Full Length Research Paper

Influence of class size on students' classroom discipline, engagement and communication: a case study of senior secondary schools in Ekiti state, Nigeria

Oluwatosin Victor Ajayi^{1*}, Christina Tanko Audu² and Evelyn Ehi Ajayi¹

¹Department of Curriculum and Teaching, Benue State University, Makurdi, Benue State, Nigeria.

²Department of Integrated Science, College of Education, Zing, Taraba State, Nigeria.

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In this study, the influence of class size on students' classroom discipline, engagement and communication was examined. A sample of 128 senior secondary school teachers from 16 purposely selected secondary schools out of a population of 4529 senior secondary teachers from Ekiti State, Nigeria was used for the study. The study adopted a descriptive survey research design. The instrument used for data collection was Influence of Class Size on Classroom Discipline, Engagement and Communication Questionnaire (ICSCDECQ) with the reliability value of 0.78 using Cronbach Alpha (KR-21). Four research questions and three null hypotheses guided the study. The research questions were answered using Mean rating and Standard Deviation scores while the null hypotheses were tested using Chi-square. The study revealed that class size has significant influence on senior secondary classroom discipline, engagement and communication. It was recommended among others that, senior secondary schools in Ekiti State, Nigeria should adopt a maximum of 40:1 student-teacher ratio (small class size) for effective classroom discipline, engagement and communication.

Key words: Class size, classroom discipline, classroom engagement, classroom communication.

INTRODUCTION

Education is the systematic training of individual in order to bring about positive change in his or her behaviour so as to become fulfilled citizen (Angelo, 2008). Across the globe, trends in education have reflected significant increase in students' enrolment (Ademola, 2014). This is very evident in Nigeria with an upward trend in school enrolment at all levels of education after the civil war in 1970. Nigeria, like most of the countries across the globe has adopted and implemented to a large extent the Education For All (EFA) policy of the United Nations (UN), which has in no small measure resulted in the increased students population at all levels of education. The increased numbers in enrolment have led to another educational problem which piqued the interest of

educators, particularly when this increased number is juxtaposed with students' classroom management and engagement. The increased figure in enrolment has led to increased number of students in a classroom. According to Yusuf (2015), classrooms are used as appropriate places for seeking and acquiring education usually from a teacher to the learners.

In this present study, classroom size is the population of a given class in terms of number of students per teacher. For instance, Canada, Australia, Romania, Czech Republic, USA and Slovenia has less than 30 students recommended for a standard class size; Turkey, Netherlands and Norway have 20 or less students for a standard class size; Japan and Singapore have above 30 students as a standard class size (Mokobia and Okoye, 2011). These fall within the UNESCO recommended standard (25) for number of students in a classroom. The National Policy on Education (2013) recommended an

*Corresponding author. E-mail: oluvictorajayi@gmail.com.

average of 40 students per class as the standard class size in Nigeria. Two class sizes are normally distinguishable in the educational sector. A large class size falls within 41 and above learners to one teacher while small class size is within 15-40 learners to one teacher (Aliu, 2005). Many scholars including Yusuf (2015), Molnar (1998), Booze and Maloney (2001) and Shuaibu (2003) cited in Yusuf (2015) all support this classification of class sizes. Therefore, in this present study, class size with 1 - 40 students per teacher will be categorized as small class size while class size with 41 and above students per teacher will be categorized as large class size.

Mokobia and Okoye (2011) highlighted that educators universally identify class size as a desirable attribute of the educational system. Thus, this has raised widely reported debate among educational stakeholders such as academics, parents and policy makers over the educational consequences of class size. Class size is referred to as students to teacher ratio per class (Ali, 2012). Class size According to Adeyemi (2008) referred to as an educational tool that can be used to describe the average number of students per class in a school. In the view of Ikolo (2011), class size equally means group which is a set of persons among whom there exist a definable or observable set of relations. The word group then can refer not only to a set of persons but to a place where the interaction occurs. Dror (2009) noted that class size has become a phenomenon often mentioned in the educational literature as an influence on students' socializing pattern and academic performance, quality of instruction, administration and school budgets. The scholar added that class size is an administrative decision which teachers have little or no control. Kedney (2013) described class size as a tool that can be used to measure performance of the education system. Imoke (2006) remarked that optimum class size in a school system implies rational coordination of educational infrastructures, subject to available number of students in order to attain high level of productivity.

