# THE CHALLENGES OF TEACHER EDUCATION IN THE 21ST CENTURY IN NIGERIA

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# PREPARATION AND AVAILABILITY OF NCE MATHEMATICS TEACHERS IN THE NIGERIAN TEACHER EDUCATION

## BY

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*Abstract*

*The study was designed to examine the preparation and availability of mathematics teachers of the teacher education programme in the colleges of education of the southwestern part of Nigeria from 1990/21- 1999/2000. As an ex-post facto research study, three research questions were raised and three instruments developed, validated and used. These included Lecturer questionnaire (r=0. 72), Mathematics teachers 'questionnaire (r=0.76) and Inventor of Mathematics researches questionnaire. Sample included 165 final year mathematics students and 30 mathematics lecturers in six colleges of education in the southwestern part of Nigeria chosen via clustered sampling technique. The findings revealed that there were 3426 NCE Mathematics teachers produced for the period of 1990/91-99/2000. Moreover, 1121(32.70 %) Mathematics teachers had the credit pass in their over all Mathematics- grade and 2305(67.3 %,) had below. Furthermore, these figures were inadequate to meet the demand of the existing public primary schools. Also, resources for the preparation of these mathematics teachers were found to be grossly inadequate to meet challenge of teachers' preparation and availabilities in the 21st century. The implications of these findings were discussed and recommendations suggested.*

## Introduction

The National policy on education (1998) section 1 (4) describes education as an instrument for national development. According to Ballantyne (2004) education is the key social activity by which society reproduces the traditions and forms of life it considers desirable, and produces new traditions and forms' of life it considers preferable to realize its aspirations for humanity. Hence, the advancement in technology and improvement in socio-economic aspects of people's life are made possible through education and was this why countries of the world are classified as developed and developing on the basis of their development as dictated by the form of education a country embraces. Functional science education enables its recipients to transfer the skill acquire from the school not only to the industries but also to spheres of life. According to Mkpa (2001) effective science education equips the learners with the potentials and capabilities for self-actualization. But science education is possible if the qualities and quantities of Mathematics teachers are adequate to complement the focus of science education. According to Harbinson (1994) the wealth of a country is dependent upon more than its natural resources, and material capital, it is determined in significant degree by the knowledge, skills and motivation of its people. This

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assertion epitomizes the Japanese s stand on no mineral resources other own but well developed human resources and as such ranked second largest industrial country after the U.S.A. The Nigerian government recognizes the importance of teachers and that was why the establishment of various colleges of education since 1989 by decree 3 section 5 (d) and (c) to saddle with the production of qualitative teachers in all various field of human endeavors. No wonder the government of Federal Republic of Nigeria through education policy provision embraced the quota admission ratio of 60:40 in favour of science to humanities in the nation universities. It is however important to observe that though various universities and polytechnics were established to perform many functions in the nation education system the colleges of education was primarily established for mono-function of preparing and make available qualitative teachers for the primary and junior secondary schools in all fields among which is Mathematics, with specified guides as contained in the minimum standard guide (1990,1994,1996,1998)

## Nature of training in colleges of education

Colleges of education occupy unique position in the training of non graduate professional teachers in all fields of human endeavors: science, social sciences and Arts. .In practice the; trainees are expected to put into immediate use the knowledge and skills acquired during training. These non-professional graduate teachers are directly involved in raising the standard of the nation's education as they serve as inputs into the existing primary and junior secondary schools. Hence their training must therefore, be relevant to the immediate needs of the country. In doing so, the objective of the Nigerian Certificate in Education programme of Mathematics have been classified unto six broad areas for the products to attain after the completion of their programme. *These include*

i)    Discuss with confidence the historical development of mathematics as a discipline.
ii)   Solve Abstract problems using mathematical functions and formulae.
iii)  Motivate pupils' interest in mathematics by the use of approximate strategies, particularly at the primary and junior secondary schools,
iv)   Analyze relationships in quantitative terms
v)    Apply the computer to data processing, and
vi)   Demonstrate convincing enthusiasm and intellectual, ability for further studies in mathematics (NCCE, 1990).

In order to attain the. above-mentioned objectives at the colleges of education the human and non-human resources in mathematics were spelt-out in quantities and qualities. For the human resources the standard minimum guide required that there should be five-man personnel of mathematics education background with the minimum qualification of the second class upper division in mathematics education or second class lower in mathematics with an additional postgraduate diploma in education; and that maximum of ten hours workloads in a week for the lecturers in order to ensure qualitative preparation of teachers. Quantities of mathematic textbooks were stipulated to cover areas of mathematics in the

ratio of one student to ten books and staff students' ratio was pegged at 1:25 in the classroom. This standard minimum guide posited that qualitative teachers of mathematics should be produced for the primary and junior secondary levels of education, which uphold the nation self-reliance due to the pivotal role of mathematics.

