Mode of Entry as Predictor of Pre-Service Teachers' Performance in Basic Science in Nigerian Colleges of Education

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Abstract

This study examined mode of entry as predictor of pre-service teachers' performance in Basic Science in Nigerian Colleges of Education. Specifically, the study determined the difference in the post test mean scores of students exposed to Reflective Teaching, Peer Tutoring and Conventional Teaching based on mode of entry. The study adopted pre-test and post-test control group quasi-experimental design. The population of the study consisted of all pre-service teachers studying Basic Science as teaching subject in all the 12 public Colleges of Education in Southwest, Nigeria. The sample for the study consisted of 124 pre-service teachers of Basic Science from the three selected Colleges of Education in Southwest, Nigeria through multistage sampling procedure. The study made use of Pre-service Teachers' Achievement Test in Basic Science (PTATBS) for data collection. The test re-test was used to establish the reliability coefficient 0.81 with the use of split-half for PSTATBS as administered to 40 pre-service teachers outside the normal sample within two weeks. Inferential statistics of Analysis of Variance (ANOVA) was used to test the hypotheses. The study revealed that the mode of entry into Nigerian Colleges of Education has no effect on the academic performance of pre-service teachers in Basic Science. Since mode of entry is not a predictor of pre-service teachers' performance in Basic Science in Nigerian Colleges of Education, lecturers should adopt the use of Reflective Teaching and Peer-Tutoring instructional strategies for better preparation of pre-service teachers in Basic Science.

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Introduction

The upgrading of Basic Science in Nigeria originated from presidential initiative pointing at attaining national economy and human development, in support of the realization of vision which focus Nigeria ranking among the 20 largest economies in year 2020 (Obiageli, 2006). Part of the strategies implemented to improve the advancement of Basic Science in Nigeria is the introduction of 9-3-4 system of education through the National Policy on Education. It stressed further that the teaching and learning of science subjects in basic education, under secondary education is important (Federal Republic of Nigeria, 2014). According to Ireogbu (2008), pre-service teachers are not performing too well in terms of academics both in pedagogy and in knowledge of the subject- matter. This was apparent in the results of Colleges of Education students collected by the researcher in some Colleges of Education in South-West, Nigeria.

Pre-service teachers are expected to act as leaders in the classroom and anticipated to pass on their own understanding of the subject to the pupils. Brownlee, Purdie and Bouton-Lewis (2001) stated that helping student teachers to know and learn more effectively would assist these future teachers to encourage similar learning outcomes in the school children for whom they have duty.

The major variable of interest in this study that affects pre-service teachers' performance is the mode of entry into the National Certificate in Education (NCE) programme vis-à-vis the scheme of instruction. Teaching method used by lecturers is expected to be aligning with the subject content and specific outcomes so as to effectively enhance transfer of knowledge and information from the lecturer to the pre- service teachers (Adunola, 2011). In view of this, there is need for the pre-service teachers to be well acquainted with strategies that can assist them to communicate effectively and achieve more in the classroom when they start practicing as teacher.

Reflective Teaching (RT) is a teaching strategy which involves observing what you do in the classroom, thinking about the reason for doing it, with a view to re-strategize for better classroom performance (Adedayo, 2014). Peer Tutoring (PT) could be defined as a learning situation where students take turns acting as the tutors and the tutees for instruction or review of academic material (Ogundola, 2017). In this case, students interchange roles during tutoring session, both giving and receiving academic assistance while the teacher supervises rather than participate in the intervention.

Observation has revealed that the system of admitting students into the Colleges of Education seems to be faulty as some of the Colleges of Education do reduce their standard by using unconventional procedure like internal sales of forms for admission other than the Unified Tertiary Matriculation Examination (UTME). The National Commission for Colleges of Education has a policy of admitting students into NCE programme with a minimum of four credits at a sitting or four credits at two sittings in O' Level examination. In some cases, students with less than the number of minimum credit passes required for admission are admitted and allowed to remedy their deficiencies before graduation. The preparation for O' Level result to redeem their insufficiencies may not permit the concerned pre-service teachers to focus on their normal academic programmes in school which may lead to poor academic achievement.

Mode of Entry into Colleges of Education is another factor that affects the pre-service teacher's achievement at teacher training institution. The category of students to be admitted for a programme is of great importance when considering the performance of pre-service teachers in Colleges of Education in Nigeria. However, the NCCE has also realized that some

prospective candidate do not have the stated minimum entry requirements, and had therefore, permitted Colleges of Education to run the Pre-NCE programme to provide ample opportunities for the admission of more candidates into the NCE programme. Accordingly, NCCE, (2016), the NCCE stated that "successful candidates in the Pre-NCE final examination organized by an accredited body would also be qualified for admission".

Presently, there are two groups of students being admitted into Colleges of Education programs in Nigeria which are those who pass through the unified tertiary matriculation examination (UTME) conducted by Joint Admission and Matriculation Board (JAMB) and those who pass through Pre-NCE programme being run by individual Colleges of Education respectively. All the two groups have varying academic experiences and hence the basis for differences in their modes of entry into the Colleges of Education.

