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# Study On Capacity Gaps Between The Federal And State Colleges Of Education In (NCE) Biology Curriculum Delivery In North-Central, Nigeria

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***Abstract:***
***Background:****The research investigated the availability and status of some human and material resources in Biology departments of four Federal Colleges of Education and four State Colleges of Education in the North-Central geographic zone of Nigeria, in order to determine the likely institutional capacity gaps between the two different categories of the colleges in respect to resources.*
***Materials and Method:*** *The research dwelt on field survey, and utilized participatory techniques and tools, questionnaire, inventories, checklist to elicit information. T-test was used to analyse the data collected.*
***Result:*** *The result was subjected to t-test statistical analysis and it revealed that, with the exception of student's enrollment in which a significant ($p>0.05$) difference occurred, all other parameters did not differ significantly ($p<0.05$) between the two categories of Colleges of Education.*
***Conclusion:*** *Arguably the research posits that the student's enrollment in the Biology departments of the colleges presently constitute a critical institutional capacity gap between the federal and state Colleges of Education under the study and likely to have a negative impact on the attainment of common NCE graduates quality production by the separate categories of the NCE graduates producing institutions. The paper therefore recommends the need for student's enrollment control by National Commission for Colleges of Education (NCCE), Joint Admission and Matriculation Board (JAMB) and other relevant stakeholders in the country.*
***Keywords:*** *Capacity gaps, Federal, State, College of Education, North-Central Nigeria*

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## I. Introduction

Primary education is the foundation of all the formal education, and its failure can only spell doom for other educational levels in any nation (Baikie, 2002). This has been affirmed in the Nigerian National Policy of Education (NPE, 2004), in the following statement that "since the rest of the education system is built upon it, the primary education level is the key to the success or failure of the whole system".

At present the Nigeria Certificate in Education (NCE) has been officially accepted and recognized in Nigeria as the minimum teaching qualification for primary school system, under the current 6-3-3-4 educational system. Obviously, the benefits of quality education to the overall well-being of the entire education system, and the importance of quality education for the NCE graduate teachers is widely accepted in the Nigerian education system today (Sarki, 2013). Impliedly, the Nigerian Colleges of Education (both the Federal and State Colleges of Education), are involved in laying the foundation at the primary school level in the country. This is because it is what the teacher is made up of that he/she transmits to the pupils. In other words, the quality of the instruction in the College of Education goes a long way in determining the standard and quality of its graduates, who teach at the primary, junior secondary or basic education schools in the country.

The curriculum is the programme designed by the federal or state government to guide the teacher to achieve federal or state educational aim and objectives. The curriculum can be designed based on the needs and aspiration of the community. The good curriculum has the impression of having good and responsible future generation while the bad curriculum is just like breaking the back-borne of the future students and economy in general. Curricula must be provided in line with the necessary knowledge related to the issues or matters in order to have a better education (Culen, 2005). Never the less, the challenges of capacity development in the Colleges of Education, curriculum implementation of the Colleges of Education academic Programmes has continued to surge against the background of the poor performance of the graduates, from the Colleges (Onwuakpa and Akpan,1999).Indeed, both the Federal and State governments in the country have found it very difficult to provide both the human and material resources required in their schools and Colleges since 1976,

when the Universal Primary Education (UPE), was launched. The rapid growth of Schools and enrollment of Students in Schools, Colleges and Universities, which resulted from this, coupled with the depressed state of the nation's economy are among the reasons for government inability to provide adequate resources in schools at all levels of the education system. So, while education has grown quantitatively, the quality of education at all levels has consistently reduced over the years (Baikie, 2002).

Biology is one of the courses offered in combination with other courses (as teaching subject), in Nigerian Colleges of Education. Biology curriculum in the Colleges is designed to produce knowledgeable, highly motivated, effective teachers of biology, who will be able to develop or inculcate in students an appreciation and understanding of biological process and principles.

To achieve effective curriculum implementation of biology and other courses in the Colleges, the National Commission for Colleges of Education (NCCE) has stipulated the minimum resource capacity requirement for the Colleges in an effort to standardize their curriculum delivery practices and as well as to create access to common conducive teaching and learning environment for the Colleges. This has been done in the belief that the availability of these resources in the Colleges could be indicators of the quality of training and skills received by the NCE graduates. Consequently, periodic monitoring and accreditation exercises is undertaken in the Colleges, by the NCCE, towards ensuring the availability and adequacy of both the human and material resources, to enhance the quality of the NCE teacher, graduate production, as well as to achieve equal competence for the graduates from the Colleges to teach their subjects efficiently.

