
EFFECTS OF TEACHER-STUDENTS RATIO IN THE IMPLEMENTATION OF BLOCKLAYING, BRICKLAYING AND CONCRETING CURRICULUM IN TECHNICAL COLLEGES IN NIGER STATE

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ABSTRACT

The study was carried out to determine the effects of teacher-students ratio in the implementation of Blocklaying, Bricklaying and Concreting (BBC) curriculum in technical colleges in Niger State. Two research questions were developed and answered. The population consisted of thirty-seven (37) respondents made up of 7 principals, 7 BBC heads of department and 23 BBC teachers in technical colleges in Niger State. The 37 respondent were used and no sampling was conducted. Cronbach Alpha statistic was used to establish the reliability of the instrument which amounted to 0.87. It was found that technical colleges are implementing some of the modules of the BBC curriculum above the National Board for Technical Education (NBTE) recommended teacher-students ratio, proper skills acquisition in technical colleges can only be achieved in compliance to the NBTE recommended teacher-students ratio and large number of students over the teacher leads to the inability of teacher to reach individual student. It was recommended that technical colleges management in the State should insist that, the BBC curriculum modules be implemented on the bases of NBTE recommended teacher-students ratio of 1:40 and government should recruit more teaching staff in order to ensure that teacher-students ratio recommended in the NBTE minimum standards is what is obtainable in the implementation of the BBC curriculum modules.

Keywords: Teacher-students ratio, Implementation, Block laying, Bricklaying and Concreting Curriculum

INTRODUCTION

Blocklaying, Bricklaying and Concreting trade is that aspect of technical and vocational education that is meant to equip students with technical knowledge and vocational skills that will make them enterprising or self-reliant. NBTE developed the BBC curriculum and spelt out its goals to include: introducing the trainee in the building trades to the basic construction principles, materials and methods, so that he/she may be able to appreciate the roles of the various trades in the building industry, introducing the trainee to the basic principles of residential building design and to enable him/her make

and interpret building drawings, provide the trainee with the essential knowledge and skills that will enable him/her perform competently in all aspects of brickwork and block-work, Provide the trainee with the basic knowledge of the properties and application of concrete as well as the skill in the production of sound concrete structures, and provide the trainee with the basic knowledge of finishing materials related to the builders work and to enable him apply such finishes proficiently (NBTE, 2001). These goals can only be achieved when all the required ingredients for implementation of the curriculum are adequately

available such as conducive learning environment, instructional facilities, manageable class size to mention a few.

The NBTE also outlined the trade theory, trade practices and related studies modules expected to be taught throughout the duration of the implementation of the BBC curriculum, these include; Introduction to Building Construction (CBC 11), Basic Construction Management (CBM 12), Building Drawing (CTD 14), Bricklaying (CBC 12), Blocklaying (CBC 13), Concreting (CBC 14) and Wall, Flooring and Ceiling (CBC 15). NBTE further stated that the implementation of technical college curriculum shall be determined based on teacher-students ratio of 1:40. This means that the number of students enrolled per teacher in each module of the BBC curriculum implementation in technical colleges should not exceed 1:40. Also according to the Training Manual for Teachers and School Managers (2015) explained that the National Policy on Education emphasizes the pupils'- teacher at the basic level to be 1:35 for effective learning at primary school level, (1:15) one to a maximum of fifteen at Nursery level while, the policy provides for 1:40 ratio for post basic. The important of this standard is that teaching and learning become easier as the teacher can handle the class effectively. Jacob (2015) explained that larger number of students per teacher do not allow students to get enough individual assistance from their teachers during teaching-learning process nor fully involved during the teaching-learning process respectively. Hence the study is to determine the effects of the teacher-students ratio in the implementation of BBC curriculum modules in technical colleges in Niger State.

Research Questions

1. What is the teacher-students ratio in the implementation of BBC curriculum modules in technical colleges in Niger State?

2. What is the effect of teacher-students ratio in the implementation of BBC curriculum modules based on NBTE minimum standards in technical colleges in Niger State?

METHODOLOGY

The research was carried out using descriptive survey research design. The study was conducted in 7 technical colleges in Niger State namely: Government Technical College, Minna, Government Technical College, Eyagi-Bida, Government Technical College, Kontagora, Suleiman Barau Technical College, Suleja, Government Technical College, New Bussa, Mamman Kontagora Technical College, Pandogari and Federal Science and Technical College Shiroro-Kuta. The population of the study consisted of 7 principals, 7 BBC heads of department and 23 BBC teachers. Therefore the entire population of the study was 37 and no sampling was conducted as population is manageable. A 17 item research checklist and questionnaire instrument was used to solicit information from the respondent.