There are alterations in the ordinary level qualification of the Pre-NCE programme students, starting from no credit to four credit passes. Whereas the UTME students must have minimum of four credits with English and Mathematics being enforced for admission consideration, the challenge seem more complex for the Pre-NCE programme students with inadequate credit level. Hence this could reflect in their academic achievement when admitted into the College of Education programmes.

Amel and Sulima (2017) stated that admission factors and the different entry qualifications, which are the results of earlier academic performance, are likely to influence the students' future academic success. Other research findings have showed that academic factors considered in the admission standards has been known to be critically linked to students' academic performance than the non-academic factors and could also affect student quality and their persistence in school (Ali, 2008). Leppel (2015) asserted that excellent performance and performance advantage connect with high persistence and student's academic performance at the selection and qualifying examination.

Ibe-bassey (2008) posited that tertiary institutions all over the globe, including Nigeria, utilize prior academic performance in terms of admission points or different entry qualifications/certificates as a basis for picking students for admission into the Colleges of Education, Polytechnic schools and Universities. These admission points or entry certificates are regularly of equivalent rating, even though they may be awarded by different examination bodies. Thus Bratti and Staffolani (2006) perceived that the measurement of the students' prior educational outcomes or performance is the most significant indicator or determinant of the students' future academic performance.

In a study conducted by Ringland and Pearson (2010) on the alterations between diploma entrants and direct 'A'-Level entrants and the subsequent performance of each group revealed that there was no significant difference between the groups; however, performance in terms of academic achievement before reaching tertiary institution did appear to influence students' performance in a little extent. This finding is supported by the observation made by Angulu (2007) that learner who got admitted into tertiary institutions with high school certificate performed better in the second and third year than those admitted via preliminary programme since they are usually more equipped for the academic work. Nevertheless, he suggested that remedial programme be permitted to stay as a means of meeting up admission proportion and solving issues of imbalance. Similarly, Mlambo in Idowu (2017) observed that for a number of institutions, student admission is based on a number of different qualifications, to the extent that students receiving instruction in the same course differ greatly in terms of their prior knowledge. This is agreement to the findings of Idowu (2017) in his study on quality assurance measures and academic performance of students in Colleges

of Education in Southwest Nigeria. He submitted that there was significant relationship between students' admission and students' academic performance. He stressed further that if the students admitted into the system are qualified and undergo better transformation process, good output in terms of academic performance is expected. This implies that when qualified and competent students are admitted into Colleges of Education, the academic performance will be good and when less-qualified students are admitted through unconventional method rather than accepted Unified Matriculation Tertiary Examination (UTME), such students may perform poorly in academic activities.

Contrarily, Kyoshaba (2009) reported that there was no significant difference in the academic performance among students due to differences in the admission criteria employed; the same study observed that while varied, these criteria adequately assessed the potential of students to handle the demands of courses in agriculture.

In light of the literature reviewed above, several authors consistently agreed that mode of entry is an important factor to be considered when discussing the academic achievement of pre-service teachers in teacher training institute or any arms of the tertiary institutions. There were contradictory views on whether the mode of entry of a pre-service teacher is related to academic achievement. Some researchers agreed that entry mode have impact on pre-service teacher's academic achievement while others disagreed. This study aims at finding out the relationship between mode of entry and pre-service academic performance. This study examined mode of entry as predictor of pre-service teachers' performance in Basic Science in Nigerian Colleges of Education. Specifically, the study was designed;

1. to determine the difference in the post test mean scores of students exposed to Reflective Teaching and Conventional Teaching based on mode of entry; and
2. to determine the difference in the post test mean scores of students exposed to Peer Tutoring and Conventional Teaching based on mode of entry.

Research Hypotheses
The following research hypotheses were formulated for this study;

1. There is no significant difference in the post test mean scores of students exposed to Reflective Teaching and Conventional Teaching based on mode of entry.
2. There is no significant difference in the post test mean scores of students exposed to Peer Tutoring and Conventional Teaching based on mode of entry.

Methodology
The study adopted pre-test and post-test control group quasi-experimental design. The population of the study consisted of all pre-service teachers studying Basic Science as teaching subject in all the 12 public Colleges of Education in Southwest, Nigeria. The sample for the study consisted of 124 pre-service teachers of Basic Science from the three selected Colleges of Education in Southwest, Nigeria through multistage sampling procedure. The sample was purposively assigned to selected intact classes of the three groups (two experimental and one control). The study made use of Pre-service Teachers' Achievement Test in Basic Science (PTATBS) for data collection. (PTATBS) test consisted thirty multiple-choice objective test items drawn from the topics taught. It consisted of two sections with Section A consists of the demographic information such as school (college), name, age, gender, name and mode of entry while section B containing duration, instruction and the test items. The face and content validity of PSTABS were carried out using two experienced Integrated Science lecturers in Colleges of Education who has taught Integrated Science for a period of at least 10years. Their suggestions, corrections and opinions helped in effecting the

necessary modifications in each of the instruments to ensure its suitability for NCE II students. The test re-test was used to establish the reliability coefficient 0.81 with the use of split-half for PSTATBS as administered to 40 pre-service teachers outside the normal sample within two weeks.

