

THE IMPACT OF OVER POPULATION ON TEACHING CURRICULUM COURSES TO SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION UNDERGRADUATE STUDENTS IN THE UNIVERSITY OF JOS

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Abstract

The study explores whether teaching curriculum courses to undergraduate education students is influenced by over population as against NUC recommendation ratio of 1:24 in a class. Focusing on the students' views by gender and level of study, students' questionnaire consisting of 23 items were administered after which it was analyzed using Statistical Package for Social Sciences (SPSS) version 17.0 at 0.05 level of significance. From the analyses, the result revealed that there was no significant relationship between students' opinion by gender. However results by level of study showed that there is significant relationship. This indicates that over population in a given class is a negative factor to students' learning. Consequently, it was recommended that administrators should regulate students' enrollment, as well as provide adequate instructional materials and assistive devices for effective teaching and learning thereby producing better qualified STM teachers.

Introduction

Teaching and learning are causally tightly bound activities. This is because teaching, which entails an intimate interaction between teachers and students, leads to learning. In a school system, the level of student performance is to a great extent influenced by the level of interaction between the teacher and students. The ideal teaching-learning processes as proposed by Laurillard (2012) are:-

- Discussion - between the teacher and the learner,
- Interaction - between the learner and some aspects of the world defined by the teacher,
- Adaptation - of the world by the teacher and action by the learner,
- Reflection - on the learner's performance by both the teacher and the learner.

Teaching objectives cannot be maximally realized without being related to learning situation. In a situation where the class-size is large, there would be swelling mounds of paperwork such as homework and examination scripts to grade, leading to less physical space per student in already tight classrooms. Over populous classes also mean less time with teacher for each student. These, according to Wilms (2006) is bound to bring difficulty to an already difficult job. In a situation where the class-size is large or the class is over populated, students are likely to be one of a crowd, receiving instruction in an audience's mode i.e. listening to teacher address all students equally. Learner's

individual difference suffers, therefore, teaching-learning process becomes impaired; also students suffer discipline problems as teachers cannot get to know them all.

In small classes, it can be easier for the teacher to spot problems and give feedback, identify specific needs and gear teaching to meet them, set individual targets for students and be flexible and adventurous in the use of different styles of teaching. The National Universities Commission has a guideline for student- teacher ratio but from records over time, there are severe shortfalls in the teacher-students ratio (TSR) at the tertiary level. The situation in the University of Jos is the same especially in education courses. There are only five lecturers to teach over 1800 students curriculum courses, which are compulsory to Faculty of Education students. Figures on the TSR in Nigerian universities are as indicated in the table below. Column 2 in the table indicates the approved National Universities Commission (NUC) Guideline for teacher- students' ratio.

Table showing NUC guidelines for university student-teacher ratio in Nigeria

Discipline	Ratio
Administration	1:20
Arts	1:20
Education	1:24
Engineering and Technology	1:9
Environmental Design	1:10
Law	1:20
Medicine/Health Sciences	1:6
Pharmacy	1:10
Sciences	1:10
Social Sciences	1:20

Source: Federal Office of Statistics, 2001:303

Schooling at its best reflects a purposeful arrangement of parts and details, organized with deliberate intention for achieving the kind of learning we seek. Teacher education at undergraduate level is aimed at providing teachers with the intellectual and professional background adequate for their assignment and also to make them adapt to changing situations (FME, 2004). These can only be achieved through effective instructions in an active and nurturing environment. For Pogozzi (1997), the school environment is:

- a place where children's opinions and needs are included
- a place where peace and gender equity are upheld and differences of class, caste and religion are accepted
- a place where opportunities for children's participation are extended, both inside the classroom, and in the community
- accessible to all, including those with learning disabilities, and those who are pregnant
- safe and secure, free from violence and abuse, sale or trafficking
- a place where children take responsibility for their learning
- a place where healthy lifestyles and life skills are promoted
- Above all, a place where children learn.