The Nigerian National policy on Education (NPE,1998) asserts that "no educational system can rise above the quality of its teachers". But in Nigeria today the teaching profession is suffering from total neglect, as not only are the objectives of teacher education not been fulfilled in any form, but the system has negated the assertion quoted above (Baike, 2002). Today the generality of the Nigerian populace seems to believe that the standard and quality of education in the country's public schools has fallen below expectation. Therefore, the current trend of discourse in the educational development is on how to improve the standard of education, through provision of quality teacher education, especially for the primary and junior secondary schools, which are the foundation of the educational system in the country and also referred to as the basic education level.

Beeby (1968) suggested that the quality of an educational system can be judged at three levels. He referred to the first level as the classroom conception of quality. This is the stage which skills can be measured. The second stage is where the quality of education is measured by productivity. The third and final stage is the stage at which quality is judged by broader social criteria.

It is believed that the quality of education should be measured by achievements at each of these levels identified by Beeby above. The first has to do with quality of instruction obtainable in the educational system, the second level deals with the relevance of the education to developmental needs, and the third level deals with the philosophical bases of the educational system. However, the immediate importance to education stake holders is to identify and assess the extent to which both the federal and State Colleges of Education are prepared to minimally attain a certain degree of quality in the NCE, teacher training using Beeby's first level criteria (i.e., using quality of instruction obtainable within the system) as a guideline.

Accordingly, this research reviewed the following components of quality assurances in the College of Education under study,

- The physical structure related gap(s)
- The lecturer related gap(s)
- The classroom environment related gap(s)
- The instructional materials related gap(s)
- Student teacher related gap(s)

Abdullahi (2005) and Ahmad et. al. (2019) posited that there is a positive relationship between teachers' qualifications and students' achievement. The more professionally qualified a teacher in a given school is, the better the performance of the students and the less difficulty the teacher has with curriculum materials.This means that the teacher plays a pivotal role in the delivery of the school curriculum.

**Statement of the Problem/Justification:**

Although the Nigeria Certificate in Education (NCE), Curriculum for primary and junior secondary teacher's production appears laudable, the fact still remains that successful implementation of an education program is to a large extent contingent on the availability of the right caliber of human and material resources. The financial capacity of the Federal and States to provide the necessary resources for their respective Colleges of Education differs and might create certain gaps in the curriculum implementation between them. The justification of this work is the need for quality teacher production of common competence for quality primary and junior secondary school education in the country.

**Objectives of the Study:**

- Identify and assess the adequacy or otherwise of human, material and physical resources in both the Federal and state Colleges of Education for effective biology instruction.
- Compare the human, material, and physical resources in both the Federal and State colleges of Education.
- To Collect and analyze information on the supply and availability of both the human and material resources in the Colleges.
- To analyze the human, material and financial capacities of the Colleges.
- To take record of the curriculum materials in the delivery of the approved NCE biology curriculum by NCCE.
- To identify and asses the gaps existing between the Federal and State colleges of Education in terms of their capacity for effective Biology curriculum delivery.

**Hypothesis/Research Questions Formulated**

To guide this research, the following hypothesis were formulated.

1. H0: There is no significant difference in the capacity of Federal and state colleges of Education to deliver the NCE (Biology), Biology curriculum in North-Central Nigeria.

H1: There is a significant difference in the capacity of Federal and state colleges of Education to deliver the NCE (Biology) curriculum in North-Central Nigeria.

2. H0: Federal colleges of Education have the same level of infrastructure as state colleges of Education to support NCE (Biology) curriculum delivery.

H1: Federal colleges of Education have better infrastructure than state colleges of Education to support NCE (Biology) curriculum delivery.

2. H0: There is no significant difference in the qualification and experience of lecturer's teaching NCE (Biology) in Federal and State colleges of Education.

H1: Lecturers teaching NCE (Biology) in Federal colleges of Education are more qualified and experienced than those in state colleges of Education.

3. H0: Federal and state colleges of Education have the same level of access to resources (e.g. textbooks, Laboratory equipment) for NCE (Biology) curriculum delivery.

H1: Federal and state colleges of Education have better access to resources than state colleges of Education for NCE (Biology), curriculum delivery.

5. H0: There is no significant difference in the perceived quality of NCE (Biology) graduates from Federal and state colleges of Education.

**Area of Study:**

The areas of study are Federal and State colleges of Education located in North-Central Nigeria (see Table1). It comprises of four (4) Federal and four (4), State colleges of Education. The Federal colleges of Education are those of Kontagora, Pankshin, Okene and Zuba, while those of State are, Minna, Gindiri Akwanga, and Ankpa .