Ogunyemi and Hassan (2011) maintained that the issue of small or large class size can be counter-productive. In remote and even local areas, classes are found to be over-congested which is indeed an indication of the dearth of educational facilities in schools. The issue of large class sizes and the associated consequences is paramount. The phenomenon of large classes is fast becoming the vogue of senior secondary schools in Nigeria and in most developing countries. The large class syndrome has been attributed to the expansion in annual students' enrolment. Sesugh (2012) discovered that there is tremendous increase in the enrolment of students and in the average size of classrooms in Nigeria senior secondary schools these days from 30 - 40 students to 60 - 75 or even more. Though, open enrolment in schools is laudable, yet, the deficiency is in the corresponding provision of adequate

infrastructures, inadequate classrooms, short supply of teachers, dilapidated structures and classrooms which look like poultry in some schools. Seats and desks which are basic classroom requirements are insufficient and in some senior secondary schools, students are sitting on ransacked furniture and some even sit on bare floor.

The size of classes has become increasingly unmanageable, leaving the teachers with the impossible task of giving individual attention to the learner's needs. The teachers' eye contact with the learner in class becomes so dissipated that a number of poorly motivated learners can form small committees at the back of the class to engage in non-school discussion, while the teacher is busy teaching. Continuous assessments are dreaded by teachers when they consider the staggering number of scripts to be marked and recorded. In modern education, attention is centered on the needs and comfort of the learner, how the learning is distributed by social background and may be influenced by the structural and organizational properties of the school. Thus, attention is centered on class size which allows pupils to learn effectively without disturbing one another. Often times, class size which implies number of students is seen as the challenge teachers have to face in maintaining effective classroom management and engagement.

In a learning community based on social constructivist theory, the teacher acts as a collaborator in the production of knowledge within the classroom. The premise is that when teachers help students construct knowledge through classroom engagement. The number of students in a class has the potential to influence not just the students' interaction pattern in different ways but also the management of such a class. Effective classroom management implies more than eliciting student cooperation in maintaining order. It also implies that worthwhile learning activities engaging to students are taking place continuously in the classroom. In a well-managed classroom, the teacher prepares a physical environment suitable for learning, develops rules of conduct, maintains student attention and participation in lessons, and monitors students' assignments and progress toward the desired learning outcome (Doyle, 2014). Classroom discipline refers to the wide variety of skills and techniques that teachers use to keep students organized, orderly, focused, attentive on task, and academically productive during a class. When classroom discipline strategies are executed effectively, teachers minimize the behaviours that impede learning for both individual students, while maximizing the behaviours that facilitate or enhance learning (Ayuba, 2013).

Makinde (2011) opine that to build effective classroom management, teachers should model appropriate behaviour and use appropriate classroom discipline methods. Class sizes have been incriminated as being responsible for the in conducive teaching and learning environment (Tobi, 2013). On one side, classroom congestion in terms of large class is blamed and on the

other hand, low utilization of classrooms in the sense of small class size have been identified as a common feature of senior secondary school in Nigeria. Conflicts have often appeared on the ideal class size.

Students' classroom engagement has been enlisted amongst key elements of educational success (Creemers, 2012). One way for students to shoulder the responsibility for learning is for them to be the readers, writers, speakers, listeners, thinkers in the classroom through active classroom engagement (Vacca, 2011). Student engagement have been defined as the level of participation and intrinsic interest that a student shows in the classroom (Newmann, 2009). Classroom engagement also involves both behaviours and attitudes towards learning (Johnson, 2014). Some studies have shown that class size have no relationship with pupils' classroom engagement (Rowe, 2012; Roland, 2015) while some studies have shown that class size have positive relationship with pupils' classroom engagement (Mezieobi, 2012; Aliu, 2015).

