

Extent of Implementation of Computer Education Programme in Colleges of Education in Nigeria

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Abstract— The study investigated the extent of implementation of computer education programme in colleges of education in Nigeria. Descriptive survey research design was adopted for the study. Four research questions guided the study. The population for the study comprised the colleges of education in south-east Nigeria. A sample of 400 lecturers from six colleges of education was used for the study. Instrument used for data collection was an 18 item structured questionnaire. Mean rating, standard deviation and frequency were employed in data analysis. Result of the analysis revealed that computer education was suitable for training of teachers in colleges of education, and also showed that the objectives of national policy on computer education cannot be not achieved from the provisions of the curriculum contents for computer education in colleges of education. Useful recommendations were proffered.

Index Terms— Education, Nigeria.

I. INTRODUCTION

Highlight The philosophy upon which computer education programme for Colleges of Education was designed was inspired by two major concepts – wide application nature of computer to various human problems, and the role of computer in technological development of nations.

“The degree of sophistication in numeracy through the use of computer has become very pronounced all over the world. Nigeria cannot afford to ignore the role which computer literacy plays in achieving the national goal of technological development. Hence, she has resolved to introduce computer education into primary and secondary schools” [1].

This resolution called for preparation of professionally trained teachers in computer studies who will teach in primary and secondary schools.

“For meaningful teaching of computer science in our primary and secondary schools, there is therefore, a need to produce professional teachers in the discipline. ...there is now urgent need for the Colleges of Education to offer computer studies as a subject in the programme of professional preparation of teachers”[1].

According to the objectives of the computer education programme for Colleges of Education, students on completion of Nigeria Certificate in Education (NCE) should be able to:

- i) Teach computer studies at primary and secondary school levels;
- ii) Write program and process data with maximum speed

and accuracy;

- iii) Demonstrate reasonably high level of competence for further studies in computer science [1].

The extent computer education programme is implemented in Colleges of Education in Nigeria is dependent on these factors:

- relevance of computer education programme to national policy on computer education,
- suitability of computer education programme for the training of teachers,
- human resources available for computer education programme in Colleges of Education,
- material resources (facilities) provided for computer education programme in Colleges of Education, and
- the level of funding the programme enjoys.

If the programme is fully implemented, the implication is that the factors listed above should be satisfied. In other word, it would mean that the objectives of national policy on computer education are achieved. That is, Nigeria is catching up with the rest of the world technologically; we are ready to computerize our operations by 21st century; our graduates are ready to take on jobs demanding computer knowledge; our operational efficiency and management has been enhanced; and our educational system has been fully computerized.

Considering the objectives of national policy on Computer Education, computer studies was not restricted to any group of students, it was proposed for all students irrespective of discipline. But contrary to this, the computer education programme as packaged by National Commission for Colleges of Education (NCCE) is to be studied as a subject in Colleges of Education. This study will determine whether computer study is open to all students or restricted to some departments in the colleges. This perhaps, would be determined by the adequacy of resources available for computer education programme in Colleges of Education.

The programme has been on for about three decades, and there is need to investigate the extent of implementation of the programme in terms of suitability of curriculum contents, availability of adequate human and material resources, and attainment of objectives of the policy establishing the programme.

A. Statement of the Problem

The world is experiencing a revolution described as computer age, a period where computer literacy is necessary for individuals and organizations to survive economically. To make a child relevant in this dispensation, he must be given a

sound knowledge of computer and its applications starting from the foundation levels of his educational career.

Colleges of Education produce teachers that teach at the foundation levels of our education system. If students in College of Education are not well trained in computer usage and applications, they will lose confidence in themselves in the face of challenges of modern world of Information and Communication Technology (ICT). Their products will not be able to compete with their counterparts in other countries on jobs demanding computer knowledge.

The long-term effect is that Nigeria will not be able to catch up with the rest of the world technologically, thus ensuring a difficult future for our children and economy. Furthermore, Nigeria will not be part of the globalization process that is going on across the globe. This will no doubt affect industrialization, which has in recent times become a function of computerization.

B. Purpose of the Study

This study investigated the extent of implementation of computer education programme in Colleges of Education in Nigeria. Specifically, the study determined:

1. the suitability of computer education curriculum for the training of teachers in Colleges of Education in Nigeria.
2. the extent national policy on computer education is implemented in Colleges of Education in Nigeria.
3. the adequacy of resources provided for computer education in Colleges of Education in Nigeria.

