

Full Length Research

Student population growth in the Colleges/ Faculties of the Sciences of higher learning Institutes in Ethiopia: it's effect on quality education

Solomon Melesse, Assi. Prof. in C&I *

Faculty of Education & Behavioral Sciences, Bahir Dar University, Ethiopia. E-mail: slmntsnt@yahoo.com.

*Mobile: +251 918784190.

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Cognizant of the decisive role education plays to speed up the overall socio-economic progress of the country, the government of the Federal Democratic Republic of Ethiopia has given a high priority to education in its strategy of capacity building and economic development. Since the issuance of the Education and Training Policy, efforts have been made to improve higher education in quality and accessibility. The present study, therefore, tried to investigate the effect of student population growth on quality education. Specifically, it focuses on the effect of student population growth on the selection and utilization of different teaching-learning methodologies, instructional facilities selection and utilization, student-teacher interaction, students' academic achievement at BDU, the College of Sciences. This study was carried out on randomly selected instructors and first year students of the College of Sciences, BDU. The total number of instructors was 132 of whom 130 were males and 2 were females. The total number of students' was 795 of whom 240 were females and 555 were males. The major data gathering instruments were open and closed ended questionnaire, document analysis, and classroom observation checklists. The results indicated that over crowdedness of students in a class in the College of Sciences brought with it lack of uninstructed-student interaction, lack of teaching-learning facilities, lack of using a variety of instructional strategies, difficulty of using alternative assessment techniques and failure for assessing students on a regular bases, difficulty of proper classroom management, low student participation in the teaching-learning process and low student academic achievement. This paper, therefore, proposes means and ways of minimizing negative repercussions that student population growth brings to quality education provision in the College of Sciences of Bahir Dar University.

Keywords: Higher Learning Institutes, Quality Education, student population growth, class size, College of Sciences, Effect

BACKGROUND OF THE STUDY

These days, there has been a dramatic change in the Ethiopian Higher Education in terms of system

diversification, student enrollment, expansion of infrastructure and establishment of new institutions. All

those are the most significant developments in the education sector. However, there is a sharp decline in the quality of Education in Ethiopian Higher Learning Institutes (Muhaddin, 2006).

The Ethiopian government democratizing the education policy – education for all – which resulted in student population growth at all levels of the educational system in the country. As the number of students in a class gets larger and larger, it is quite sure that there would be less chance of student interaction with teachers and among themselves, less chance to follow the individual learner by a teacher, and less chance for intimate participatory nature of interaction between a teacher and students and among students. These all are some of the justifications to say that high quality educational provision could be realized in small classes than large classes (Seltene, 1988 cited in Muhadin, 2006). Moreover, teachers' attitude, belief, behavior and moral are more positive when they teach small classes than large classes, i.e., they enjoy their students and more satisfied with their performance in small classes than large classes (Marcus, 1997 cited in Muhadin, 2006).

In large class size, students are passive to questioning, interaction and communication with both a teacher and students. Due to large number of students and physical distance from the teacher, it makes challenging if not impossible to manage large classes (Brenner, 2000 cited in Giuseppe, Laria, Makoni, Linn, Clark, 2008). Moreover, in large class size rooms, students are more likely to listen from a teacher while in small class sizes students interact actively with their teacher and among themselves by initiating, responding and sustaining contact (Brown, 2005 cited in Bradley, Elsbree, Berger, Barnard, 2011).

The average class size widely accepted in most parts of the world under the favorable condition is 30-40 students (Ayalew, 1991). According to him, classroom interaction, teacher-student motivation and student discipline seems to be influenced by the size of a class. Small class sizes lead to active participation among students in the learning process where large class size leads to less involvement of students in the teaching-learning process (Cuseo, 2007 cited in Bradley, Elsbree, Berger, Barnard, 2011).

In small classes, teachers are able to select and utilize a variety of instructional methodologies alternatively such as discussion, role play, exploration, and the like which provide individualized attention and increase student involvement into their own learning that raise the quality of instruction ((Rockoff, 1999 cited in Christy M., Dillon, Siann, Kutnick, 2005). However, teaching large class size leads instructors to prioritize and utilize methods of whole tutoring, shift teaching and lecturing (Moshiro, 2007 cited in Moshiro, Oliver, Kutnick, Bain, 2007). Due to the rapid student

population growth in HLIs, classes are overcrowded, textbooks and other instructional materials are inadequate which in turn affects quality in education (Seltene, 1988 cited in Muhaddin, 2006; (6) UNESCO, 1972).