For the prospective teacher to be effective, he needs to be acquainted with the curriculum, pedagogy and assessment which are normally handled through curriculum courses taught at the undergraduate level. Academic rigor is an essential characteristic of effective curriculum, instruction and assessment. Normally, students learn when they are challenged to use the full length of their talents and intellectual abilities. Therefore all students should have the opportunity to participate in qualitatively different academic environments that build upon their interests, strengths and personal goals. It's on the bases of these that this study on the effects of overpopulation on teaching curriculum courses to science, technology and mathematics (STM) education undergraduate students in the University of Jos is carried out.

There is some agreement in the literature that in administering certain tests, class-size matters in some circumstances. Mckeachie, Asghar, and David, (1990), have presented arguments that class-size is the primary environmental variable colleges and faculties must contend with when developing effective teaching strategies. According to them, motivation and attitude to learning tends to be more affected by large classes. Nowadays, the general impression is that the quality of Nigerian graduates is fast deteriorating. This may be as a result of the quality of the environment, nature of the lectures and so on. This study has been designed to look at incidences of inadequate infrastructure to accommodate large population of students in the university of Jos, inadequate instructional material and manpower to effectively handle large classes. Cases of missing scripts culminating in missing results, marking difficulties and one-way and non- existence of continuous assessment due to difficulties in marking and grading were also considered.

Purpose of the study

The main purpose of the study is to investigate the impact of overpopulation on teaching curriculum courses to science, technology and mathematics education undergraduate student curriculum courses in the University of Jos.

Research Questions

1. How do gender differences affect performance of STM education students in the University of Jos?
2. To what extent is the STM students' performance affected by their levels?
3. How do curriculum lecturers handle individual differences in over populated classes with reference to NUC ratio of 1:24?
4. To what extent does large population influence STM education students' performance in the University of Jos?

Hypotheses

The following hypotheses were formulated for the study.

1. There is no significant difference between STM education undergraduate students' opinions on curriculum courses based on over population according level.

2. There is no significant difference between the male and female undergraduate STM students on the effects of over population on the teaching of curriculum courses in the University of Jos.

Methodology

For the purpose of this study, a descriptive survey design was employed. This is because survey typically contains a way of obtaining exact facts about the present condition of a thing. Surveys are also able to extract data that are similar to the exact attributes of the larger population.

Target population for the study comprised all science, technology and mathematics 300level and 400level education students during 2012/2013 academic session in the University of Jos, Nigeria. A sample of 150 was drawn from the total population of 482 students by random sampling technique.

The main instrument for data collection was a questionnaire titled *The Impact of Over Population on Teaching of Curriculum Course to Science, Technology and Mathematics Education Undergraduate Education Students in the University of Jos (ILPTSTMUSCC)*. The questionnaire, designed by the researchers consisted of 23 items fashioned on five point likert type scale of strongly agree, agree, undecided, disagree and strongly disagree. It consisted of two parts, the first part sought basic information about the respondents with respect to gender and level of study whereas the second part probed into the impact of overpopulation on teaching.

The instrument was developed by first generating items and using responses from 15 students from the Department of Special Education and Rehabilitation Science University of Jos to determine the extent to which the items of the instrument were relevant and appropriate to the aims/purpose of the research. The questionnaire was then scrutinized by two experts in measurement and evaluation from the University of Jos. The researchers then made necessary corrections and revision of the items appropriately. Reliability of the instruments was established through Crombach Alpha test of reliability using the responses from 15 , 300 & 400 level students in the Department of Special Education and Rehabilitation Science that offer curriculum courses along with science, technology and mathematics education students. It gave a reliability coefficient of 0.86. in line with George and Mullery, (2003), rules of thumb regarding Crombach Alpha coefficient, the internal consistency of the items is considered reliable, since it is greater than 0.8.

Questionnaires for the study were administered personally by the researcher with the assistance of the respective class representatives. As a result of the procedure adopted during the administration of the instrument, 100% return rate was achieved.

The data was analyzed using SPSS version 17.0 (Npar test). The hypotheses were tested using chi-square statistical technique.