Going by various years of WAEC examiners' reports and' Odubusnmis (2006) study on the dismal performance of students in secondary school subjects especially science and mathematics in particular, it is sad to observe that perennial dismal performance was prevalent in mathematics. The findings that might not be unconnected with series of problems of teaching and learning from the primary and junior secondary schools with prominent among the factors put forward for this poor performance was largely due to teacher's factors.

**Table 1: Students' academic performances in Mathematics from 1991-2004**

| Year | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|
| Entries | 294079 | 265491 | 291755 | 518118 | 262273 | 514342 | 616923 |
| Credit Pass (%) | 11.1 | 21.69 | 10.93 | 16.59 | 16.50 | 10.00 | 7.60 |
| Failure (%) | 88.9 | 78.317 | 89.07 | 83.5 | 83.5 | 90.00 | 92.4 |
| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| Entries | 756080 | 756080 | 643371 | NA | 1078961 | 939506 | 844525 |
| Credit Pass (%) | 11.5 | 18.25 | 32.81 | 36.55 | 31.56 | 36.91 | 34.52 |
| Failure (%) | 88.85 | 81.75 | 67.19 | 63.45 | 68.44 | 63.09 | 65.48 |

*Source: WAEC Annual Reports in Odubunmi (2006)*

Since colleges of education was primarily established for the production of non-graduate professional in all fields, mathematics inclusive, and based on. the accreditation of these colleges to have possessed the mandated resources the study was carried out to assess the preparation and availability of mathematics teachers of the teacher education programme in the colleges of education of the South Western part of Nigeria from 1990/91 - 1999/2000.

**Statement of the Problem**

The study was designed to examine the preparation and availability of mathematics teachers of the teacher education programme in the colleges of education of the southwestern pan of Nigeria from 1990/91 - 1999/2000. Specifically, the study sought answers to the following:

(a)    What are the numbers of NCE Mathematics teachers prepared and available from 1990/91 to 999/2000 m the affected colleges of education.

(b)    What are the percentages of the available professionally qualified NCE Mathematics teachers using the minimum of credit level at the end of the programme?

(c) What are the constraints in the preparation and availability of NCE Mathematics teachers?

## Methods
### Research Design

The study employed exposit-facto research design where there was no manipulation of any variable of interest. Variables in the study included inventory of teaching learning facilities, academic records of the selected colleges for the period identified and mathematics lecturers' attributes as outline in the standard 'minimum guide.

## Population:

The population of the - study included all the colleges of education that run Mathematics education in Nigeria. As result it comprised of prospective the mathematics lecturers and the mathematics teachers of the institutions earlier mentioned.

## Sample and sampling technique:

Six colleges of education that run 10- subject combination of Mathematics programme out of approved 20 - subject combination for all colleges of education were sampled via cluster sampling technique. In these colleges one hundred and sixty five prospective mathematics teachers are selected into the study due to the course attrition rate that minimal at 300 levels . Also that these mathematics teachers to-be could be sure practice he profession due to their exposure to over 90% of NCE Mathematics contents.. 30 mathematics lecturers (5 from each college) were involved in the sample, which constitute the minimum number of personnel to ensure the programme, accreditation by the NCCE (1998).

## Instruments

Three instruments were developed, validated and used for the study. These included Lecturer questionnaire (r=0.72), Mathematics teachers "questionnaire (0.76l and Inventory of Mathematics resources in the colleges. Lecturers' questionnaire was used to elicit the bio data and other relevant information from Mathematics lecturers, mathematics teachers' questionnaire was used to compare the 'claim made by these teachers on the' school's facilities with quantities found on ground relatively to the standard minimum guide, while inventory of resources listed out the expected resources in the colleges by the NCCE. The researcher used the last instrument personally in order to assess the extent of conformity to the requirement of accreditation

## Findings

RQ 1: What are the numbers of NCE Mathematic teachers prepared and available from 1990/91/2000 in the affected Colleges of Education?