In another development, it is stressed that the relationship that exist between student population growth and their academic achievement is remarkably strong. Small class size is significantly correlated with higher student academic achievement where large classes provide less chance to achieve educational outcomes (California class size reduction program, 2013; Glass, 1978 both cited in Muhadin, 2006).

Now days, the main aim of Ethiopian education system is 'provision for quality education for all that pave the way forward to strive productivity, social and individual problem solving capacity' (MoE, 1994, p. 9). However, large class size tends to be one of the problems in all levels of education in Ethiopia in general and BDU, College of Sciences in particular due to the rapid increment of student enrollment. Hence, the researcher has been initiated to investigate the problem of student population growth on quality education provision in BDU, the College of Sciences.

Statement of the Problem

Higher Learning Institutes are expected to demonstrate the provision of quality education and strive towards improving it (Anderson, 2006 cited in Muhaddin, 2012). However, quality education provision in Ethiopia can be affected by student population growth. That is, educational institutions are more challenged to fulfill effective instruction, qualified teachers, sufficient facilities and conducive environment in large class sizes than small class sizes.

There is, however, debate among scholars that sometimes small classes are better and some others assert that often there are no obvious differences between large and small classes (Wolf, 1996 cited in Assefa, 2002). Small classes were associated with higher levels of academic achievement across all levels of education (Glass, 1982 cited in Glass, Tan, Mckeachie, Finn, 1996) but Pritchard (1992) cited in Pritchard, Borden, Toth (2003) suggested that small classes have no proven influence on students learning outcome.

Brand and Kinder (1973) cited in Assefa, (2002) asserted that as the number of students in a class exceeds 35, it can be considered as a large class. When one relate the above ideas within the present Bahir Dar University, College of Sciences, it is possible to say that classes are of large class size. This is due to the fact that document analysis results at BDU, the College of Sciences confirmed that the number of

students in a class were 59 on average.

Hence, the researcher was interested to investigate how far student population growth really affects quality in education at BDU, the College of Sciences. For this purpose, the following research questions were formulated:

- Does student population growth affect the selection and utilization of different teaching-learning methodologies?
- Does student population growth reduce teacher-student interaction?
- Does student population growth destruct proper use of teaching-learning facilities?
- Does student population growth affect student's academic achievement?

Purpose of the Study

The purpose of this study was to identify the effect of student population growth on quality education. Hence, the following are some of the purposes of this study:

- To investigate the effect of student population growth on the selection and utilization of different teaching-learning methodologies.
- To analyze the effect of student population growth on student-teacher interaction.
- To find out the effect of student population growth on teaching-learning facilities selection and utilization.
- To investigate the effect of student population growth on their academic achievement.

Significance of the Study

To realize quality in education, the creation of favorable and conducive atmosphere in the classroom is essential. However, the problem associated with student population growth is a serious challenge in the College of Sciences, BDU. Without favorable and conducive classroom, it is known that students cannot acquire the expected worthwhile skill, attitude and knowledge. Therefore, the study is hoped to provide possible solution for the problems associated with student population growth in the College of Sciences, BDU. Moreover, the study findings will inform decision makers about the effect of student population growth on quality education and thereby qualify their future decision as per the empirical findings of this study.

Delimitation of the Study

The scope of this study is confined to identify the effect of student population growth on quality education at BDU, the College of Sciences. Specifically, it focuses

on the effect of student population growth on the selection and utilization of different teaching-learning methodology, instructional facilities selection and utilization, student-teacher interaction, students' academic achievement at BDU, the College of Sciences. The problem that student population growth has on quality education is equally sensed all over the educational levels in Ethiopia. However, the study is confined to BDU, the College of Sciences due to accessibility of the College for data collection.

METHODOLOGY OF THE STUDY

This chapter deals with design of the study, target population and sample of the study, sampling technique, instruments for data gathering, data gathering procedures and methods of data analysis.