Data analyses

Research Question One

Table 1. Showing the scores of male and female undergraduate education students' on large population in curriculum classes in University of Jos

sex	Observed (%)	expected	Residual
Male	84 (56%)	75.0	9.0
Female	66(44%)	75.0	-9.0
Total	150(100%)		

Table 2, . Showing the frequency of 300 level and 400 level undergraduate education students' opinions towards large population in curriculum classes in University of Jos

level	Observed(%)	Expected(%)	Residual
300level	54(36%)	75.0	-21
400level	96(64%)	75.0	21
Total	150(100%)		

From Table 2, 300level scores 54(36%) while 400level scores 96(64%).

Table 3, Chi-square values of various variables in the study at 0.05 level of significant

	Sex	Level	SA	A	U	DA	SD
Chi-square	2.160a	11.760a	39.000b	115.267c	151.760d	165.120e	343.867f
df	1	1	20	22	11	12	7
asyp.sig.	.142	.001	.007	.000	.000	.000	.000

Discussion

From Table 1, the male's score which is 84 representing 56% shows that the male students are of the position that over population affects performance of STM education students greatly. Similarly, the female scores which is 66 representing 44% shows that over population is equally affecting performance of STM education students in University of Jos.

Besides, 400 level students scores of 96 representing 64% on table 2 shows that 400 level students had suffered most from the effect of over population in the University of Jos. 300 level students scores of 54 representing 36% from the same table shows that this category of students also suffered from the effect of overpopulation against the NUC ratio of 1:24.

From Table 3 above analyses according to sex revealed that chi-square calculated is 2.160 and asymp. Sig. is .142 as seeing in the table, it means then that there is no significant relationship, since the asymp. Sig. of 0.142 is greater than 0.05 (0.142>0.05). Analyses according to students' level of study showed that the chi-square computed is 11.760 and the asymp. Sig. is 0.001, this shows there is a significant relationship since 0.001 is less than 0.05 (0.001<0.05). The higher our chi-square value, the stronger our

significance and the lower our asymp.sig, the stronger our significance. The size of a class which is no doubt associated with teaching and learning (both from table 3) leads us to conclude that class-size has an effect on students' academic achievement. Both lecturers and students' are members of schools' their schools are defined by many qualities and characteristics; who goes there, who teaches there, how they are organized, the mission that underlies their operations and how they are structured, etc. This research focuses on overpopulation on teaching curriculum courses. It examines whether this structural feature influences lecturers and students' this study demonstrates that populous classes matters in effective teaching. Evidences abound from the statistics on the decisions of the respondents in table 3. The findings are straightforward and consistent with other researchers' findings. Haggai, Bahago and Guyit, (2001), in their research on assessment technique; used by nursery schools, found out that there is an association between class size and assessment technique, teachers in large classes use mostly individual oral test for assessing pupils as well as group written test while small classes do not use group test. Also, according to Valeria and Sussana, (1999), teachers who interact more often with fewer students know their students better. By knowing students better, teachers are likely to worry more about their failure, provide more help directed towards improvement, take responsibility of disciplining everyone and invest more fully in improving the whole school. Authorities like Obodo, Eze and Anigbo (1999), Ochiagha (1990) and Ogunlana (1997) cited in Ene and Nnabueze (2001) condemned what they termed as problematic issues militating against conduct of examinations in tertiary institutions in Nigeria. Among these problematic issues they mentioned overpopulation of students in a class.

Recommendations

In a nation with an ambitious goal of vision 20:2020, a lot has to be done by institutions of higher learning in order to achieve this goal. The study therefore made the following recommendations:

1. The university should employ more qualified personnel to cater for the increasing population in order to meet up with NUC guidelines on teacher/student ratio.
2. The institution should adhere to the admission guidelines recommended by NUC. Thus the institution should follow the quota system during admission to minimize the pressure on admission which culminates in overpopulation.
3. Adequate instructional materials and larger lecture theatres or halls should be provided in order to enable proper class interaction.

Conclusion

This study, having revealed the way and manner over population affects the teaching and learning process, recommends for proper implementation of the suggestions highlighted for effective teaching.

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