The checklist was developed by the researcher using NBTE-BBC curriculum and the questionnaire through literature review. The checklist response is based on NBTE minimum standards and the questionnaire was based on four point rating scale. The instrument was validated by three experts in the Department of Industrial and Technology Education of the School of Science and Technology Education, Federal University of Technology, Minna. The reliability of the instrument was tested using the Cronbach Alpha statistic and a coefficient of 0.87 was obtained. The researcher distributed and collected back the completed questionnaire with the help of research assistant. The instrument distributed were 100% collected and used in analyzing data. The data collected in the study presented and analyzed using NBTE minimum standards and mean. Based on the checklist, NBTE minimum standards recommended teacher-students ratio was employed for

the study, any item that falls within the recommended NBTE minimum standards of teacher-students ratio and below was considered appropriate while any item with above NBTE minimum standards was deemed to have been inappropriate by respondents. The response option and the weighing for the questionnaire section adopted

is four (4) point rating scale of Strongly Agree (SA) = 4, Agree (A) = 3, Strongly Disagree (SD) = 2, Disagreed (D) = 1. Any item with 2.50 and above was considered agreed and any item with the below cut-off point was considered disagreed by the respondents.

RESULTS

Table 1: The Teacher-students Ratio in the Implementation of BBC Curriculum Modules in Technical Colleges in Niger State

S/NO.	BBC Curriculum Modules	NBTE Recmd Ratio		Classes		GTC Minna		R M K		GTC Eyagi-Bida		R M K		GTC Kontagara		R M K		SBTC Suleja		R M K		GTC New Bussa		R M K		MKTC Pandogari		R M K		FSTC Shiroro-Kuta		RMK
		T	S			T	S			T	S			T	S			T	S			T	S			T	S					
1	Introduction to Building Construction (CBC II)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	A							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							
2	Basic Construction Management (CBM I2)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	A							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							
3	Building Drawing (CTD I4)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	A							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							
4	Bricklaying (CBC I2)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	A							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							
5	Blocklaying (CBC I3)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	A							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							
6	Concreting (CBC I4)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	I							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							
7	Wall, Flooring and Ceiling (CBC I5)	1	40	TC1	1	55	1	1	70	1	1	54	1	1	48	1	1	30	A	1	43	1	1	40	A							
		1	40	TC2	1	49	1	1	52	1	1	58	1	1	55	1	1	50	1	1	49	1	1	38	A							
		1	40	TC3	1	60	1	1	63	1	1	49	1	1	62	1	1	43	1	1	37	A	1	42	I							

Key: NBTE Recmd Ratio=National Board for Technical Education Recommended Ratio, T=Teacher, S=Students, A=Appropriate, I=Inappropriate, TC1A = Technical College Year 1, TC2A = Technical College Year 2, TC3A = Technical College Year 3

BBC curriculum module implementation. In Government Technical College Minna, with Introduction to Blocklaying (CBC I3), Basic Construction Management (CBM I2) and Building Drawing (CTD I4) having teacher to students ratio in TC1, TC2 and TC3 to be 1:55, 1:49 and 1:60 respectively, which are not within NBTE recommended ratio and all were considered inappropriate. Also the ratio in GTC Minna in Building Drawing (CTD I4) and Bricklaying (CBC I2) with TC1 and TC2 were 1:55 and 1:49 respectively.

Table 1 revealed the ratio of teacher to students in technical colleges in Niger State within each

The Table also revealed the ratio of teacher to students in Government Technical College Eyagi-Bida, Niger State with Introduction to Building Construction (CBC II), Basic Construction Management (CBM I2) and Building Drawing (CTDI4) having teacher to students ratio in TC1, TC2 and TC3 to be 1:70, 1:52 and 1:63 respectively. All the ratios in these theory classes were considered inappropriate on the bases of NBTE recommended ratio. Also in Government Technical College Eyagi-Bida is the ratio of teacher to students in Building Drawing (CTDI4), Bricklaying (CBC I2) with in TC1 and TC2 to be 1:70 and 1:52 respectively.

The Table also revealed the ratio of teacher to students in Government Technical College kontagora, Niger State with Introductory to Building Construction (CBC II), Basic Construction Management (CBM I2) and Building Drawing (CTDI4) having teacher to students ratio in TC1, TC2 and TC3 to be 1:54, 1:58, and 1:49 respectively, none of the theory classes ratio is considered appropriate on the bases of NBTE recommended ratio. Also in Government Technical College kontagora is the ratio of teacher to students in Building Drawing (CTDI4), Bricklaying (CBC I2) with teacher to student's ratio in TC1, TC2 and TC3 to be 1:54, 1:58 and 1:49 respectively.