Design of the study

The main purpose of this study was to investigate the effect of student population growth on quality education provision in the case of the College of Sciences, BDU. To this end, analytical research design was used.

Target Population and Sample of the Study

The target populations of this study were instructors and first year students of the College of Sciences, BDU. The total number of instructors was 132 of whom 130 were males and 2 were females. The total number of students' was 795 of whom 240 were females and 555 were males. The following tables (Table 1 and 2) show instructors and students respectively vis-à-vis the different programs of the College of Sciences, BDU.

Sampling technique

The College of Sciences, BDU was selected using purposive sampling technique as the researcher believed that there is relatively large number of student population in the college and is accessible for data collection. From 7 programs of the College of Sciences, 3 programs were selected as a representative sample by using purposive sampling technique, as the three programs have relatively large student population growth than others. From a total of 440 (334 male and 106 female) students in the three purposively selected programs, 150 (114 males and 36 females) were selected using simple random sampling technique. Among 132 instructors, 60 were selected using simple random sampling technique.

Table 1: Staff on Duty in the Different Programs of the College of Sciences, BDU

No	Program	Staff on Duty				Total
		PhD	MSc	BSc	TA	
1	Biology	9	10	2	9	49
2	Chemistry and Industrial Chemistry	8	21	1	5	62
3	Geology	1	2	2	-	5
4	Mathematics	5	32	-	1	52
5	Physics	4	12	1	3	27
6	Statistics	1	4	1	-	12
	Total	28	81	7	18	207

Table 2: Number of First Year students of 2012/2013 Academic year in the Different Programs of the College of Sciences, BDU (Data secured from the registrar)

Programs	Year: 1		Total
	Regular Degree		
	F	M	
Mathematics	41	85	126
Industrial chemistry	25	47	72
Chemistry	58	65	123
Physics	37	92	129
Statistics	39	74	113
Geology	12	35	47
Biology	108	77	185
Total	320	475	795

classroom observation checklists. The three instruments were used to collect data regarding the effect of student population growth on academic achievement, student participation, instructor-student relation, selection and utilization of different teaching methods, nature of assessment, and classroom

Instruments for data gathering

The major data gathering instruments were open and closed ended questionnaire, document analysis, and management which all are signs of quality education provision as reiteratively confirmed in the literature. The data obtained through the three instruments were made to cross validate data and supplement the data secured using one instrument by the other (s).

Data gathering procedures

In this study, the following procedures were applied:

- Both open and close-ended questionnaire and classroom

observation checklists were developed by the researcher.

- The questionnaire was developed in English. As HLI instructors and students can easily understand the items prepared using English as a medium. It was distributed for the sample teachers and students.
- The instrument was distributed for 15 senior year College of Science students and 10 instructors of the same college to check its reliability. The researcher has used Kuder Richardson R20 formula to check the reliability level of the instruments. The reliability levels of the instruments were found 0.82 and 0.80, respectively. Besides, colleagues in the faculty of Educational and Behavioral Sciences of BDU critically evaluated the instruments. Then, unnecessary items were modified to ensure the face validity of the instruments.

Methods of Data Analysis

The data collected through close-ended questionnaire was analyzed using one sample t-test. The data collected through open-ended questionnaire, document

analysis and classroom observation was analyzed by using narrative description or using words. The researcher tried to analyze and interpret the data secured using questionnaire from instructors and students as the main data, where document analysis and classroom observation were employed as a supplementary evidences for this study.

DATA PRESENTATION AND ANALYSIS

This part deals with the presentation and analysis of the data obtained from instructors, students through questionnaire, classroom observation, and document analysis. The collected data using close-ended questionnaire were analyzed using one sample t-test. But, the data obtained using open-ended questionnaire, observation and documents were analyzed through narrative description, or using words.

Data obtained using observation and document analysis

Documents procured from the registrar confirmed that the average number of students in a class the case of College of Sciences were above 59. However, the literature pointed out that the most accepted class size in the world is 30- 40. It is obvious that large number of students in a class leads to serious shortage of instructional facilities and minimum quality of education (Ayalew, 1991).