RQ 1: What are the numbers of NCE Mathematic teachers prepared from 1990 91 2000 in the Colleges of Education

**Table 2: Qauntities of NCE Mathematics Teachers Prepared from 1990/91=1999/2000 in the College of Education**

| Session | 90/91 | 90/92 | 90/93 | 90/94 | 90/95 | 90/96 | 90/97 | 90/98 | 90/99 | 90/00 | Total |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Candidates | 301 | 361 | 403 | 322 | 307 | 425 | 357 | 388 | 320 | 242 | 3426 |

*Source: Academic Offices of the Colleges of Education in the Southwestern Nigeria*

Table 1 showed three thousand four hundred and twenty six NCE Mathematics teachers that were prepared and available for the existing primary schools between the periods of 1990/91 to and 1999/2000 sessions. The highest and lowest numbers were recorded in the sessions 1995/96 (425) and 1999/2000(242) respectively.

RQ2: What are the percentages of the available professionally qualified NCE Mathematics teachers using the minimum of credit level at the end of the programme?

**Table 3:** Parentages of the available professionally qualified NCE Mathematics teacher using the minimum of credit level form 90/91-99/2000

| Session | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 | 99/00 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below Grade C | 64.8 | 64.8 | 60.6 | 60.9 | 62.8 | 71.6 | 66.4 | 67.0 | 597 | 75.6 |
| Grade C & Above | 35.2 | 25.2 | 39.4 | 39.1 | 37.2 | 28.4 | 33.6 | 33.0 | 30.3 | 24.4 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Academic offices of the colleges of education in the South Western Nigeria
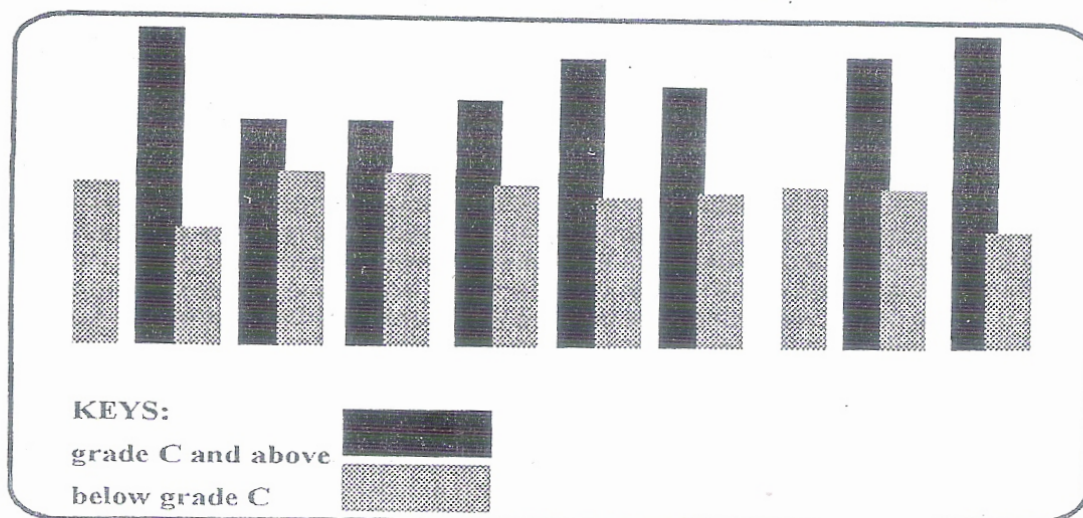


KEYS:
grade C and above
below grade C

Table 6 shows the inventory of Mathematics resources in the colleges were grossly inadequate to the recommended quantities by the NCCE. (1998). It showed the relative

quantity available in terms of personnel to teach Mathematics in the colleges while the extent of inadequacy to both Mathematics students-teachers and lecturers were identified by the corresponding percentages. The implication of .This was that teaching learning process would be skewed towards whatever lecturers said in the classroom without any further studies from the students-teachers to cross-validate the proof on one hand and the knowledge of the subject matter by the lecturers was based on the acquired ones when they were undergoing the academic and professional training. The situation called for the in-service training to improve the level of Mathematics for the contemporary periods

## Conclusion

Most of the problems besieging the nation educational system are not unconnected with resources in the preparation of necessary personnel to man effectively quality deliverance of the tune of the curriculum. As a result, problems of students' poor performance in the schools' subjects especially in Mathematics might become mirage when in actual sense the root of the problem is not addressed, particularly in the preparation and availability of competent Mathematics teachers in the primary and secondary schools.

## Recommendation

As a result of the identified lapses it is hereby recommended that strict condition-of mathematics teachers preparation should be enforced in order to attain the laudable objective of universal basic education, for a half- baked mathematics teachers is inimical to the success of the project if allowed to continue.

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