers"* (Teacher, Western Region).

*"I will suggest that more classrooms are built to reduce the size of classes. More teachers must be trained and recruited into the system"* (Teacher, Upper West).

*"The assembly has to provide us with more classroom blocks to be able to reduce the class sizes in our school"* (Teacher, Eastern Region).

Students re-echoed the views of their teachers and head teachers when asked about what to do to improve learning as a result of the large class size. Some of them noted:

*"We need more classrooms and teachers in our school"* (Student, Ashanti Region).

*"Our school needs to be provided with more and well ventilated classrooms. Better still, fans should be installed in the classrooms with large class size"* (Student, Volta Region).

Monks and Schmidt (2010) argue that reducing class size plays a contributory role in the significant improvement of students' learning outcomes. In Ghana, this seems to be impracticable in the short term due to the huge financial implications associated with it.

However, in the long term an increase in government resource base together with an equitable spending can lead to an improvement in school infrastructure (classrooms) hence reduction in class sizes across the country. Discussions with some heads of schools revealed that, the school is collaborating with PTA/SMC to build additional classroom to help manage large class sizes. They noted:

*"PTA is supporting us to build an eight-unit classroom block"* (Head teacher, Western Region).

*"We are constructing more classrooms with the help of the school PTA and SMC"* (Head teacher, Volta Region).

*"We are also appealing for more teachers to be recruited to manage the large number of student s in the classrooms"* (Head teacher, Central Region).

Moving on, some head teachers and teachers were of the view that both pre-service and in-service teacher training can help teachers effectively manage large class sizes. Some of them noted:

*"Unfortunately, we have not received any training on large class size, but I think workshops can still be organized to help us manage a large class size"* (Teacher, Central Region)

*"Workshops and in-service training should be organized for teachers on how to effectively manage a large class size"* (Head teacher, Volta Region).

*"GES [Ghana Education Service] must intervene and organize in-service training for teachers on how best to manage a large class size"* (Head teacher, Ashanti Region).



*“The management of large class sizes should be incorporated in the teacher training programme to help teachers handle this situation with ease”* (Head teacher, Greater-Accra).

Representatives of the two teacher unions (GNAT & NAGRAT) shared similar views as the head teacher and teachers regarding how large class size can be managed as seen in Box 4.4.

**Box 4.4:**

Using child centred teaching methodologies...Making lessons very practical that will engage all the student...Having subjects that demand serious thinking like mathematics and science in the morning and subjects that can be used as outdoor activities in the afternoon under trees. **Participant 1.**

Employment of more teachers....Government to build schools in newly developing communities **Participant 2**

The issue of Pupil Teacher Ratio (PTR) should be critically looked at....Provision of adequate school infrastructure. **Participant 3**

Introduction of teaching assistants in the classrooms...Provision of adequate TLMS and text books...Teachers should employ activity base method of teaching. **Participant 4**

Lack of trainings for teachers to manage large class sizes....Inadequate text books and teaching and learning materials. **Participant 4**

The opinion shared by teachers, head teachers and their representatives substantiate the findings of Benbow et al (2007) and Blatchford et al (2003) who both argue that, initial and continuing teacher training programmes should be aimed to equipping teachers to such contextual features as large class size.

From the findings, the study has therefore generalize four key possible ways of managing the effects of large class sizes on quality education namely: Training and recruitment of teachers; provision of adequate school infrastructure; use of appropriate teaching methods and organising workshops and inset to teachers.

## **5 CONCLUSION AND RECOMMENDATIONS**

### **5.1 INTRODUCTION**

As mentioned earlier, research evidence indicate that large class sizes affects the quality education where teachers become both victims of the pedagogical shortcomings and the stress conditions it produce (Chingos, 2013). In Ghana, social interventions aimed at increasing enrolment has resulted in education without adequate provision of infrastructure has resulted in over-crowded and large class sizes. Quality of education is seriously affected as evidence in the continuous low decline in students' performance in WAEC examinations. Interestingly, teachers are blamed for the declining trend in students' performance in standardised examinations.

The findings from this study have some critical implications for policy makers, labour unions and educators concerned with identifying the effects of large class sizes on quality education and instituting measures for managing them. This next section discusses the conclusions, policy implications and recommendations for the study.

### **5.2 CONCLUSION**

The study aimed at identifying the actual class sizes as against the required size by education providers and policy makers. Further, the study was also to examine the possible causes and effects of large class sizes. Finally, this study identified possible ways of managing large class sizes in Ghanaian educational system from basic to secondary level.

