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Assessment of adequacy of human and material resources for the implementation of physics curriculum in Nigerian colleges of education

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ABSTRACT
This study was to assess the adequacy of human and material resources for effective implementation of physics curriculum. Four colleges of educations were randomly sampled in four states. Teachers' opinions questionnaire was used to collect relevant data. Frequency count and percentages were used to analyze the data collected. The result shows that laboratories, school library sizes and non- teaching staff were moderately adequate and science journal was inadequate. It was recommended that lapses in each of the colleges need immediate amelioration for quantitative education.

Introduction

Science and technology are globally accepted as the cornerstone for a sustained national development. In fact, the level of any country's scientific and technological break – through has been used worldwide to rank a country into developed, developing and under- developed nations (Williams, 1990). Since the launch of the first man-made satellite, the Russia Sputnik, into the space in 1975, the world has been confronted with the challenge of tremendous advances in science and technology. This has led to a series of curriculum reform projects in many countries, especially America, which were aimed at exploring better strategies to improve the quality of science and technology education.

Majasan and Yoloye (1980) had earlier argued that a static curriculum cannot produce a dynamic society, since changes in society's needs are usually accompanied with a change in curriculum. As a result of the continued expression of concern over the quality of education in Nigeria, effort has been made to maintain high standard in the teaching force. The most significant development in this direction is the settings of the Nigeria Certificate in Education (NCE) as the minimum qualification for entry into the teaching profession in Nigeria (FRN, 2004). In order to give the NCE awarding Colleges of Education a permanent stamp of quality, the National Commission for Colleges of Education (NCCE) was established in 1992. Some of the functions of NCCE include: setting the same minimum requirements for the intakes into colleges of education, ensuring that students are exposed to the same minimum curriculum contents, and comparable minimum physical and human facilities.

The minimum standard requirement for provision of appropriate human and material resources for effective training of NCE graduates demand realistic financial support from the proprietors of the colleges which are majorly the federal, state, private or community, voluntary agencies and military.

Ajidagba (2002), Olasehinde (2001) and William (2002), in their different studies, found out that the available human and material resources were grossly inadequate in Islamic studies curriculum, English component of the General studies and Christian religious studies respectively, in colleges of education. Similarly, Akanbi, Ibrahim and Adebayo (2012) found out in their study that instructional materials and utilization of human and material resources were moderately appropriate. In a study carried out by Edobor (2007) regarding the availability of human and material resources in vocational course, in secondary schools in the south-eastern parts of Nigeria, the discoveries were in line with Odunsanya (2006), Aina (2000) and NERD (2004), confirming the inadequacy of human and material resources in the teaching and learning of vocational courses.

Adewumi (1998), evaluates the use of English, a general undergraduate course in the university. The result shows that the lack of teaching aids and inadequate lecture rooms and employment of part-time teachers affected the effective teaching of the course. Sule (1991) also evaluate the mathematics teacher education program in Colleges of Education in Nigeria found out that 53% of total available teachers of mathematics were competent to teach mathematics curriculum only. Osarenren-Osaghae and Irabor (2012), in their own study evaluate the availability and adequacy of human and material resources for the teaching and learning of skill-based courses in Nigerian Public Universities. It was found that the human and material resources on ground for the teaching and learning of skill-based courses in Nigerian Public Universities did not match the minimum standard requirement recommended by the National Universities Commission.

Purpose of the study

The purpose of this study was to assess the NCCE curriculum as use in the colleges of education. Specifically, this study intended to examine:

1. The adequacy of material resources for effective implementation of the NCCE physics curriculum in the state colleges of education
2. The adequacy of human resources for effective implementation of the NCCE physics curriculum in the state colleges of education.

Research Questions

Answers are provided to the following research questions:

1. Are there enough laboratory equipments for effective implementation of the NCCE physics curriculum in the state colleges of education?

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2. How adequate and appropriate are the human resources for the effective implementation of the NCCE physics curriculum in the state colleges of education?

Methodology

A descriptive survey method was used to assess the adequacy of the resources available in the selected Colleges of Education. Four Colleges of Education were selected out of nine colleges from four states by purposive random sampling on the basis that they run physics education for the past ten years. The checklist was used to obtain information on available human and material resources and teachers' opinion questionnaire was used to obtain information on library, staff, infrastructures and lecture rooms.

Results

The results in the table show that Ijebu-Ode has the highest sitting capacity of five hundred and fifty (550). The textbooks titles available on physics in all the sampled courses were over 200, journals available were less than thirty (30). The laboratory in Ikere-Ekiti and practical Ijebu-Ode had a sitting capacity of fifty (50) each while those in Ilesha and Ilorin were thirty five (35) and twenty five (25) respectively.

Concerning the lecture rooms, the finding shows that in Ilorin and Ilesha both theory and practical aspects hold in the laboratory. However, Ikere-Ekiti and Ijebu-Ode have separate lecture rooms attached to the laboratory and has a sitting capacity of seventy, respectively. Evidence shows that in all the colleges sampled, the laboratory had a non-academic staff who was/was not qualified. Most of the teachers/lecturers in the sampled colleges had a Master degree in physics education.

Note: the response option a, b, c, d for the different facilities A-D in table 2 signifies: in (A): a = well equipped, (b) moderately equipped, (c) poorly in (B-D): a = adequate, b = moderately adequate, c = inadequate, d = not adequate

Results in table 2 showed that the teachers' responses 41 (81.1%) indicated that the laboratories were adequately equipped. 135 (59.9%) teachers indicated that it was moderately equipped. 51 (22.4%) teachers indicated the laboratories were poorly equipped respectively. Lecturers in Ikere-Ekiti and Ijebu-Ode submitted that the laboratories were adequately equipped. However, lecturer in Ilorin and Ilesha 46 (76%) and 36 (75%), respectively indicated that the laboratories were only moderately equipped.

