



## **Evaluation Of Centres For Educational Technology In NCE Awarding Institutions In Northeast, Nigeria**

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### **ABSTRACT**

The Centres for Educational Technology in each of the Colleges of Education in Nigeria provide the necessary framework for the adaptation of reforms for teacher training programmes. The efficacy of these centres and the extent to which they are geared towards the achievement of the goals of their establishment is a source of worry. This is because experience has shown that many pre-service teachers as well as in-service teachers lack the requisite skills for media production and application. Therefore, the major purpose of the study was to evaluate Centres for Educational Technology in Colleges of Education in the North-East Zone of Nigeria. Four instruments were used to gather data for the study. These instruments were checklist, questionnaire, observation schedule and focus- group- discussion-guide. The reliability of the questionnaire was determined through Cronbach alpha reliability procedure. Evaluation research design was adopted for the study. Input-process-effectiveness evaluation model (IPE) was adopted within the shufflebeam's CIPP evaluation framework for the study. The study was guided by 8 research questions and 4 hypotheses. The sample consisted 10 Centres for Educational Technology in ten (10) colleges of education in the North-east zone. The respondents were 10 coordinators, thirty (30) lecturers and nineteen (19) supportive staff. A total of two hundred (200) students were also used out of a population of four thousand nine hundred and fifty thousand (4,950) students. The computation of the data was done using Statistical Package for Social Sciences (SPSS). Simple frequency counts and percentages were used to answer research questions 1, 2, 7 and 8, while mean ( $\bar{x}$ ) and standard deviation scores were used to answer research questions 3 to 5. The hypotheses of the study were tested using t-test at 0.05 level of significance. The results of t-test on hypothesis one, revealed that there was significant difference in the mean ratings on adequacy of facilities in the state and federal colleges (cal.  $t = -1.50$   $P < .14$ ), accommodation (cal  $t = 2.39$ ,  $P < .02$ ) and software (cal.  $t = -2.38$ ,  $P < .02$ ). These differences were in favour of state colleges. Results of t-test for hypothesis two on use of CET facilities, showed that  $t = -2.39$   $p < .04$ . This indicated that the null hypothesis was rejected. There was significant difference in the mean ratings on use of facilities by state and federal colleges, in favour of state colleges. Also, for hypothesis three on maintenance of CET facilities, the calculated  $t = -.88$   $P < .40$ . The null hypothesis was not rejected. There was no significant difference in the mean ratings on maintenance of CET facilities by the state and federal colleges of education. Result of t-test on hypothesis four on competence possessed by CET staff in the operation of equipment, indicated that the calculated  $t = .03$ ,  $P < .98$ . The null hypothesis was not rejected. Therefore, significant difference did not exist in the mean ratings on competence possessed by CET staff on the operation of equipment in federal and state colleges of education. The results of data analysis on the research questions indicated that facilities were available, inadequate and functional in majority of the colleges of education. Most of the concepts in Educational Technology were well taught and Micro Teaching skills were well practiced by trainee teachers. One major implication of the study was that lack of Closed Circuit Television (CCTVs) in most of the CETs

might have led to poor organization of Micro Teaching in the colleges. The major recommendation of the study was that Educational Technologists should be recruited as coordinators of CETs to be able to appropriately manage the CETs as contained in the NCCE (2020) minimum standard.

### **Background**

The training of teachers in the Colleges of Education for the Nigeria Certificate in Education (NCE) regulated by the National Commission for Colleges of Education (NCCE) needs to be evaluated to ascertain the extent to which the mandated services provided by the relevant centres for Educational Technology are being provided. According to Wikimedia (2010), teacher training in education is the preparations of individuals to enable them become professional teachers with special skills and abilities necessary to succeed in the teaching profession. This important training is usually being provided by the Centres for Educational Technology of the designated institution which is a requirement of establishing a college of education.