In addition, the researcher's frequent classroom observation confirmed that classes were overcrowded, i.e., sitting patterns in the classroom didn't have enough space to move through and thereby enabling instructors and students to interact each other, and continually monitor student learning in the teaching-learning process.

a) The effect of student population growth on their academic achievement, teachers and students questionnaire response

An attempt was made to check how far student population growth in HLIs affects their academic achievement. Table 3 specifically summarizes data related to students' response about the effect of student population growth in HLIs on their academic achievement. The results indicated that the effect of student population growth in HLIs on their academic achievement is above the mean. The difference for students' reactions to the effect of student population growth in HLIs on their academic achievement to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has

significant negative effect on students' academic achievement.

An attempt was made to check how far student population growth in HLIs affects their academic achievement. Table 4 specifically summarizes data related to instructors' response about the effect of student population growth in HLIs on students' academic achievement. The results indicated that the effect of student population growth in HLIs on their academic achievement is above the mean. The difference for instructors' reactions to the effect of student population growth in HLIs on their academic achievement to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has significant negative effect on their academic achievement.

b) Student population growth and instructor-student relationship

An attempt was made to check how far student population growth in HLIs affects student-instructor relationship. Table 5 specifically summarizes data related to students' response about the effect of student population growth in HLIs on student-instructor relationship. The results indicated that the effect of student population growth in HLIs on student-instructor relationship is above the mean. The difference for students' reactions to the effect of student population growth in HLIs on student-instructor relationship to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative effect on student-instructor relationship.

An attempt was made to check how far student population growth in HLIs affects student-instructor relationship. Table 6 specifically summarizes data related to instructors' response about the effect of student population growth in HLIs on student-instructor relationship. The results indicated that the effect of student population growth in HLIs on student-instructor relationship is above the mean. The difference for instructors' reactions to the effect of student population growth in HLIs on student-instructor relationship to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative effect on student-instructor relationship.

c) The effect of student population growth on their classroom participation

An attempt was made to check how far student population growth in HLIs affects students' classroom participation. Table 7 specifically summarizes data related to students' response about the effect of student

Table 3: Students' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Student population growth – academic achievement	150	2	2.44	.728	149	41.051	.000

Table 4: Teachers' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of class size on student achievement	60	2	2.35	.577	59	31.542	.000

Table 5: Students' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Student population growth – student-teacher relation	150	2	2.65	.478	149	68.055	.000

Table 6: Teachers' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of student population growth on teacher-student relationship	60	2	2.65	.481	59	42.676	.000

Table 7: Students' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
student population growth – student participation	150	2	2.71	.550	149	60.258	.000

Table 8: Teachers' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of student population growth on their classroom participation	60	2	2.70	.561	59	37.249	.000

population growth in HLIs on their classroom participation. The results indicated that the effect of student population growth in HLIs on their classroom participation is above the mean. The difference for

students' reactions to the effect of student population growth in HLIs on their classroom participation to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a

Table 9: The effect of student population growth on the use of a variety of teaching methods, instructors' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of student population growth on the use of a variety of teaching methods	60	2	2.85	.360	59	61.308	.000

Table 10: The effect of student population growth for the selection and utilization of different assessment techniques, as responded by instructors

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of student population growth on nature of teachers' assessment	60	2	2.80	.403	59	53.768	.000

Table 11: The effect of student population growth on classroom management, instructors' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of student population growth on classroom management	60	2	2.50	.504	59	38.406	.000

related to instructors' response about the effect of student population growth in HLIs on their classroom participation. The results indicated that the effect of student population growth in HLIs on their classroom significant negative effect on students' classroom participation.

An attempt was made to check how far student population growth in HLIs affects students' classroom participation. Table 8 specifically summarizes data participation is above the mean. The difference for instructors' reactions to the effect of student population growth in HLIs on students' classroom participation to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative effect on students' classroom participation.

An attempt was made to check how far student population growth in HLIs affects the use of a variety of teaching methods. Table 9 specifically summarizes data related to instructors' response about the effect of student population growth in HLIs on the use of a variety of teaching methods. The results indicated that

the effect of student population growth in HLIs on the use of a variety of teaching methods is above the mean. The difference for instructors' reactions to the effect of student population growth in HLIs on the use of a variety of teaching methods to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative contribution towards the use of a variety of teaching methods.