Communication process is vital to effective learning within a classroom environment. Classroom instruction that produce positive result acknowledges the need for a liberal use of non-verbal cues, student involvement and term communication. Students' involvement during classroom discussions typically fosters a healthy communication process (Nwaubani, 2007). Some studies have shown that class size have no relationship with classroom communication (Nwaubani, 2007; Nosiri, 2012) while some studies have shown that class size have strong relationship with classroom communication (Pascarella, 2012; Kehinde, 2014; Johnson, 2015). It is on this note that the study examined the influence of class size on senior secondary students classroom discipline, engagement and communication in senior secondary schools in Ekiti State, Nigeria as a study area. Specifically, the study:

- i.) Determined the influence of class size on senior secondary students' classroom discipline
- ii.) Ascertained the influence of class size on senior secondary students' classroom engagement
- iii.) Determined the influence of class size on senior secondary students' classroom communication
- iv.) Ascertained the perceived major causes of large class size

Research questions

The following research questions guided this study:

- i.) How does class size influence senior secondary students' classroom discipline?
- ii.) How does class size influence senior secondary students' classroom engagement?

iii.) How does class size influence senior secondary students' classroom communication?

iv.) What are the perceived major causes of large class size?

Hypotheses

The following null hypotheses were tested:

- i.) Class size has no significant influence on senior secondary students' classroom discipline
- ii.) Class size has no significant influence on senior secondary students' classroom engagement
- iii.) Class size has no significant influence on senior secondary students' classroom communication

Research design and procedure

The study adopted a descriptive survey research design. The design was considered appropriate because the design sought to obtain information that discloses existing phenomena by asking individual about their perceptions, attitude, behaviour or beliefs. The study area was Ekiti State, Nigeria. A sample of 128 senior secondary school teachers from 16 purposively selected secondary schools from the 16 Local Government Area of Ekiti State, Nigeria was used for the study.

An instrument known as Influence of Class Size on Classroom Discipline, Engagement and Communication Questionnaire (ICSCDECQ) developed by the researchers and validated by four experts in science education/measurement and evaluation was used to collect the data. ICSCDECQ contained two sections. Section "A" contained demographic information of the respondents, while section "B" contained a 20-item questionnaire which was intended to help respondents express their perceptions on the influence of class size on classroom management and engagement. Each of the items is a 5-point Likert-rating scale with 5 responses options. The options are Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD). ICSCDECQ yielded a reliability coefficient of 0.78 using Cronbach Alpha (KR-21). Two research questions and two null hypotheses guided the study. After collecting the data using ICSCDECQ, the research questions were answered using Mean and Standard Deviation scores while the null hypotheses were tested using Chi-square.

RESULTS AND TABLES

Research question one

How does class size influence senior secondary students' classroom discipline? The answer to research question one is contained in Table 1.

Table 1 revealed that the mean ratings of items 1, 2, 6

Table 1. Mean and standard deviation scores of respondents on the influence of class size on classroom discipline.

Item No	Item Description	SA	A	U	D	SD	X	ST.D	Decision
1.	I start lessons on time and continue without any interruption (students disruptive behaviour such as noise) in a small class size	67	42	1	13	5	3.45	0.93	Accepted
2.	I consistently enforce the classroom rule and procedures, so discipline problems are infrequent in a small class size	72	45	-	9	2	3.74	1.12	Accepted
3.	I easily ensure that transition from one learning activity to another is done with no loss of instructional time in a large class size	3	12	2	40	71	2.49	0.51	Rejected
4.	I usually attend to the needs of individual students in a large class size	4	7	4	32	81	2.74	0.72	Rejected
5.	I have to stop during lessons to address students misbehaviour in a small class size	5	4	-	30	89	2.81	0.84	Rejected
6	I feel my classroom management techniques are inadequate in a large class size	82	35	-	9	2	3.94	1.29	Accepted
7	I am able to attend to two events simultaneously in a small class size without being diverted unduly by disruptions	79	33	-	12	4	4.08	1.41	Accepted
Cluster mean and Standard Deviation							3.32	0.97	Accepted

and 7 are 3.45, 3.74, 3.94 and 4.08 respectively with the corresponding standard deviation of 0.98, 1.12, 1.29 and 1.41. All the mean ratings of item 1, 2, 6 and 7 are above the cut-off point of 3.0. This implies that the respondents agreed that they start lessons on time and continue without any interruption (students disruptive behaviour such as noise) in a small class size; they consistently enforce the classroom rule and procedures, so discipline problems are infrequent in a small class size; they feel that classroom management techniques used are inadequate in a large class size; they are able to attend to two events simultaneously in a small class size without being diverted unduly by disruptions