Factors that influence implementation of computer education programme in Colleges of Education in Nigeria.

C. Research Questions

The following research questions were carefully structured and constructed to guide this study:

1. To what extent is computer education curriculum suitable for the training of teachers in Colleges of Education in Nigerian?
2. To what extent is national policy on computer education implemented in Colleges of Education in Nigeria?
3. What factors influence the implementation of computer education programme in Nigeria?
4. How adequate are the resources provided for computer education in Colleges of Education in Nigeria?

D. Hypothesis

H_{01} : There is no significant difference between the mean responses of lecturers in different Colleges on the extent of implementation of computer education programme in Colleges of Education in Nigeria.

II. REVIEW OF RELATED LITERATURE

Computer education is about the last field in education discipline that took the center stage in Nigerian tertiary institutions at the wake of 21st century. Because computer studies is science based, it has not been easy for many

researchers in education to venture into the field of computer education, and computer scientists are not too willing to present computer as a discipline in education. This may be partly because they are not grounded in educational philosophy and practice, or because computer studies was relatively new, and the natural scientists do not have a comprehensive knowledge of the operations and principles of computer science. Perhaps, this resulted to the dearth of relevant reference materials for this study.

The history of computer machine in Nigeria could be traced from 1963, when Nigeria conducted her national census. The computer was used in processing data collated by the enumerators. In the same year, IBM World Trade Corporation in collaboration with University of Ibadan had a working agreement to advance the use of modern data processing methods in Africa. This gave cause to the establishment of African Education Centre for organizing and conducting training programmes on computer applications. The objectives of the centre was to meet the needs of Nigerians and other Africans in computer education. In 1968 the centre was renamed Ibadan University Computing Centre, and it conducted undergraduate courses in computer education and also provided administrative support for the university until 1974 when the university established a department for computer services [2].

The philosophy upon which the department of computer science was established and the curriculum it operated centered on: teaching basic theories of computer science, giving extensive and effective experience in practical applications of the computer, and inculcating in the students the right attitudes to the professional practice of computer science. By early 1980s, some first generation universities in Nigeria, started offering computer programmes. University of Lagos for instance, had an extension computer programme for undergraduates and postgraduates. The extension programmes included part-time and evening courses for bankers, engineers, accountants, etc.

Computer education has its fair share of the problems of science education in Nigeria, in terms of lack of functional and effective curriculum. Reference [3] asserted that science education and science teaching in Nigeria has gone skewed, static and insensate and should be fixed through a more responsive curriculum, relevant, appropriate and transferable skills from the classroom to real life-world experience. In 1988 the education minister announced the intention of federal government to introduce computer education in Nigerian secondary schools. This led to the setting up a pilot training scheme for computer education and some federal government colleges and colleges of education across the country were used [4].

Subsequently, a national committee on computer education in Nigeria was setup, and its terms of reference included planning for a dynamic policy on computer education and literacy, as well as devising clear strategies and terminologies to be used by the federal and state governments and other

relevant organizations in introducing computer education into their institutions of learning [4]. The committee called for memoranda from the general public for assistance specifically on two major areas – computer science and technology, and computer education.

Eventually, on 14th December 1987, the minister of education, Prof. Jubril Aminu setup a committee to formulate a national policy on computer education. The policy objectives included:

- To catch up with rest of the world,
- To be ready to enter into 21st century of high technology where computer will undoubtedly be at the center of it all, as the most sophisticated and the most enabling tool,
- To be able to land on jobs demanding computer knowledge,
- To enhance operational efficiency and management, and to open an almost infinite scope for human endeavor, and
- Above all to regulate the proliferation of microcomputer and its integration within the education system [5].

The committee eventually developed a policy on computer education and literacy. The policy dealt with issues like selection, manufacture, application, maintenance, research and others with appropriate promotional activities and legislation. The report of the committee was both broad-based and equally specific. It contained specifications, procedures and activities at all levels of Nigeria education system.

III. RESEARCH DESIGN

The study adopted descriptive survey research design. This design is quite appropriate in this study, because the purpose in surveys is to identify the characteristics of a defined population with respect to specific variables. Hence, the survey researcher is always interested in what exists in a population, the factors that influence them and their interrelationships “unpublished” [6]. The population of the study consisted of all the Colleges of Education in South-East zone of Nigeria, which is made up of five states namely: Abia, Anambra, Ebony, Enugu and Imo, with a total of 1,347 (805 males and 542 female) lecturers [7].