An attempt was made to check how far student population growth in HLIs affects the selection and utilization of different assessment techniques. Table 10 specifically summarizes data related to instructors' response about the effect of student population growth in HLIs on the selection and utilization of different assessment techniques. The results indicated that the effect of student population growth in HLIs on the selection and utilization of different assessment techniques is above the mean. The difference for instructors' reactions to the effect of student population growth in HLIs on the selection and utilization of different assessment techniques to the mean is

Table 12: The match between number of students & selection and utilization of laboratory equipments, students' questionnaire response.

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
match between equipments & number of students	150	2	1.82	.868	149	25.694	.000

Table 13: The match between student population growth & availability of reference books, students' questionnaire response

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
match between reference books & number of students	150	2	1.52	.673	149	27.671	.000

Table 14: The effect of student population growth on quality education, questionnaire response by students

	N	Expected Mean	Actual Mean	Std. Deviation	df	t	Sig. (2 - tailed)
Effect of student population growth on quality education	150	2	2.32	.708	149	40.146	.000

significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative contribution towards the selection and utilization of different assessment techniques.

An attempt was made to check how far student population growth in HLIs affects classroom management practice in universities in Ethiopia. Table 11 specifically summarizes data related to instructors' response about the effect of student population growth in HLIs on classroom management practice. The results indicated that the effect of student population growth in HLIs on classroom management practice is above the mean. The difference for instructors' reactions to the effect of student population growth in HLIs on classroom management practice to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative contribution towards proper classroom management practice.

d) The match between student population growth & resources, as questionnaire responses of students

An attempt was made to check how far student

population growth in HLIs affects the selection and utilization of concerns based laboratory equipments. Table 12 specifically summarizes data related to students' response about the effect of student population growth in HLIs on the selection and utilization of relevant laboratory equipments. The results indicated that the effect of student population growth in HLIs on the selection and utilization of relevant laboratory equipments is below the mean. The difference for students' reactions to the effect of student population growth in HLIs on the selection and utilization of relevant laboratory equipments to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant negative contribution towards selection and utilization of need-based laboratory equipments.

An attempt was made to check the match between number of students & availability of reference books. Table 13 specifically summarizes data related to instructors' response about the match between number of students & availability of reference books. The results indicated that the match between number of students & availability of reference books is below the mean. The difference for students' reactions to the match between

number of students & availability of reference books to the mean is significant at α value of 0.05. The finding implies that student population growth in HLIs has a significant mismatch with availability of reference books.

An attempt was made to check the effect of student population growth on quality education. Table 14 specifically summarizes data related to students' response about the effect of student population growth on quality education. The results indicated that the effect of student population growth on quality education is above the mean. The difference for students' reactions to the effect of student population growth on quality education to the mean is significant at α value of 0.05. The finding implies that student population growth has a significant negative contribution towards quality provisions in education.

Also teachers' suggestions on the open ended items of the questionnaire revealed that quality education provision requires an average number of students (20_30) in a class. This reasonable number paves the way to improve the teaching-learning process, improve laboratory equipments, integrate the curriculum with technology, use different teaching methods, use different methods of assessment, and the like. The open-ended questionnaire responses of instructors confirmed that the effect of student population growth on the selection and utilization of instructional resources, laboratory equipment, teaching-learning aids, reference books was profound.

DISCUSSION OF THE FINDINGS

a) The effect of student population growth on their academic achievement, teachers and students questionnaire response

Students' population growth was found significantly influencing their academic achievement at α value of 0.05 (Refer to Tables 3 and 4). In relation to this point, Glass (1982) cited in Borich (1988) explained that student population growth negatively affects students' academic achievement. Generally, most early educators agree that the relation between student population growth and their academic achievement are negatively sloped.