Table 1 also revealed that the mean ratings of items 3, 4 and 5 are 2.49, 2.74 and 2.81 respectively with the corresponding standard deviation of 0.51, 0.72 and 0.84. All the mean ratings of items 3, 4 and 5 are below the cut-off point of 3.0. This implies that the respondents disagreed that they easily ensure that transition from one learning activity to another is done with no loss of instructional time in a large class size; they usually attend to the needs of individual students in a large class size; they have to stop during lessons to address students misbehaviour in a small class size. The cluster mean of 3.32 with the standard deviations of 0.97 was also found to be above the cut-off point of 3.0. This implies that class size have influence on students' classroom discipline in senior secondary schools in Ekiti State, Nigeria.

Research question two

How does class size influence senior secondary students'

classroom engagement? The answer to research question two is presented in Table 2.

Table 2 revealed that the mean ratings of items 8, 9, 12, 13 and 14 are 3.66, 3.75, 3.61, 3.72 and 3.85 respectively with the corresponding standard deviation of 1.04, 1.11, 1.02, 1.09 and 1.19. All the mean ratings of items 8, 9, 12, 13 and 14 are above the cut-off point of 3.0. This implies that the respondents agreed that they don't usually assign independence practice activities such as seatwork and homework to students in a large class size; they always engage the students in classroom discussion in a small class size; they encourage students to solve their problem between each other independently when doing group work in a small class size; they dislike engaging students to solve their problem between each other independently when doing group work in a large class size because it will lead to disruptive behaviour; they have an increasingly difficult job trying to engage students in practice activities such as seatwork, practical work and homework in a large class size

Table 2 also revealed that the mean ratings of items 10 and 11 are 2.76 and 2.47 respectively with the corresponding standard deviation of 0.73 and 0.49. All the mean ratings of items 10 and 11 are below the cut-off point of 3.0. This implies that the respondents disagreed that they usually maintains the flow of activities by stimulating students involvement in a large class size; they allow students to frequently ask questions during class session in a large class size. The cluster mean of 3.40 with the standard deviations of 0.95 was also found to be above the cut-off point of 3.0. This implies that class

Table 2. Mean and standard deviation scores of respondents on the influence of class size on classroom engagement.

Item No	Item Description	SA	A	U	D	SD	X	ST.D	Decision
8.	I don't usually assign independence practice activities such as seatwork and homework to students in a large class size	73	38	2	11	4	3.66	1.04	Accepted
9.	I always engage the students in classroom discussion in a small class size	70	39	1	12	6	3.75	1.11	Accepted
10.	I usually maintains the flow of activities by stimulating students involvement in a large class size	5	13	-	31	79	2.76	0.73	Rejected
11.	I allow students to frequently ask questions during class session in a large class size	12	14	-	43	59	2.47	0.49	Rejected
12.	I encourage students to solve their problem between each other independently when doing group work in a small class size	58	53	2	13	2	3.61	1.02	Accepted
13	I dislike engaging students to solve their problem between each other independently when doing group work in a large class size because it will lead to disruptive behaviour	61	47	-	17	3	3.72	1.09	Accepted
14	I have an increasingly difficult job trying to engage students in practice activities such as seatwork, practical work and homework in a large class size	52	60	-	11	5	3.85	1.19	Accepted
Cluster Mean and Standard Deviation							3.40	0.95	Accepted

size influence students' classroom engagement in senior secondary schools in Ekiti State, Nigeria.