Research has shown that the use of technology in the teaching and learning process is important. Akinpelu (2006) stated that if the culture of media-based instruction is imbibed by the teachers, then learning will become fun. This is because media reduce a lot of inhibiting factors to learning more especially where teachers are friendly with media utilization. Hence, the NCCE made the establishment of Centre for Educational Technology (CET) a compulsory requirement for the accreditation of any teacher training institution. The CET produces and houses instructional resources to facilitate effective teaching and learning. The facility requirements for the establishment of CETs in the colleges according to the NCCE (2020) minimum standard are:

*“ the provision of office accommodation, micro teaching laboratory, closed circuit television, projectors and their accessories, computers and their accessories, video and photographic cameras, photographic laboratory, duplicating machine, projection screens, public address systems, display boards, storage devices for non-projected instructional materials, viewing centre and CET workshop among others(Pp.4 & 5).”*

In addition to the procurement of these teaching facilities, the CET should be headed by a coordinator who must be an educational technologist with supportive staff like projectionists, computer operators, technicians and cameramen. Therefore, the CETs in the Colleges of Education are set up to provide the prospective teachers with the desired knowledge and skills needed to carry out their instructional assignments. The extent to which the CETs comply with the laid down requirement for the establishment of these centres need to be ascertained.

The NCCE provides the necessary funding to the Federal Colleges of Education, while the State Colleges of Education are being funded by their respective states. The disparity in funding among state and federal colleges of education may affect the provision of teaching facilities in the state colleges of education. The availability of teaching and learning facilities in the colleges of education is a stepping stone towards the realization of virile teacher training programmes. According to Akinpelu (2006) availability of teaching facilities is the provision of materials and facilities required to improve teaching and learning. It should be noted that the availability of media during the teaching and learning process could bring excitement and add confidence to both the trainees and the teacher when effectively utilized to facilitate effective understanding.

The teaching facilities need to be adequate to produce desired result. For teaching and learning facilities to be adequate according to the NCCE (2020) provision they should be in a ratio of one facility to twenty five students (1:50). Adequate instructional materials according to Bolaji (2004), entails the capacity of such instructional facility to cover the entire instructional process effectively. The adequate provision of instructional facilities more especially in the colleges of education where large group instruction is prevalent becomes necessary in order to cope with the increasing challenges of instruction.

It must be noted that the provision of adequate teaching facilities alone cannot bring about good teacher training. The appropriate use of these facilities in teaching is also very important. This is possible if the facilities are in good conditions. The maintenance of the existing teaching facilities at the various CETs of the colleges is necessary to keep the facilities in good working condition. The Association for Educational Communication and Technology AECT (1999) defined media maintenance as the sporadic inspection of teaching and learning facilities to determine their level of performance. Lack of effective maintenance culture of the CET facilities may largely affect the utilization of these facilities for the training of NCE teachers.

Media application is determined by the mental capacity of an individual to participate in physical activity with the requisite competence (Wikimedia, 2010). Competence can be viewed as a standardized requirement for an individual to properly perform specific job. Competence also encompasses a wide range of knowledge, skills and behaviour to improve performance (Akinpelu, 2006). Nwankwo (2002) also viewed competence as the maximum use of human expertise appropriately to create an enabling environment for the practice of acquired skills. The extent CET lecturers and supportive staff possess the required competence to use the CET teaching facilities are yet to be ascertained.

Therefore, effective supervision and regular evaluation of the CETs at the various colleges have become imperative in order to enhance their productivity. Evaluation, according to Akubue (1991), is an appraisal of a fully developed programme in order to find out the effectiveness of the programme in terms of achieving the stipulated educational objectives and thereby arrive at decision on how to improve the programme if found wanting. In other words, it could be appraising or determining the extent to which CETs are succeeding in achieving their goals of professional teacher development. Evaluation depends on the purpose for which it is intended. In this work, evaluation is used in relation to programmes. Okoro (1993) defined programme evaluation as the appraisal of a whole programme to determine the extent to which it is servicing the purpose for which it was established.