This study covered a total of 571 participants of which 27 are head teachers, 233 teachers and 311 students selected from primary schools, Junior High Schools and Senior High Schools from all ten regions of Ghana.

With respect to demographics, male teachers dominated across all levels of education – Primary 67%; JHS 72% and SHS 71%. Female participants were found to constitute 30% of head teachers – 33% at primary, 27% at JHS and 29% at SHS. On teacher qualifications, a Bachelor's degree was the highest qualification, with 38% of primary, 49% of JHS and 81% of SHS teachers holding a Bachelor's degree. Taking age into consideration, teachers were found to be youthful as over 70% were found in an age bracket of 26 and 40 years.

With regard to head teacher qualifications, 100% of SHS heads were Master's degree holders while only 36% of JHS and 22% of primary head teachers held a Master's degree. Majority of head teachers were found to be at least 41 years and above at all levels, primary (67%), JHS (82%) and SHS 100%).

At the primary level, the Northern region recorded the highest in large class size (84) with Ashanti the least (36). At the JHS level, Ashanti and Northern regions recorded the highest in large class size (63 each) with Greater Accra being the least (43). Northern region again recorded the highest large class size (96) at the SHS level and Eastern region being the least (42). In summary, Northern region, though not the poorest in the country, recorded the highest large class size at all levels of education (Primary, JHS & SHS).

The findings revealed that rapid population growth and lack of school infrastructure such as classroom were the major factors leading to large class sizes in schools.

Based on the findings of the study, conclusions can be drawn that large class size have some effect on teachers' teaching, students' learning, classroom management, provision of timely feedback and effective use of teaching and learning materials. A large number of teachers (90%) also argued that students' achievements are affected as a result of the large class size. It is therefore not surprising to note that, both head teachers (81%) and teachers (86%) indicated that, they were not happy with their class size.

With regards to effects of large class on teachers' teaching, it was revealed that a higher proportion of head teachers (93%) and teachers (73%) were of the view that large class size limits teachers' ability to deliver quality instruction. Teachers stated that as a result of the large class size, a lot of energy is needed to be able to reach out to all individuals in the classroom. Head teachers supported their teachers' view by adding that large class size brings a lot of stress to teachers and does not allow effective delivery of instruction.

With respect to the effects of large class size on students' learning, a significant number of head teachers (89%) and teachers (85%) were of the view that, students are usually distracted by their colleagues when learning in a large class. Teachers indicated that students do not pay attention in overcrowded classroom which leads to poor performance. Majority of students (83%) preferred a smaller class size with the view that, they are not comfortable in their classrooms as a result of its size.

In relation to the effects of large class size on classroom management, majority of head teachers (85%) and teachers (87%) were of a strong opinion that the management and control of students become very difficult in a large class. Teachers are not able to monitor and supervise their students as their movements in the class are restricted as a result of the overcrowded class. Large class sizes were found to be characterized by noise making, bullying, stealing, quarrels, which becomes stressful for teachers to manage.

On the provision of timely feedback to students, a large proportion of head teachers (89%) and teachers (80%) were of the view that large class size limits teachers' ability to deliver specific feedback to all students in the classroom. They further revealed that, providing feedback to, and receiving it from students become more difficult as a result of large class size. Students confirmed that as a result of the large class size, feedback from teachers is usually delayed and sometimes does not happen at all.

Also, stress and wellbeing emerged as a concern for all the categories of respondents when classes are overcrowded. Both teachers (including head teachers) and students were worried about stressful conditions and unhealthy learning and teaching environments in overcrowded classrooms. The teaching learning interactions such as giving assignments and feedbacks to students of overcrowded classes was stressful, particularly to teachers

To conclude, head teachers (96%) and teachers (86%) were of the view that large class size leads to the inadequacy of learning resources for an effective learning of students. The schools are not able to provide adequate TLMs to all students which results in ineffective teaching and learning.

### **5.3 RECOMMENDATIONS**

Based on the findings, the following recommendations are made to the relevant stakeholders in the education sector:

- a. Provision of adequate school infrastructure especially classrooms in compliance with government standards.
- b. Training and recruitment of certified teachers to meet the required trained teacher-pupil ratio.
- c. In the short term, schools should be provided with adequate TLMs especially textbooks while improvement and provision of adequate infrastructure are made in the long term as a permanent solution.
- d. Workshops and INSET should be organized frequently for teachers and head teachers to make them competent in managing large class sizes.

- e. Teachers and their representatives should be actively engaged for the identification of the biggest challenges of large class size and how they can be overcome.
- f. Efforts should be made to increase the domestic resource base through a progressive tax policy to secure a reliable source of funding

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