On school library sizes, more than 50% of the respondents in each institution indicated that the size was moderately adequate. On available books, lecturers in Ilorin and Ilesha had more than 60% of their respondents indicating these facilities were adequately provided, while less than 40% indicated that the books were inadequate. The trend was however, different in Ikere-Ekiti where 38% of the respondents indicated that books were adequately provided. In Ijebu-Ode, 51(87.9%) lecturers indicated that textbooks were moderately adequately adequate while 12.1% of the respondent indicated that textbooks were not available. Space for teaching was adjudged by most respondents as being adequate and moderately adequate. However, in Ijebu-ode 13(22%) of the respondents indicated inadequate space for teaching.

On adequacy of non-teaching staff, respondents in Ilorin 52 (87%) indicated that the provision was moderately adequate while 8 (13%) indicated that the provision of non-teaching staff was adequate unlike in Ilorin. Respondents in Ijebu-Ode 51 (88%), Ikere-Ekiti 39 (64%) and Ilesha 16 (33%) indicated that the non-teaching staff employed were only moderately adequate. Results in table 3 shows that more than 60% of the respondents indicated that the staff employed were adequate. The mode of responses was similar across colleges examined.

Summary of Findings

The major findings of this study based on the research questions are summarized as follows:

1. Laboratory in each college were moderately adequate.
2. School library sizes were moderately adequate.
3. Space for teaching was adjudged as being adequate and moderately adequate.
4. Non-teaching staff were moderately adequate
5. Teaching staff employed were adequate.

Conclusion

The objectives of any educational program must be to ensure that skills, knowledge and dispositions acquired by the students graduating from the program are able to function adequately in the society. On the bases of these findings, the colleges of education involved in the study could be adjudged as suitable to participate in NCE awarding program in Nigeria education settings. But first and foremost, thee laboratory size in some colleges need to be expanded and the number of journals in each of the colleges needs to be increased for qualitative education.

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Table 1: Available facilities in the sampled colleges

Types of facilities	Colleges/Capacity and Quantity			
	Ilorin	Ilesha	Ikere Ekiti	Ijebu-Ode
Capacity	336	320	520	550
Textbooks (Titles)	201	200	240	240
Journal (Titles)	13	17	25	17
Physics Laboratory sizes/Capacity	25	35	50	50

Table 2: Frequency distribution of teachers' response on availability of materials

Facilities	Colleges	A		b		C		d		Total	
		N	%	N	%	N	%	N	%	N	%
A. Laboratory Facilities	Ilorin	_	_	46	76.7	14	23.3	_	_	60	100
	Ilesha	_	_	36	75.0	12	25.0	_	_	48	100
	Ikere-Ekiti	28	45.9	21	34.4	12	19.8	_	_	33	100
	Ijebu-Ode	13	22.4	32	55.2	13	22.4	_	_	45	100
	Total	41	18.1	135	59.5	51	22.4	_	_	186	100
B. School Library i. sizes	Ilorin	_	_	38	63.3	22	36.7	_	_	60	100
	Ilesha	_	_	28	58.3	20	41.7	_	_	48	100
	Ikere-Ekiti	_	_	38	62.3	23	37.7	_	_	61	100
	Ijebu-Ode	07	12.1	404	75.8	07	12.1	_	_	51	100
	Total	07	3.1	148	65.2	72	31.7	_	_	220	100
ii. Books available	Ilorin	_	_	36	60.0	24	40.0	_	_	72	100
	Ilesha	_	_	32	66.7	16	33.3	_	_	48	100
	Ikere-Ekiti	23	10.1	30	49.2	08	13.1	_	_	61	100
	Ijebu-Ode	_	_	51	87.9	07	12.1	_	_	58	100
	Total	23	10.1	149	65.6	55	24.2			239	100
C. Space Classroom For teaching	Ilorin	_	_	60	100	_	_	_	_	60	100
	Ilesha	48	100	_	_	_	_	_	_	48	100
	Ikere-Ekiti	15	24.6	46	75.4	_	_	_	_	61	100
	Ijebu-Ode	_	_	45	77.6	13	22.4	_	_	58	100
	Total	63	27.8	151	66.5	13	5.7			227	100
D. Non Teaching Personnel	Ilorin	8	13.3	52	86.7	_	_	_	_	60	100
	Ilesha	_	_	32	66.7	16	33.3	_	_	48	100
	Ikere-Ekiti	_	_	22	36.1	39	63.9	_	_	61	100
	Ijebu-Ode	_	_	07	12.1	51	87.9	_	_	58	100
	Total	08	3.5	113	49.8	106	46.7	_	_	227	100

Table 3: Frequency Distribution on Adequacy of Employed Staff for the Physics Programme

		Most Adequate		Just Adequate		Slightly Adequate		Inadequate		Total	
College	Course	N	%	N	%	N	%	N	%	N	%
Ilorin	Physics	_	_	11	100	_	_	_	_	11	100
Ilesha	Physics	6	37.5	10	62.5	_	_	_	_	15	100
Ikere-Ekiti	Physics	_	_	10	100	_	_	_	_	10	100
Ijebu-Ode	Physics	12	70.6	5	29.4	_	_	_	_	17	100

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