The first phase of the experiment was the administration of pre-test to all the Pre-service Teachers of the intact classes of NCE II with the assistance of trained research assistants. Thereafter, the three colleges were assigned into experimental and control groups. The researcher with the help of research assistants made use of reflective teaching and peer-tutoring strategies on the experimental groups while the control group was taught by the conventional method. After the treatment, the researcher personally administered the post-test to both experimental and control groups. Inferential statistics of Analysis of Variance (ANOVA) was used to test the hypotheses.

Results

Hypothesis 1: There is no significant difference in the post test mean scores of students exposed to Reflective Teaching (RT) and Conventional Teaching (CT) based on mode of entry.

In order to test the hypothesis, posttest mean scores of students exposed to Reflective Teaching (RT) and Conventional Teaching (CT) were computed and compared for statistical significance based on mode of entry. The result is presented in Table 1.

Table 1: 2 X 2 ANOVA of Performance of Pre-service Teachers Exposed to Reflective Teaching (RT) and Conventional Teaching (CT) in Basic   Science by Mode of Entry

Source	SS	df	MS	F	p
Corrected Model	1393.581	3	464.527	80.270	.000
Mode of entry	6.378	1	6.378	1.102	.297
Group	1166.828	1	1166.828	201.627	.000
Mode of entry * Group	1.058	1	1.058	.183	.670
Error	416.669	72	5.787		
Total	34533.000	76			
Corrected Total	1810.250	75			

p>0.05

Table 1 shows that the computed F-value (0.183) obtained for the groups with a p value > 0.05 was not significant at 0.05 level. The null hypothesis not rejected; implying that there is no significant difference in the mode of entry in the post test mean scores of students exposed to Reflective Teaching and Conventional Teaching. Similarly, the main effect of mode of entry on the posttest mean scores of pre-service teachers in Basic Science is not statistically significant at 0.05 level ($F_{1,72}=1.102$, p>0.05). However, treatment had significant effect on the performance of pre-service teachers in Basic Science ($F_{1,72}=201.627$, p<0.05).

Hypothesis 2: There is no significant difference in the post test mean scores of students exposed to Peer Tutoring (PT) and Conventional Teaching (CT) based on mode of entry.

In testing the hypothesis, post-test mean scores of pre-service teachers exposed to Peer Tutoring and Conventional Teaching were computed and compared for statistical significance using Analysis of Variance (ANOVA) based on mode of entry. The result is presented in Table 2.

Table 2: 2 X 3 ANOVA of performance of Pre-service Teachers Exposed to Peer Tutoring (PT) and Conventional Teaching (CT) in Basic Science by Mode of Entry

Source	SS	Df	MS	F	P
Corrected Model	1962.245	3	654.082	115.013	.000
Mode of entry	4.542	1	4.542	.799	.374
Group	1776.798	1	1776.798	312.431	.000
Mode of entry * Group	3.378	1	3.378	.594	.443
Error	483.395	85	5.687		
Total	45039.000	89			
Corrected Total	2445.640	88			

p>0.05

Tables 2 indicate that the computed F-value (0.594) obtained for the groups with a p value > 0.05 were not significant at 0.05 level. The null hypothesis is not rejected. It implies that there is no significant difference in the mode of entry. Also, the main effect of mode of entry on the posttest mean scores of pre-service teachers in Basic Science is not significant at 0.05 level ($F_{1,85}$= 0.799, p>0.05). However, treatment had significant on the posttest mean scores of pre-service teachers in Basic Science at 0.05 level ($F_{1,85}$=312.431, p<0.05).

Discussion

The result of hypothesis four and five showed that there is was no significant difference in the posttest mean scores of pre-service teachers exposed to Reflective Teaching, Peer-Tutoring and Conventional teaching strategies based on the mode of entry in Basic Science. That is, there was no significant effect of both direct and preliminary mode of entry into Nigerian Colleges of Education in Basic Science pre-service teachers' performance. The result contradict the submission of Simeon and Nancy (2010), that, the duration of preliminary students in the Colleges might have positive contribution to their improved performance over direct students. The result of the study further discard the assumption that preparation for O'level result to redeem the deficiencies of preliminary students may not allow them to concentrate on their normal academic programme in school which may lead to poor academic achievement.

Conclusion and Recommendation

The study concludes that the mode of entry into Nigerian Colleges of Education has no effect on the academic performance of pre-service teachers in Basic Science. Since mode of entry is not a predictor of pre-service teachers' performance in Basic Science in Nigerian Colleges of Education, lecturers should adopt the use of Reflective Teaching and Peer-Tutoring instructional strategies for better preparation of pre-service teachers in Basic Science

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Cite this article:

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