Research question three

How does class size influence senior secondary students' classroom communication? The answer to research question three is presented in Table 3.

The result presented in Table 3 showed that the mean ratings of items 15, 16, 18, 19 and 20 are 3.71, 3.54, 3.81, 3.89 and 3.66 respectively with the corresponding standard deviation of 1.08, 0.99, 1.17, 1.24 and 1.04. All the mean ratings of items 15, 16, 18, 19 and 20 are above the cut-off point of 3.0. This implies that the respondents agreed that they always write on black board to explain a concept because students cannot hear my voice very well during classroom session in a large class size; they always holds students attention during lessons in a small class size; they speaks or communicate clearly during classroom session in a small class size; they have an increasingly difficult job trying to communicate effectively in a large class size; they feel that most students jot down note during classroom session because they can hear my voice clearly in a small class size.

Table 3 also revealed that the mean rating of item 17 is 2.45 with the corresponding standard deviation of 0.48. The mean rating of item 17 is below the cut-off point of 3.0. This implies that the respondents disagreed that they always has a firm grasp of the class when teaching in a

large class size. The cluster mean of 3.51 with the standard deviations of 1.00 was also found to be above the cut-off point of 3.0. This implies that class size influence students' classroom communication in senior secondary schools in Ekiti State, Nigeria.

Research question four

What are the perceived causes of large class size?

The result in Table 4 revealed that insufficient/dilapidated classroom, insufficient teaching staff, inadequate infrastructural facilities, budgetary constraints ranked the major causes of large class size in senior secondary school in Ekiti State, Nigeria.

Hypothesis one

Class size has no significant influence on senior secondary students' classroom discipline. The answer to hypothesis one is presented in Table 5.

The results in Table 5 reveal that 75% of the respondents agreed that class size has significant influence on senior secondary students' classroom discipline as against 32% of respondents who disagreed. The chi-square calculated value of 87.69 was greater than the chi-square table value of 3.84 checked at 0.05 level of significance and at 1 degree of freedom. The null hypothesis is therefore rejected. This implies that class size has significant influence on senior secondary students' classroom discipline.

Table 3. Mean and standard deviation scores of of respondents on the influence of class size on classroom communication.

Item No	Item Description	SA	A	U	D	SD	X	ST.D	Decision
15.	I always write on black board to explain a concept because students cannot hear my voice very well during classroom session in a large class size	62	49	-	15	2	3.71	1.08	Accepted
16.	I always holds students attention during lessons in a small class size	56	53	1	17	1	3.54	0.99	Accepted
17.	I always has a firm grasp of the class when teaching in a large class size	10	16	-	40	62	2.45	0.48	Rejected
18.	I speaks or communicate clearly during classroom session in a small class size	68	38	2	14	6	3.81	1.17	Accepted
19.	I have an increasingly difficult job trying to communicate effectively in a large class size	77	26	1	19	5	3.89	1.24	Accepted
20	I feel that most students jot down note during classroom session because they can hear my voice clearly in a small class size	75	36	-	15	2	3.66	1.04	Accepted
Cluster Mean and Standard Deviation							3.51	1.00	Accepted

Table 4. Mean Scores of Respondents' Causes of Large Class Size in order of Ranking (n=128).

Perceived causes of large class size	Mean scores	Ranking
Insufficient/dilapidated classrooms	2.55	1 st
Insufficient teaching staff	2.60	2 nd
Inadequate infrastructural facilities	2.76	3 rd
Budgetary constraints	3.85	4 th
Lack of physical space	4.10	5 th
Unexpected high enrollment	4.94	6 th
Change in certificate requirement	5.18	7 th

Table 5. Chi-square test of the influence of class size on classroom discipline.

Opinions	Observed Frequency	Expected Frequency	Df	Level of Sig.	χ^2 -cal	χ^2 -tab	Decision
Not Significant	32 (25%)	64.0 (50%)	1	0.05	87.69	3.84	
Significant	96 (75%)	64.0 (50%)					Significant

Values in parentheses are percentages ($\chi^2 = 87.69$, df =1, $p < 0.05$).