The Colleges were stratified into three categories of management, such as federal government, state government, and private. Purposive sampling was used to select two colleges from each of the stratum. Simple random sampling was used to select 400 (250 males and 150 females) lecturers from the six colleges chosen from the zone, which represented about 30% of the population. The sample selected cut across the colleges of education in the entire South-East zone.

The instrument for data collection was a structured questionnaire titled “Computer Education Programme Implementation for Colleges of Education Questionnaire (CEPICE)”. The instrument was structured into two sections, A and B. section A consisted of items designed to elicit information on the profile of the respondents, while section B comprised a 4-point response scale to each of 22 behavioural items for the respondents. The responses were categorized into Strongly-Agree (SA), Agree (A), DisAgree (DA), and Strongly-DisAgree (SD), with weightings of 4, 3, 2 and 1 respectively.

The face validity of the instrument was established through the expert scrutiny and judgment of two authorities in Departments of Curriculum and Instruction, and Measurement and Evaluation, School of Education, Federal College of Education, Eha-amufu in Enugu state. During the process of validation, the items were scrutinized in terms of clarity of instructions to the respondents, proper working of the items and adequacy in addressing the purpose of the study. All ambiguities in the items on the questionnaire were duly modified or discarded where necessary.

The reliability of the instrument was established through a test-retest method. The data collected from the tests of two weeks interval was analyzed and the reliability coefficient obtained using Pearson Product Moment Correlation Coefficient. The correlation coefficient was found to be 0.97. This confirmed the instrument to be very reliable. The questionnaire was administered by the researcher with the help of six (6) trained research assistants from each of the selected colleges.

All the questionnaires were retrieved, sorted and converted into raw scores. The Likert four-point scale was used in rating the responses. The four categories of responses – Strongly-Agree (SA), Agree (A), DisAgree (DA), and Strongly-DisAgree (SD), were assigned weights of 4, 3, 2 and 1 respectively. A frequency table was then constructed for each research question. Responses for each item of the questionnaire were tallied according to the categories. A total score for each category was recorded under such category to form the frequency table. The mean value (\bar{X}) and standard deviation (σ) of the distribution was computed in respect of the items. With the Likert four-point scale rating employed, my decision rule was to accept any item with a mean score of $\bar{X} \leq 2.5$ (i.e. $(4+3+2+1)/4$), otherwise the item was rejected.

Table 1: Mean and standard deviation of suitability of Computer Education Curriculum for training of teachers in Colleges of Education.

Suitability of Curriculum	SA 4	A 3	DA 2	SD 1	(x)	(σ)	Decision
i).Word processing develops in students skills in: Typesetting reports, memos, letters, formatting, mail merge, column, Desktop publishing, file saving and retrieval, etc. using the computer.	320	80	0	0	3.80	0.15	Accept
ii).Data processing/spreadsheet develops in students skills in: electronic worksheet, sales mgt., accounting, record keeping, inventory mgt., financial analysis, payroll, statistical & sales analysis, taxes, etc. using the computer.	352	48	0	0	3.88	0.11	Accept
iii).Database management system develops in students skills in: File organization, management and access, sorting, report generation, querying, file processing, adding, modifying, deleting data, selecting data, etc. using computer.	384	16	0	0	3.96	0.04	Accept
iv).Computer programming develops in student skill in: System analysis and design, programming process, structured programming, logic design tools, programming languages, diagnostic procedures, debugging, testing, documentation, etc.	400	0	0	0	4.00	0.00	Accept
v).Computer graphics develops in students skills in: Technical drawing, engineering drawing, image scanning and processing, graphic designing, creative art and fine art, power point presentations, etc. using computer.	320	64	16	0	3.76	0.14	Accept

Table 1 shows mean values of 3.80, 3.88, 3.96, 4.99 and 3.76 for items i, ii, iii, iv and v respectively for research question 1, indicating that computer education curriculum is suitable for training of teachers.

Table 2: Mean and standard deviation of the extent national policy on computer education is implemented in Colleges of Education in Nigeria.