It can also be observe from the table that the ratio of teacher to students in Suleiman Barau Technical College Suleja, Niger State with Introduction to Building Construction (CBC II), Basic Construction Management (CBM I2) and Building Drawing (CTDI4) having teacher to students ratio in TC1, TC2 and TC3 to be 1:48, 1:55, and 1:62 respectively, none of the theory class ratio is considered appropriate on the bases of NBTE recommended ratio. Also in Suleiman Barau Technical College Suleja, is the ratio of teacher to students in Building Drawing (CTDI4) and Bricklaying (CBC I2) with teacher to student's ratio in TC1, TC2 and TC3 to be 1:48, 1:55, and 1:62 respectively and are implemented out of

the NBTE recommended ratio and hence considered inappropriate.

The table also shows the ratio of teacher to students in Government Technical College New Bussa, Niger State with Introductory to Building Construction (CBC II), Basic Construction Management (CBM I2) and Building Drawing (CTDI4) having teacher to students ratio in TC1, TC2 and TC3 to be 1:30, 1:50, and 1:43 respectively, while only the ratio of TC1 theory class is considered appropriate on the bases of NBTE recommended ratio. Also in Government Technical College New Bussa, is the ratio of teacher to students in Building Drawing (CTDI4) and Bricklaying (CBC I2) with teacher to students ratio in TC1, TC2 and TC3 to be 1:30, 1:50 and 1:43 respectively, these theory classes of TC2 and TC3 were considered inappropriate on the bases of NBTE recommended ratio for the BBC curriculum modules implementation.

The ratio of teacher to students in Mammam Kontagora Technical College Pandogari, Niger State is also revealed in the table with Introductory to Building Construction (CBC II), Basic Construction Management (CBM I2) and Building Drawing (CTDI4) having teacher to students ratio in TC1, TC2 and TC3 as 1:43, 1:49 and 1:37 respectively, Only in TC3 the ratio is considered appropriate on the bases of NBTE recommended ratio, whereby TC1 and TC2 classes were not within the NBTE recommended ratio and therefore considered inappropriate. Also in Mammam Kontagora Technical College Pandogari, Niger State is the ratio of teacher to students in Building Drawing (CTDI4) and Bricklaying (CBC I2) with teacher to students ratio in TC1, TC2 and TC3 to be 1:43, 1:49 and 1:37 respectively, both TC1 and TC2 theory classes were considered inappropriate on the bases of NBTE recommended ratio, whereby only TC3 theory classes of the BBC curriculum modules implemented is within the NBTE recommended ratio and therefore considered appropriate.

It can also be seen from the table that the ratio of teacher to students in Federal Science and Technical College Shiroro-Kuta, Niger State with Introduction to Building Construction (CBC 11), Basic Construction Management (CBM 12) and Building Drawing (CTDI4) having teacher to students ratio in TC1, TC2 and TC3 to be 1:40, 1:38, and 1:42 respectively, only in TC3 the ratio is considered inappropriate on the bases of NBTE recommended ratio, whereby other theory classes are within the NBTE recommended ratio and therefore

considered appropriate. Also in Federal Science and Technical College Shiroro-Kuta, is the ratio of teacher to students in Building Drawing (CTDI4) and Bricklaying (CBC 12) with teacher to students ratio in TC1, TC2 and TC3 to be 1:40, 1:38, and 1:42 respectively, these theory classes of the BBC curriculum modules implemented were within the NBTE recommended ratio with the exception of only TC3 and therefore considered appropriate.

Table 2: Mean Response on the Effects of Teacher-students Ratio in the Implementation of BBC Curriculum Modules Based on NBTE Minimum Standards in Technical Colleges in Niger State

Effects of teacher-students ratio in the implementation of BBC curriculum modules based on NBTE minimum standards in technical colleges in Niger State						
S/N		X₁	X₂	X₃	X₄	RMK
1	Larger number of students over the teacher makes students playful and not concentrating	3.00	3.45	2.88	3.11	Agreed
2	NBTE recommended teacher-students ratio enhance good teaching and learning	3.66	3.89	3.65	3.73	Agreed
3	Larger number of students makes teaching difficult	4.12	2.78	3.63	3.51	Agreed
4	Proper skills acquisition in technical colleges can only be achieved in compliance to the NBTE recommended teacher-students ratio	2.99	3.49	3.50	3.33	Agreed
5	Larger students class makes the learning environment not conducive	3.71	3.24	3.98	3.64	Agreed
6	Larger students class overload the teacher	3.21	3.57	2.80	3.19	Agreed
7	Technical colleges have enough building/classrooms that takes note of NBTE recommended ratio into consideration	2.04	1.88	2.00	1.97	Disagreed
8	Evaluation of students' performance in smaller class is easier and effective compare to larger class size	4.00	2.99	3.09	3.36	Agreed
9	Large students class leads to the teacher inability to reach individual student	3.55	3.76	3.02	3.44	Agreed
10	Teacher found it difficult to control larger student class	2.90	3.00	3.46	3.12	Agreed