The CET in each College of Education houses two courses, namely: micro-teaching and educational technology. Micro-teaching is a compressed teaching situation in terms of class size, duration, content and the skills to be acquired and practiced (Abimbade, 1997). It exposes the student teachers to the basic pedagogical knowledge capable of providing the trainees with appropriate level of competence needed in the classroom as a teacher. Abifarin (2004) described micro-teaching as a laboratory procedure which is aimed at simplifying the complexities of regular teaching-learning processes. It is a process that has been used to raise the level of teacher's competencies under controlled laboratory settings where frequent practice sessions and evaluation are easily effected. The extent to which micro teaching exercise is carried out by the CET to provide the required skills to trainee teachers has not been determined.

Educational technology is a field that is involved in the facilitation of human learning through the systematic identification, organization, development and utilization of learning resources and through the management of these processes (AECT, 1972). In other words, educational technology is all encompassing in terms of design, development, utilization, selection and improvisation of media for teaching and learning. Educational technology is an interdisciplinary course that provides solutions to teaching and learning problems in the classroom. At the NCE level, the course exposes the trainee-teachers to the basic skills of media design, development, use and evaluation.

The extent the CETs handle micro teaching and educational technology courses to provide the trainee-teachers these skills need to be determined. This has become necessary because of poor performance of students in teaching practice. Therefore, there is the need to evaluate the CETs to determine the quality of the services they provide in federal and state Colleges of Education.

### **Statement of the Problem**

The establishment of a well-equipped CET is a requirement for the accreditation of Colleges of Education by the NCCE. The CETs are responsible for training student-teachers in the design, production, and utilization of media as well as in the acquisition of teaching skills. Experience has shown that many pre-service teachers as well as in-service teachers do not teach well due to lack of the skills of teaching and that of media production and application. This may have to do with the capacity of the CETs to achieve

their goals. The problem of this study therefore, is the evaluation of centres for educational technology in colleges of education in the North-east zone of Nigeria.

**Objectives of the Study:** The major purpose of this study is to evaluate the CETs in NCE awarding institutions in the north-east zone of Nigeria. Specifically the study sought to:

- 1- Determine the availability of teaching facilities in the CETs.
- 2- Ascertain how functional the available teaching facilities are.
- 3- Determine the adequacy of the facilities.
- 4- Determine the extent of use of the facilities.
- 5- Find out the level of maintenance of the facilities.
- 6- Ascertain how competent the Lecturers and Supportive Staff are in the utilization of the facilities.
- 7- Examine the implementation of Educational Technology course.
- 8- Examine the implementation of Micro Teaching course.

**Research Questions:** The study was guided by the following research questions:

1. What facilities are available in the CETs of the Colleges of Education?
2. To what extent are the teaching facilities functional?
3. How adequate are the facilities in the CETs?
4. What is the extent of use of the available teaching facilities?
5. How frequent are the teaching facilities maintained?
6. What is the level of competence possessed by the CET personnel in the use of the facilities?
7. How do the CETs implement the educational technology course?
8. How do the CETs implement the micro teaching course?

**Hypotheses:** The following null hypotheses ( $H_0$ ) were tested at 0.05 level of significance:

**$H_{01}$**  – Significant difference does not exist in the mean ratings on the adequacy of teaching facilities in the federal and state colleges of education.

**$H_{02}$**  – Significant difference does not exist in the mean ratings on the extent of use of the facilities in the federal and state colleges of education

**$H_{03}$**  – There is no significant difference in the mean ratings on the maintenance of the teaching facilities in the state and federal colleges of education.

**$H_{04}$**  – There is no significant difference in the mean ratings on the competence possessed by CET staff in the operation of equipment in the federal and state colleges of education.