National policy on computer education implementation in Colleges of Education	SA 4	A 3	DA 2	SD 1	(x)	(σ)	Decision
i).NCE graduates compete favourably with their counterparts in developed countries on computer usage and applications.	0	0	256	144	1.24	0.39	Reject
ii). Colleges of education in Nigeria are adequately equipped for computer education programme.	0	0	160	240	1.40	0.24	Reject
iii).Students in Colleges of education exhibit high level of computer utilization in their subject areas.	0	80	240	80	2.00	0.40	Reject
iv).Computer education curriculum is focused on the objectives of national policy on computer education programmes in Colleges of Education in Nigeria.	0	0	128	272	1.32	0.70	Reject

Table 2 indicates that all respondents either disagree or strongly disagree with all the items of research question 2, showing complete rejection of the items.

Table 3: Mean and standard deviation of factors that affect the implementation of computer education programme in Colleges of Education in Nigeria.

Factors that influence computer education programme in Colleges of Education.	SA	A	DA	SD	(x)	(σ)	Decision
	4	3	2	1			
i).Availability of qualified computer science lecturers	208	176	0	0	3.48	0.52	Accept
ii). Adequate number of computer science lecturers	240	160	0	0	3.48	0.51	Accept
iii).Availability of computer labs irrelevant departments	352	48	0	0	3.88	0.33	Accept
iv).Availability of well-equipped computer laboratories.	336	4	0	0	3.84	0.37	Accept
v).Installation of ICT infrastructure in the Colleges	288	80	32	0	3.64	0.42	Accept

Table 3 indicates that of the 4 items of research question 3 has a mean value between 3.48 and 3.88, indicating acceptance that the factors contained in the items actually influence the implementation of computer education programme in Colleges of Education.

Table 4: Mean and standard deviation of adequacy of resources available for computer education in Colleges of Education in Nigeria.

Adequacy of computer resources in Colleges of Education in Nigeria.	SA	A	DA	SD	(x)	(σ)	Decision
	4	3	2	1			
i).One computer laboratory in computer science dept.	0	0	208	192	1.52	0.51	Reject
ii). A ratio of one computer to 10 students minimum.	0	0	144	256	1.36	0.49	Reject
iii).A ratio of one computer science lecturer to more than five hundred students.	0	0	304	96	1.76	0.44	Reject
iv).Adequate ICT facility such as public address system (PAS), digital projectors and laptops for mass education.	0	16	160	224	1.48	0.47	Reject

Table 4 shows that mean value of all the items are below acceptable limit of 2.50, indicating total rejection by all respondents that computer resources in Colleges of Education are adequate for computer education programme in Nigeria.

IV. SUMMARY OF FINDINGS

Findings presented in this study revealed the following:

1. There was consensus opinion on the part of the respondents that that computer education curriculum is suitable for the training of teachers in Colleges of Education.
2. It was equally majority opinion that provision of adequate number of qualified lecturers, ICT infrastructure for mass education are factors that

influence the implementation of computer education programme in Colleges of Education in Nigeria.

3. It is also a consensus opinion that the curriculum contents of computer education for Colleges of education in Nigeria is not focused on realizing the objectives of national policy on computer education.
4. The respondents were also of the opinion that human and material resources available for computer education programme in Colleges of Education in Nigeria are inadequate.

V. DISCUSSION OF FINDINGS

There was general agreement that by respondents that computer education programme is suitable for training of teachers in colleges of education. The result is not surprising since computer education programme is based on various areas of computing, such as word/data processing, database management system, computer programming, graphics and computer aided design. These aspects of computing have some skills that they bequeath to students in colleges of education which could guide them as teachers. This finding is agreement with [8] and [9] opinions that computer is a powerful tool which could be variously applied as instructional material for almost every subject of study at different levels of education.

Secondly, the finding which revealed a disagreement between objectives of national policy on computer education and computer education curriculum could be explained by the fact that graduates from colleges of education in Nigeria cannot compete favourably with their foreign counterparts for reasons of dearth of resources and deficiencies in curriculum issues. The curriculum does not provide for students in other departments outside computer science.

One of the objectives of national policy on computer education is to prepare our students for entry into 21st century where computer will be at the center of every activity, but we are already in 21st century and our colleges of education are still grappling with the provision of basic computing facilities. This informed the suggestion made by Tahir, calling for establishment of ICT centres across the colleges of education in Nigeria “unpublished” [10].

VI. CONCLUSION AND RECOMMENDATION

Based on the findings and discussion of the study, computer education programme has been found to be suitable for training of teachers in colleges of education, but there is need to refocus the curriculum to achieve the objectives of the policy establishing the programme. Government should engage adequate and qualified personnel, provide functional computer laboratories equipped with enough computer systems and peripherals in all departments, and also establish ICT centres for full implementation of computer education programme in colleges of education.

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