Hypothesis two

Class size has no significant influence on senior secondary students' classroom engagement. The answer to hypothesis two is presented in Table 6.

Table 6 reveals that 62% of the respondents agreed that class size has significant influence on senior secondary students' classroom engagement as against 38% of

respondents who disagreed. The chi-square calculated value of 98.79 was greater than the chi-square table value of 3.84 checked at 0.05 level of significance and at 1 degree of freedom. The null hypothesis is therefore rejected. This implies that class size has significant influence on senior secondary students' classroom engagement.

Table 6. Chi-square test of the influence of class size on classroom engagement.

Opinions	Observed Frequency	Expected Frequency	Df	Level of Sig.	χ^2 -cal	χ^2 -tab	Decision
Not Significant	49 (38%)	64.0 (50%)	1	0.05	98.79	3.84	
Significant	79 (62%)	64.0 (50%)					Significant

Values in parentheses are percentages ($\chi^2 = 98.79$, df =1, $p < 0.05$).

Table 7. Chi-square test of the influence of class size on classroom communication.

Opinions	Observed Frequency	Expected Frequency	Df	Level Sig.	of χ^2 -cal	χ^2 -tab	Decision
Not Significant	36 (28%)	64.0 (50%)	1	0.05	99.19	3.84	
Significant	92 (72%)	64.0 (50%)					Significant

Values in parentheses are percentages ($\chi^2 = 99.19$, df =1, $p < 0.05$).

Hypothesis three

Class size has no significant influence on senior secondary students' classroom communication. The answer to hypothesis three is presented in Table 7.

The results in Table 7 reveals that 72% of the respondents agreed that class size has significant influence on senior secondary students' classroom communication as against 28% of respondents who disagreed. The chi-square calculated value of 99.19 was greater than the chi-square table value of 3.84 checked at 0.05 level of significance and at 1 degree of freedom. The null hypothesis is therefore rejected. This implies that class size has significant influence on senior secondary students' classroom communication.

Discussion of findings

The findings of this study revealed that class size has significant influence on senior secondary students' classroom discipline in senior secondary schools in Ekiti State. This finding agrees with the finding of Jacob and Olawuyi et al. (2016) who found that there is relationship between class size and discipline of secondary school students in Yagba West of Kogi State. The finding of this study also revealed that class size has significant influence on senior secondary students' classroom engagement. This finding agrees with the finding of Majanga and Nasongo et al (2011) who found that there is relationship between class size and engagement of primary school students in Nakuru. However, the finding of the study further revealed that class size has significant influence on senior secondary students' classroom communication. By implications, the findings

of this study revealed that respondents (teachers) preferred small class size (maximum of 40:1 student–teacher ratio) than large class size for effective classroom discipline, engagement and communication because in small class size they consistently enforce the classroom rule and procedures, so discipline problems are infrequent and they always encourage to engage the students in classroom discussion and also speaks or communicate clearly during classroom session without any form of barriers. The finding of this study also revealed that that insufficient/dilapidated classrooms, insufficient teaching staff, inadequate infrastructural facilities, budgetary constraints ranked the major causes of large class size

Conclusion

Evident from the findings of this study, class size significantly influence classroom discipline, engagement and communication. By implication, this implies that large class size (above 40 students per teacher in a classroom) is one of the major causes of ineffective classroom discipline, engagement and communication. However, insufficient/dilapidated classrooms, insufficient teaching staff, inadequate infrastructural facilities, budgetary constraints ranked the major causes of large class size in senior secondary schools in Ekiti State, Nigeria

Recommendation

Both public and private schools administrators should be encouraged to adopt a maximum of 40:1 student-teacher ratio (small class size) for effective classroom discipline,

engagement and communication. Workshops, conferences or seminars should be organized by Ministry of Education for school administrators on the need to adopt small class size. Government should increase budget funding of educational sector to improve on schools infrastructural facilities and Ministry of Education and school administrators should recruit more qualified teaching staff, renovate dilapidated classrooms, build more classrooms to control the effect of large class size on students' classroom discipline, engagement and communication.

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