### **Significance of the Study**

The following will benefit from the findings of the study. They include: Curriculum planners like the NCCE, donor agencies, colleges of education, and researchers. The study will go a long way in providing the NCCE with information for improving the curricula content of the courses serviced by the CETs for effective teacher training. It will also help the NCCE in reviewing its accreditation guidelines for NCE programmes in the colleges. The colleges of education benefit from intervention programmes by donor agencies like the Petroleum Development Trust Fund (PTDF) and Education Tax Fund (ETF). Therefore, the findings of this study will assist the PTDF and ETF to see the areas they can come in to upgrade the facilities of the centres in the colleges of education and also provide some capacity building workshops to enhance the performance of personnel in the centres.

The study will also provide the colleges of education in the study area information with which to address the grey areas reflected in this study to improve the training they provide to NCE teachers in micro teaching and educational technology. This study will also provide the necessary framework for researchers on how to conduct research that relate to the evaluation of teacher training programmes in the colleges of education.

**Scope of the Study:** The study was conducted in ten (10) state and federal Colleges of Education in the north-east zone of Nigeria. The study determined availability of facilities, use of such facilities in the training of NCE teachers by CET personnel, adequacy of the facilities, the level of competence possessed

by CET personnel in the use of the facilities, level of maintenance of teaching facilities, as well as the implementation of micro teaching and Educational Technology courses.

### **Literature Review**

A detailed literature review was done that covered theoretical and conceptual frameworks using different evaluation theories and concepts like Payne (1969) evaluation taxonomy, Wikimedia (2008) evaluation taxonomy, Rossi and Freeman (1993) evaluation model and Stufflebeam's (1972) CIPP evaluation model. The study was anchored to Stufflebeam's CIPP evaluation model. Therefore, the model to be adopted depends on what is to be evaluated. Evaluation models can be used to define the parameters of an evaluation, what concepts to study, and the processes or methods needed to extract critical data (Keachie, 1994). This study adopted the Input-Process-Effectiveness evaluation (IPE) within the CIPP evaluation framework. Input evaluation assessed the teaching facilities available and the extent they can sufficiently be used to meet the needs of the trainees based on the NCCE minimum standard. Process evaluation assessed the implementation of the programmes, in terms of the actual teaching-learning process and the use of media at the CETs. Effectiveness evaluation assessed what the beneficiaries of the NCE programme which were NCE III final year students got from the programme or services provided by the CETs. Both qualitative and quantitative data were collected.

### **METHODOLOGY**

**Design of the Study:** The study adopted an evaluation research design. This is the systematic collection of information about the activities, characteristics, and outcomes of programmes to make judgments about the programme, improve programme effectiveness, and/or take decisions about future programming (Patton, 1997). Consequently, its main purpose is to help an organisation reflect on what it is trying to achieve, assessing how far it is succeeding, and identify required changes.

This design was found suitable for the study because it provided information on the input, process and effectiveness of the centres for educational technology in colleges of education in the northeast zone of Nigeria.

**Area of the Study:** The study was conducted in the northeast zone of Nigeria covering Gombe, Bauchi, Yobe, Adamawa, Taraba and Borno States. All the ten (10) state and federal Colleges of Education were involved in the study. The quality of the training the NCE teachers in these colleges received is in doubt when you observe them perform in the schools. This necessitated a study on the evaluation of the CETs.

**Population of the Study:** The target population of the study was all the ten (10) Centres for Educational Technology in the ten (10) colleges of education in the North-east zone. Also involved were all the ten (10) Coordinators, thirty (30) lecturers and nineteen (19) supportive staff in these Centres totaling fifty nine (59) respondents. A total of four thousand nine hundred and fifty thousand (4,950) NCE II students also constitute the population.

**Sample and Sampling Technique:** All the ten (10) Colleges of education as well as all the ten (10) Coordinators, thirty (30) lecturers and nineteen (19) supportive staff were used for the study. Only twenty (20) students from each college were drawn using simple random sampling technique for focus-group-discussion. Therefore, a total number of fifty nine (59) personnel and two hundred (200) students constituted the respondents.