Key: N₁= Number of Principal, N₂= Number of BBC Heads of Department, N₃= Number of BBC Teacher, X₁= Mean Response of Principal, X₂= Mean Response of BBC Heads of Department, X₃= Mean Response of BBC Teacher, X₄= Average Mean Response

The result of the analysis from both groups of respondent shown in Table 2 revealed that the respondents agreed to all listed items since their average mean ranged from 3.07-3.73 which is above the acceptance level for agreement. This implies that the

listed items are the effects of teacher-students ratio in the implementation of BBC curriculum modules based on NBTE minimum standards in technical colleges in Niger State.

DISCUSSION OF FINDINGS

The results in table 1 on the ratio of BBC teacher-students for each module of the BBC curriculum on the bases of NBTE minimum standards showed that many classes of the BBC curriculum module implementation were above the NBTE recommended ratio of 1 teacher to 40 students in theory classes therefore, the classes were overcrowded as the population of the students passes the NBTE recommended ratio thereby making it impossible for teacher to implement the module of the curriculum effectively. Supporting this is Majanga, Nasongo and Sylvia (2011) who stated that when teacher is over-loaded with students during teaching and learning he become demoralized and handling of the lessons also become difficult. The finding is also in concord with Shah and Inamullah (2012) that found from their studies that problem of over-crowded classes have direct impact on the students' learning. They noted that over-crowded class will not only affects students' performance but the teachers had to face different problems such as discipline, behavioral problems, poor health and poor performance of students, put stress on teachers and increased in drop-out rate of students.

Table 2 result revealed that many factors effects classes with larger number of students over the teacher such as inability of the teacher to reach the individual student to assist them. This is in agreement with Majanga, Nasongo and Sylvia (2011) who explained that it will be difficult for the teachers to give personal attention to all the learners, give assignments to test what has been taught and take full control of their classes. This affects the ability of the teachers to identify students' weakness and assist them. There is a

likelihood that this would affect quality of education given to the pupils especially in learning practical skills acquisition. The result also indicated that proper skills acquisition can only be achieved in compliance to the NBTE recommended teacher-students ratio, this is in support of Carlson (2000) who reported that quality learning was not possible when large number of students were packed into small classrooms. Carlson further reported that 40 plus children were stuffed into classrooms designed for not more than 35 students. They were seated so closely together that they were unable to work or move. The finding also showed that technical colleges do not have enough building/classrooms that take note of NBTE recommended ratio into consideration, supporting this is Ijaiya (1999) who suggested that additional buildings and furniture should be given priority in educational planning at all levels. In his study he found a weak positive correlation between the opinion of teachers and students on overcrowded class and he is of the view that over crowdedness in a classroom diminished the quality and quality of teaching and learning with serious implications for attainment of educational goals.

CONCLUSION

Based on the findings of the study, it was concluded that most of the BBC curriculum modules in technical college in Niger State were implemented above the NBTE recommended teacher-students ratio and the implication is that, the class become overcrowded thereby over working and disallowing the teacher to give the prompt attention expected in the implementation of BBC curriculum. It was also concluded that evaluation of students' performance become difficult by the teacher, proper skills acquisition can only be effectively achieved in a smaller size classroom and NBTE recommended teacher-students ratio if appropriately abide by it would enhance good teaching and learning process by both the teacher and students.

RECOMMENDATIONS

1. Technical colleges management in the State should insist that, the BBC curriculum modules be implemented on the bases of NBTE recommended teacher-students ratio of 1:40.
2. Government should recruit more teaching staff in order to ensure that teacher-students ratio recommended in the NBTE minimum standards is what is obtainable in the implementation of the BBC curriculum modules.
3. Government should always have a strategic working plan for the construction of building/classrooms as enrollment of students in technical college increases.
4. Non-governmental agencies should also come to the aid of these technical colleges in the State toward building more blocks of classroom for effective BBC curriculum implementation based on NBTE minimum standards.

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