**Table 1:** Showing Federal and State Colleges of Education in North-central Nigeria

| S/N | States | Federal Colleges of Education | State colleges of Education |
|---|---|---|---|
| 1 | Kwara | - | Ilorin, Lafiagi |
| 2 | Niger | **Kontagora** | **Minna** |
| 3 | Plateau | **Pankshin** | **Gindiri** |
| 4 | Benue | - | Katsina Ala, Oju |
| 5 | Nassarawa | - | **Akwanga** |
| 6 | Kogi | **Okene** | **Ankpa** |
| 7 | FCT | **Zuba** | - |

**Population of Study:**

The Population of the study are academic staff of Biology Departments of the Federal and State colleges of Education as listed in Table 1.

**Population Sample:**

The Population sample is five (5) academic staff of Department of Biology from each of the eight (8) Federal and State Colleges of Education in North-Central Nigeria, thereby making the total sample size to be forty (40).

## II. Methodology/Instrumentation

The study employed participatory approaches, while working with the selected Federal and State Colleges of Education. The research dwelt on **field survey**, and utilized participatory techniques and tools, **questionnaire, inventories, checklist** to elicit information.Table 2, below shows the main minimum standard gaps analytical indicators.

**Table 2:** Showing Biology NCE Minimum Standard Gaps Analytical Indicators

| CAPACITY ASPECTS | KEY INDICATORS | MAIN DATA SOURCING INSTRUMENT/PROCEDURE | IDENTIFIABLE GAP LEVEL |
|---|---|---|---|
| 1.Infrastructure. | - Central Lecture(s)<br>- Lecture rooms<br>- Resource rooms<br>- Practicum<br>- Faculties<br>- Departmental offices<br>- Academic staff offices<br>- Technical staff offices<br>- Support staff offices | Questionnaire | -Number available for use<br>-Number exclusively dedicated to Biology<br>-Availability of faculties<br>-Adequacy of faculties utilization |
| 2.Techniques and learning facilities | Books, Journals, manuals<br>-Computers<br>-ICT facilities<br>-source of electrical power | Questionnaire | - Adequacy<br>- Quality<br>- Currency |
| 3. Staffing. | -Academic<br>-Technical<br>-Support | Questionnaire | -Adequacy<br>-Quantity<br>-General Qualification<br>-Teaching experience<br>-Motivation and top<br>-Access/funding<br>-Personal/family<br>-Existence of mentoring system |
| 4. Teacher development | -Type of program<br>-Duration<br>-Mode of classification | Questionnaire | -Adequacy<br>-Quality<br>-funding |
| 5. Inter-intra institutional linkages | -internal linkage<br>-external linkage<br>-outreach | Questionnaire | -Linkage type<br>-outreach type<br>-Value of linkage/outreaches |
| 6.Departmental resources. | -funding<br>-support/donation<br>-grant<br>-source of support | Questionnaire | -Adequacy of funds<br>-Donation/grants Endowment<br>-Budgetary provision/impress |
| 7.Students. | -Qualifications<br>-Characteristics<br>-Moral/and job satisfaction<br>-occupational prestige and status | Questionnaire | -adequacy<br>-Number of students<br>-quality of students Commitment and motivation<br>-Levels of challenges<br>-existence of mentoring systems<br>-Quality of source of support. |

## III. Result And Analysis

**Table 3:** Status of Biological Gardens

**Table 3a:** Federal colleges of Education

| S/N0 | Institutions | Available within the college | Not available within the college | Shared with other institutions | Not owned by the institution |
|---|---|---|---|---|---|
| 1 | kontagora | 5 | - | - | - |
| 2 | Pankshin | 5 | - | - | - |
| 3 | Okene | 5 | - | - | - |
| 4 | Zuba | 5 | | - | - |
| | Total | 20 | - | | - |
| | % | 100 | 00 | 00 | 00 |

**Table 3b:** State Colleges of Education

| S/N0 | Institutions | Available within the college | Not available within College | Shared with other institutions | Not owned by the institutions |
|---|---|---|---|---|---|
| 1 | Akwanga | 5 | - | - | - |
| 2 | Ankpa | 5 | - | - | - |
| 3 | Gindiri | 5 | - | - | - |
| 4 | Minna | 3 | - | - | 02 |
| | Total | 18 | - | - | 02 |
| | % | 90 | 00 | 00 | 10 |

Table 3a and 3b above reveals that 100% and 90% of the Federal and State Colleges of education have their Biological gardens located within the College premises respectively. The t-test revealed no significant difference ($p<0.05$) in respect of the availability of biological garden within the vicinity of the colleges between sampled federal and State colleges.