Based on the above information, the researcher concludes that student population growth has a great effect on students' academic achievement. Because of student population growth, individual student attention decreases. Therefore, the current finding is consistent with early works on student population growth with academic achievement correlation.

b) Student population growth and teacher-student relationship

The current research confirmed that there is a

significant mismatch between student population growth and teacher-student relationship at α value of 0.05 (Refer to Tables 5 and 6). The researchers' frequent classroom observation also confirmed that student population growth lead to inconveniency of the physical arrangements of students in the classroom that failed to allow free movements for both instructors and students and thereby interacting smoothly to each other during teaching-learning process.

In line with this finding, Brown (2005) cited in Bradley, Elsbree, Berger, Barnard (2011) disclosed that there would be less teaching, less individual attention from instructors, less active student interaction with instructors and more talk about negative behavior of students in the school in classes with large number of students.

Generally, therefore, the responses in Tables 5 and 6 and the researcher's repeated classroom observation in the College of Sciences proved that it is difficult for both instructors and students to create intimate relationship between and among them due to the prevalence of student population growth in the College of Sciences' classroom.

c) The effect of student population growth on students' classroom participation

The current research confirmed that there is a significant effect of student population growth on their classroom participation at α value of 0.05 (Refer to Tables 7 and 8). Related to this point, Siann (1980) cited in Santa, Felder, Brown, Michealowa (2003) disclosed that student population growth highly affects the extent of students' participation in the teaching-learning process. Moreover, the current researcher's repeated observation confirmed that due to student population growth in the College of Sciences instructors' failed to encourage all students to ask and answer questions. And also, the repeated classroom observations showed that students who sat at the back seats of the classroom failed to easily see and hear instructors' presentations.

d) The effect of student population growth on the use of a variety of teaching methods

Instructors' questionnaire response (Refer to Table 9) confirmed that student population growth has a significant effect on the use of a variety of teaching methods at α value of 0.05. In line with this finding, Barnald (1965) cited in Bradley, Elsbree, Berger, Barnard (2011) pointed out that it becomes more difficult and an instructor tends to use lecture methods of teaching in large class size than in small class size. Also the researchers repeated observation of large class size classrooms confirmed that instructors mostly use lecture method of teaching in the classrooms. The

implication of this finding is that large classes have significant effect on instructors' sense of freedom in choosing and using relevant teaching methods. Similarly, the researcher's repeated observation further proved that most students only listen and took notes from their instructors' presentation at the cost of using other learner-centered approaches.

e) The effect of student population growth for the selection and utilization of different assessment techniques

Instructors' questionnaire response confirmed that student population growth has a significant effect on the selection and utilization of different assessment techniques at α value of 0.05 (Refer to Table 10). Supporting the current finding, Lim, Baronilen, Deighton, Renolds, (2001) disclosed that student population growth has an effect on the selection and utilization of the type of assessment techniques, like for example, objective or subjective type of evaluation. That is, essay questions practically challenge large class size schools but not in small class size schools. In large class size schools, multiple choice tests are more feasible where all type of test items are appropriate small class size schools (Lim, Baronilen, Deighton, Renolds, 2001).

f) The effect of student population growth on classroom management

Instructors' questionnaire response (Refer to Table 11) of the current study confirmed that student population growth has a significant effect on classroom management. In relation to this point, Kutnick (2001) cited in Jan, Benbow, Mwamwenda, Balogun, Akande (2007) asserted that instructors in large classes use a few classroom control rather than small classes. That is, large classes are more affected than small classes in using appropriate classroom management techniques. Also the researcher's repeated observation confirmed that the sitting arrangement of the students was not appropriate and it was highly overcrowded due to the existing large number of students in the College of Sciences, BDU. Instructors, therefore, have not the chance to properly manage students in the classroom.

g) The match between student population growth & access for relevant resources, as questionnaire responses of students

Instructors' questionnaire response (Refer to Table 12) confirmed that there exist a significant mismatch between number of students & selection and utilization of laboratory equipments. In relation to this point, Ango (1986) cited in Hanover, Wilson, Lee, Davies (2006)

suggested that instructors could not realize the stated educational objectives through their practical work with the absence of well equipped laboratory facilities, high enrollment of students, and inadequate quality and quantity of practical resources in the school. Interview results with the students also confirmed that they were using laboratory practices divided into two or more phases. This is due to the fact that laboratory equipments and number of students did not match each other.