#### **Instruments for Data Collection**

The following instruments were used to gather data for the study:

- a. Checklist (Appendix A)
- b. Questionnaires (Appendix B)
- c. Observation schedule (Appendix C)
- d. Focus-Group-Discussion Guide (Appendix D)

The Checklist (CHRESA) contained fifty six (56) items soliciting for information on availability of teaching facilities in the CETs of the Colleges to be completed by the researcher or his trained research

assistant. It has sections 'A' and 'B'. The researcher will indicate with a tick the availability or otherwise of each of the items and the number available.

Two (2) sets of structured questionnaires were used; the first set of questionnaire for coordinators (QCFUMC) contained seventy (70) items. It has 4 sections 'A', 'B', 'C' and 'D' on demographic information, functionality and use, maintenance and competence respectively. The second set of questionnaire is to be responded by the lecturers and supportive staff (QLECSUPC) of the CETs. It contained seventy three (73) items and three (3) sections, namely: 'A' - on demographic information, 'B' on adequacy and 'C' on competence.

A thirteen -item Observation Schedule (OBSC) to be filled by the researcher or his trained assistant during educational technology instruction by jotting down observable traits during the teaching exercises was used.

A Focus-Group-Discussion-Guide (FGDG) with two (2) sections, namely 'A' on general information and 'B' containing 12 items on micro teaching and educational technology was developed. It was used by the researcher and his assistant to interact with 20 final year trainee-teachers during teaching practice exercise in their various schools.

**Validation of the Instruments:** The instruments used for the study namely: questionnaire, checklist, observation schedule and focus-group-discussion-guide were sent to three experts to determine their validity.

Two of the experts drawn are Educational Technologists from the Department of Arts Education of the University of Nigeria Nsukka, while one expert was drawn from the department of science education all in the faculty of education university of Nigeria, Nsukka. The three instruments were subjected to face validation by these experts where the clarity, appropriateness and the relevance of these instruments were critically examined in relation to the problem under study. Their suggestions were used to modify the instruments. (See appendix E)

**Reliability of the Instruments:** The questionnaires were trial-tested using two colleges of education, one in the South-East and the other from the North-Central with a view to establishing the reliability of the instrument. The reliability of the instrument was determined through Cronbach Alpha reliability procedure. The choice of this method was necessitated by the fact that coefficient Alpha can be employed generally without regard to the nature of the scoring method used (Frisbe, 1988).

The questionnaire for coordinators showed reliability coefficient of 0.89, 0.90 and 0.88 for sections 'B', 'C' and 'D' respectively. The overall reliability coefficients of the questionnaire for coordinators stood at 0.89. The questionnaire for lecturers and supportive staff showed reliability coefficients of 0.92 and 0.94 for sections 'A' and 'B' respectively. The overall reliability co-efficient of the questionnaire for lecturers and supportive staff stood at 0.93.

**Method of Data Collection:** The instruments were administered to all coordinators, lecturers and supportive staff in all the centres for educational technology in the study area by the researcher and his assistants. The checklist was used by the researcher or his assistants to determine on the spot the available resources and their numbers. The two (2) sets of questionnaires were supported by introduction letters to facilitate effective response by the respondents. The focus-group-discussion guide was used to interact with twenty (20) students in each of the colleges.

**Method of Data Analysis:** The researcher used frequency counts and percentages to answer research questions 1 and 2, while mean ( $\bar{x}$ ) and standard deviation were used to answer research questions 3 to 9. With regard to the hypotheses, t-test was used to test the hypotheses at 0.05 level of significance.

On research question 1, any item whose percentage score is below 50% is considered not available while research question 3 and hypothesis 1 on adequacy; items with scores between or 0.50 – 1.49 are not adequate and items between 1.50 – 2.49 are less adequate while 2.50 – 3.49 – adequate and 3.50 - 4.00 are very adequate. On research question 4 and hypothesis 2 on use of CET facilities, any item whose mean score ranges between 0.50-1.49 - not at all, 1.50 - 2.49 is seldom used and 2.50 - 3.49 is frequently used while 3.50 – 4.00 is very frequently used. On research questions 7 and 8 on how micro teaching and educational technology courses are being taught, 50% and below are considered not well taught while

above 50% are considered well taught. The computation of the data was done using Statistical Package for Social Sciences (SPSS).