**Table 4:** Departmental Academic Offices

**Table 4a:** Federal colleges of Education

| S/N0 | Institutions | Available within vicinity of the department | Available at different locations in the College | Common staff room | Not available at all |
|---|---|---|---|---|---|
| 1 | Kontagora | 2 | 2 | - | 01 |
| 2 | Pankshin | 2 | 3 | - | - |
| 3 | Okene | 1 | 4 | - | - |
| 4 | Zuba | 5 | - | - | |
| | Total | 10 | 09 | - | - |
| | % | 50 | 45 | 00 | 05 |

**Table 4b:** State Colleges of Education

| S/N0 | Institutions | Available within vicinity of the department | Available at different locations in the College | Common staff room | Not available at all |
|---|---|---|---|---|---|
| 1 | Akwanga | 04 | 01 | - | - |
| 2 | Ankpa | 01 | 04 | - | - |
| 3 | Gindiri | 05 | - | - | - |
| 4 | Minna | 00 | - | - | |
| | Total | 10 | 05 | - | - |
| | % | 50 | 50 | 00 | 05 |

Tables 4a and 4b above reveals that the sampled Federal and State colleges of Education both have their departmental academic offices located within the vicinity in the colleges. The t-test shows no significant difference ($p<0.05$) in the location of the academic staff offices between the sampled Colleges.

**Table 5:** Status of the office classes and lecture Halls

**Table 5a:** Federal colleges of education

| S/N0 | Institutions | Available to Department of Biology only | Available but shared | Not available |
|---|---|---|---|---|
| 1 | kontagora | - | 5 | - |
| 2 | Pankshin | - | 5 | - |
| 3 | Okene | - | 5 | - |
| 4 | Zuba | 05 | - | |
| Total | Total | 05 | 15 | 00 |
| | % | 25 | 75 | 00 |

**Table 5b:** State Colleges of Education

| S/N0 | Institutions | Available to Department of Biology only | Available but shared | Not available |
|---|---|---|---|---|
| 1 | Akwanga | - | 5 | - |
| 2 | Ankpa | 02 | 3 | - |
| 3 | Gindiri | 01 | 4 | - |
| 4 | Minna | - | 05 | - |
| Total | Total | 03 | 17 | - |
| | % | 15 | 85 | 00 |

Tables 5a and 5b above reveals that Biology departments of both sampled Federal and State colleges have classes and lecture halls available and shared as well, and the t-test shows no significant difference($p<0.05$) between the colleges in respect of classes and lecture halls.

**Table 6:** Departmental staff strength

**Table 6a:** Federal Colleges of Education

| S/N0 | Institutions | Academic Staff | Non Academic staff |
|---|---|---|---|
| 1 | Kontagora | 8 | 3 |
| 2 | Pankshin | 21 | 5 |
| 3 | Okene | 19 | 3 |
| 4 | Zuba | 10 | 4 |
| | Total | 58 | 15 |
| | % | 74.45 | 20.55 |

**Table 6b:** State Colleges of Education

| S/N0 | Institutions | Academic Staff | Non Academic staff |
|---|---|---|---|
| 1 | Akwanga | 25 | 4 |
| 2 | Ankpa | 15 | 6 |
| 3 | Gindiri | 09 | 1 |
| 4 | Minna | 18 | 2 |
| | Total | 67 | 13 |
| | % | 83.75 | 16.25 |

Tables 6a and 6b above shows that the sampled federal colleges have a total of fifty-eight (58) academic staff, while the States have sixty-seven (67) respectively. The t-test analysis reveals that there is no significant difference in academic staff strength ($p<0.05$).

**Table 7:** Academic Staff Qualifications

**Table 7a:** Federal Colleges of Education

| S/N | Institutions | Nos of first degree | Nos of second degree | Nos with M.ED | Nos with M.sc | Nos with Ph.D | Nos with NCE | Nos with PGDE | Nos with PDE | Nos with other qualifications |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Kontagora | 09 | 08 | 01 | 04 | 03 | 05 | 03 | - | - |
| 2 | Pankshin | 03 | 18 | 08 | 01 | 09 | - | 08 | - | 09 |
| 3 | Okene | 19 | 15 | - | 14 | 01 | 19 | 01 | - | 14 |
| 4 | Zuba | 10 | 07 | 04 | 04 | 02 | 05 | 02 | - | 07 |
| | Total | 41 | 48 | 13 | 23 | 15 | 29 | 14 | - | 30 |