Moreover, instructors' questionnaire response (Refer to Table 13) confirmed a significant mismatch between class size and availability of reference books at α value of 0.05. In this regard, Hallak (1990) cited in Ministry of Education (2012) noted that teaching-learning facilities are the important factors that contribute to students' academic achievement, besides to the school buildings, classrooms, reference books, laboratory equipments, and other instructional materials. Also interview with the students confirmed that they use reference books in the library for a limited time as there were less than 5-6 copies of the reference books of each course in the library. Therefore, the researchers confirmed that the availability of reference books did not match with the number of students found in the College of Sciences, BDU.

SUMMARY

There are many factors that affect the quality of education. One of the factors that affect quality education is student population growth.

Student population growth without a parallel growth of instructional facilities, intimate relationship between instructors and students, without using a variety of teaching methods and without good academic achievement has a detrimental effect on quality education provision in higher learning institutions.

Therefore, this paper is intended to investigate the effect of student population growth on quality in education at the College of Sciences first year students, BDU. To this end, the following research questions were formulated.

- Does student population growth affect selection and utilization of different teaching-learning methodologies?
- How can student population growth affect selection and utilization of teaching-learning facilities?
- Does student population growth reduce instructor-student interaction?
- How does student population growth affect students' academic achievement?

To answer these basic research questions, the researcher took instructors and first year students at the College of Sciences as target population. In order to

answer the research questions, the researcher administered close-ended questionnaires for 150 students and both close-ended and open-ended questionnaires for 60 instructors selected by using simple random sampling techniques. Also, the researcher had supplemented the questionnaire results with data secured through classroom observation and document analysis.

Through the research attempts made so far, the following major findings were obtained:

- Due to student population growth, instructors mostly used direct instructional strategy,
- Students remain passive during teaching-learning process as a result of student population growth in the College of Sciences, BDU,
- Student population growth had put a major influence on the selection and utilization of a variety of continuous assessment techniques,
- Due to student population growth, instructors failed to properly manage classrooms during the teaching-learning process which further obstructs the move to realize quality in education,
- First year students of the College of Sciences, BDU lack relevant laboratory equipments and library reference books,
- Student population growth made students to exhibit low academic achievement, and
- It was found out that the existing student population growth in the College of Sciences reduce the intimate relationship between instructors and students.

CONCLUSIONS

Base on the presentation, analysis of data, discussion of the findings, the researcher has forwarded the following conclusions:

The result of the study indicated that over crowdedness of students in a class in the College of Sciences brought with it lack of instructor-student interaction, lack of teaching-learning facilities, lack of using a variety of instructional strategies, difficulty of using alternative assessment techniques and failure for assessing students on a regular bases, difficulty of proper classroom management, low student participation in the teaching-learning process and low student academic achievement. As pointed out elsewhere in the literature, the preceding deficiencies affected the quality of education and consequently the quality of graduates in higher learning institution.

RECOMMENDATION

In light of the above conclusion, the following recommendations were forwarded with the assumption

of the researcher that the recommendations could provide possible remedy for the problems that student population growth brings to quality education provision.

- The management of the College of Sciences, university administrators and concerned government officials shall consider a way out for the match between number of students and access to relevant instructional materials that support instruction.
- It is well shared that increment in student population growth suffers quality in education. Hence, the management in the College of Sciences, the ministry and university officials shall restrict the number of students in a class and the college decision makers shall admit the students based on their resource capacity so that the students could get quality education.
- It is suggested in the methodology literature that using alternative instructional strategies entertain different learning styles in the classroom. Therefore, instructors in the college shall use a variety of instructional strategies based on students' interest and the nature of the content. In addition, the college shall accept a reasonable number of applicants so that number of students doesn't compromise with intimate relationship between instructors and students; increment in students' academic achievement and thereby provision for quality education in the College of Sciences.
- Decision makers in the College of Sciences shall accept a reasonable number of applicants on competitive basis in such a way that number of students doesn't compromise the use of continuous and alternative assessment techniques in the classroom.
- Though not directly implied from this research endeavor, massification of higher learning institutes of Ethiopia shall be done vis-à-vis the resource capacity of the nation to subsume graduates of HLIs of Ethiopia.

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