## RESULTS AND MAJOR FINDINGS OF THE STUDY

The results of t-test on hypothesis one, revealed that there were significant differences in the mean ratings on adequacy of facilities in the state and federal colleges (cal.  $t = -1.50$ ,  $P < .14$ ) and also for accommodation (cal  $t = 2.39$ ,  $P < .02$ ) and software (cal.  $t = -2.38$ ,  $P < .02$ ). These differences were in favour of state colleges. Results of t-test for hypothesis two on use of CET facilities, showed that  $t = -2.39$ ,  $p < .04$ . This indicated that the null hypothesis was rejected. There was significant difference in the mean ratings on use of facilities by state and federal colleges, in favour of state colleges. Also, for hypothesis three on maintenance of CET facilities, the calculated  $t = -.88$ ,  $P < .40$ . The null hypothesis is not rejected. There was no significant difference in the mean ratings on maintenance of CET facilities by the state and federal colleges of education. Result of t-test on hypothesis four on competence possessed by CET staff in the operation of equipment, the calculated  $t = .03$ ,  $P < .98$ . The null hypothesis was not rejected. Therefore, significant difference did not exist in the mean ratings on competence possessed by CET staff on the operation of equipment in federal and state colleges of education.

The results of data analysis on research question 1 and 2 indicated that facilities were available and functional in majority of the colleges of education while the results on research question 7 revealed that most of the concepts in educational technology were well taught. Results on research question 8 revealed that micro teaching skills were well practiced by trainee teachers.

One major implication of the study was lack of closed circuit television in most of the CETs which might have led to poor organization of micro teaching in the colleges. The major recommendation of the study was that Educational Technologists should be recruited as coordinators of CETs to be able to appropriately manage the CETs as contained in the NCCE minimum standard. A ratio of one facility/personnel to 25 students which was recommended in the NCCE minimum standard was not realistic in all the colleges in the study area based on the findings of this study.

## CONCLUSION

The conclusions of this study based on the findings obtained are as follows:

1. Majority of the CETs in the colleges of the study area have facilities for teaching and learning.
2. Only a negligible number of available facilities are not functional; but majority of the facilities in most of the colleges are functional.
3. The facilities for the training of teachers are not adequate in majority of the colleges. However, state colleges appear to have more adequate facilities than the federal colleges based on the respondents' ratings.
4. Results of finding on research question 4 and hypothesis 2 revealed that State and federal colleges maintained uniform level of use of CET facilities.
5. Findings on research question 5 and hypothesis 3 indicated that no significant difference existed on the level of maintenance of CET facilities by state and federal colleges of education.
6. Results on research question 6 and hypothesis 4 showed that the competence possessed by CET staff in the operation of equipment in the state and federal colleges was high and comparable.
7. A ratio of one facility/personnel to 25 students was recommended in the NCCE minimum standard; this is not realistic now in all the colleges in the study area based on the findings of this study.

## RECOMMENDATIONS

Based on the findings and implications of this study, the following recommendations were made:

- 1- State and federal colleges of education should recruit more trained personnel and acquire more functional facilities to be able to produce competent teachers.

- 2- Educational Technologists should be recruited as coordinators of CETs to be able to appropriately manage the CETs as contained in the NCCE minimum standard.
- 3- Closed circuit Television should be acquired for all the CETs for effective micro teaching exercise, as the first equipment requirement in the NCCE minimum standard.
- 4- The time allotted for micro teaching practicum is grossly inadequate, the minimum standard should be reviewed to provide more time for the acquisition of knowledge and skills by trainee-teachers.

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