**Table 7b:** State Colleges of Education

| S/N | Institutions | Nos of first degree | Nos of second degree | Nos with M.ED | Nos with M.sc | Nos with Ph.D | Nos with NCE | Nos with PGDE | Nos with PDE | Nos with other qualifications |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Akwanga | 18 | 07 | 01 | 04 | 01 | 06 | 05 | 02 | 11 |
| 2 | Ankpa | 04 | 04 | 01 | 09 | 01 | 05 | 04 | 03 | 05 |
| 3 | Gindiri | 05 | 12 | 03 | 03 | 02 | 06 | 03 | - | 06 |
| 4 | Minna | 03 | 34 | 01 | 06 | 05 | 05 | 06 | 07 | - |
| | Total | 30 | 48 | 06 | 22 | 09 | 22 | 18 | 12 | 22 |

Tables 7a and 7b above shows number of academic staff with first degree are forty-one (41), while those with second degree and above are forty eighth (48) in the sampled Federal colleges of Education, while table 10b shows that the number of academic staff with first and second degree are thirty (30), respectively. The t-test analysis was not significant ($p<0.05$).

**Table 8:** Student's enrollment in the Department 2023/2024 Session

**Table 8a:** Federal Colleges of Education

| S/N0 | Institutions | 100L | 200L | 300L | Total |
|---|---|---|---|---|---|
| 1 | kontagora | 100 | 150 | 240 | 490 |
| 2 | Pankshin | 137 | 196 | 282 | 615 |
| 3 | Okene | 80 | 125 | 178 | 383 |
| 4 | Zuba | 140 | 178 | 180 | 498 |
| | Grand Total | | | | 1,986 |

**Table 8b:** State Colleges of Education

| S/N0 | Institutions | 100L | 200L | 300L | Total |
|---|---|---|---|---|---|
| 1 | Akwanga | 2,485 | 3,080 | 3,863 | 9,428 |
| 2 | Ankpa | 27 | 53 | 90 | 170 |
| 3 | Gindiri | 61 | 174 | 167 | 402 |
| 4 | Minna | 283 | 381 | 369 | 1,033 |
| | Grand Total | | | | 11,033 |

Tables 8a and 8b above shows that the grand total of student's enrollment in the sampled Federal and State colleges of Education into biology department in 2023/2024 academic session is 1,986 and 11,033 respectively and none of the Colleges has less than one hundred students per level in all the sampled colleges. The t-test analysis shows a significant difference ($p>0.05$) in student's enrollment between the Federal and State Colleges Education.

## IV. Discussion

The result of the research indicates that both the Federal and State Colleges of Education sampled met the Biology NCE minimum standard curriculum requirement in respect of the Head of department office, availability and status of support staff offices, academic staff offices, number of academic staff and their qualification, availability of biological garden, classes and lecture; and that no significant difference ($p<0.05$) exists in their availability and status between the two categories of the sampled colleges of education. Arguably the two categories of the sampled colleges possess common instructional leverages in respect of the instructional resource factors investigated for achieving the common or uniform quality standard of the NCE minimum standard in the country. This is because instructional resource input is known to be an integral variable for enhancing quality delivery in the education system at all levels (Madeuwesi, 2005 and Mkpa 2007).

The result also reveals that none of the colleges sampled have been able to strictly comply with the National Education policy of 1:40 ratio of teacher-students in classrooms. The situation will likely not allow for proper lecturers-student interaction and may result in the overall effect of not allowing quality teaching and learning to take place, and thereby making the production of desirable quality NCE graduates not impressive (Sarki, 2013).

## V. Recommendations

**1.** There is the need for student's enrollment control by NCCE, JAMB and other relevant stakeholders in the country.

**2.** Governments, especially at state level should step up on the funding of their colleges to mitigate against the uncontrolled student enrolment for fund generation purposes without adequate resources to match the enrolment.

**3.** Provision of adequate human and infrastructural resources should continue to be given adequate attention to achieve the goal of churning out well trained teachers.

**4.** NCCE as a regulatory body should make accreditation exercise more strict to ensure that human and infrastructure needs are met.

## VI. Summary/Conclusion

No matter how available or sufficient the human and material resources may be available in the colleges of education under study and indeed in any other educational institution in the world, an overpopulated class and excess work loaded lecturer will obviously find the marking of many scripts cumbersome and become ineffective in assessing students' performance.Therefore, with the existing alarming rate of class size of hundreds or more students in the biology departments of the colleges, especially state owned colleges of education, no matter how zealous a lecturer attempts to meet up with regular testing, he cannot be thorough as required especially in giving feedback and corrective instructions to the large numbers of the students in the class.

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