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Oladimeji Akanbi, Abdulrasaq; Ore Omosewo, Esther

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Assessment of quantity and quality of lecturers for effective implementation of the Nigeria certificate in education physics curriculum

Abdulrasaq Oladimeji Akanbi^{1*} and Esther Ore Omosewo²

Department of Science Education, University of Ilorin, P.M.B. 1515, Ilorin, Nigeria. *Author for correspondence. E-mail: physicsakanbi@yahoo.com

ABSTRACT. The study assesses the quantity and quality of lecturers for effective implementation of the NCE Physics curriculum in the Federal and State Colleges of Education in Nigeria. The sample was drawn from two Federal Colleges of Education and two State Colleges of Education in all the six geo-political zones in Nigeria. 60 lecturers were purposively sampled from 24 colleges of education. The instrument used was Lecturers' questionnaire (LVENPC). Frequency counts, percentages, charts and chi-square analysis were applied to test the hypothesis. The result indicates that there are not enough lecturers in both Federal and State Colleges of Education and the quality of the lecturers is appropriate, there is no significant difference in the staffing of lecturers' from Federal and State Colleges of Education on the quantity and quality of human resources for successful implementation of Physics course. It was recommended that sufficient Physics lecturers should be employed to teach Physics in Colleges. Colleges should ensure sufficient provision of human resources in both quantity and quality to enable the objectives of the programme to be fully achieved.

Keywords: physics lecturer, curriculum, Nigeria certificate in education.

Avaliação da quantidade e qualidade de professores para a efetiva implementação do currículo de física do certificado nigeriano em educação

RESUMO. A pesquisa avalia a quantidade e qualidade dos professores para a efetiva implementação do currículo de Física do Certificado Nigeriano de Educação nas Universidades Federais e Estaduais de Educação nigerianas. A amostra originou-se de duas faculdades federais de educação e duas faculdades estaduais de educação nas seis zonas geopolíticas da Nigéria. Sessenta professores de vinte e quatro faculdades de Educação foram escolhidos e o instrumento de trabalho consistiu na aplicação do questionário de professores (LVENPC). Frequência, porcentagens, gráficos e análise quadrática foram aplicados para testar a hipótese. Os resultados mostram que não há professores suficientes nas faculdades federais e estaduais de Educação, a qualidade dos professores é adequada e não há nenhuma diferença significativa na efetivação de professores das faculdades federais e estaduais de Educação sobre a quantidade e qualidade de recursos humanos para a implementação bem-sucedida do curso de Física. Recomenda-se que professores de Física suficientes sejam empregados para ensinar Física nas faculdades. As faculdades devem garantir suficientes recursos humanos em qualidade e quantidade para que os objetivos do programa sejam cumpridos.

Palavras-chave: professor de Física, currículo, Certificado Nigeriano de Educação.

Evaluación de la cantidad y calidad de profesores para la efectiva implementación del currículo de física del certificado nigeriano en educación

RESUMEN. La investigación evalúa la cantidad y calidad de los profesores para la efectiva implementación del currículo de Física del Certificado Nigeriano de Educación en las Universidades Federales y Estatales de Educación nigerianas. La muestra se originó de dos facultades federales de educación y dos facultades estatales de educación en las seis zonas geopolíticas de Nigeria. Sesenta profesores de veinticuatro facultades de Educación fueron elegidos y el instrumento de trabajo se consistió en la aplicación del cuestionario de profesores (LVENPC). Frecuencia, porcentajes, gráficos y análisis cuadrático fueron aplicados para testar la hipótesis. Los resultados muestran que no hay profesores suficientes en las facultades federales y estatales de Educación, la calidad de los profesores es adecuada y no hay ninguna diferencia significativa en la efectuada de profesores de las facultades federales y estatales de Educación sobre la cantidad y calidad de recursos humanos para la implementación exitosa del curso de Física. Se recomienda que una cantidad adecuada de profesores de Física sea empleada para enseñar Física en las facultades. Las facultades deben garantizar recursos humanos adecuados en calidad y cantidad para que los objetivos del programa sean cumplidos.

Palabras clave: profesor de Física; currículo; Certificado Nigeriano de Educación.

Introduction

No education system can rise above the quality of its teacher (FRN, 2004) there is the need,

therefore, for special emphasis on the teacher's role in the implementation of any new curriculum. The Federal Government, through the National Policy

on Education (FRN, 2004) document admitted that whatever changes in educational policy should be dictated by the needs of the society. These by themselves depend on the prevailing economic, political and socio-natural climate of the society in question. No matter how well-planned a National Policy on Education is, it is likely to remain a useless document, and by implication a waste of time, energy and resources, if it is not followed with an equally well-planned curriculum and an effective implementation. The fore-going discussion on Teacher Education emphasizes the role of the teacher. The teacher is, therefore, the nerve centre of the process of any curriculum implementation. The success or failure of any well-planned curriculum depends largely on the teacher. The study of Onwuka (1996) shows that the teacher is an analyst and an active agent, whose contribution can be crucial for effective learning... and that to alienate the key actor from the curriculum, is equivalent to squeezing life out of the entire educational endeavour. Thus the teacher is the life-wire of any educational system.

Having identified the teacher as a principal actor in the implementation of any curriculum, he on his part has to make his teaching meaningful, relevant and interesting to his students. Effective teaching never occurs in the absence of learning on the part of the students. Emeruwa (1996, p. 62) asserted that "[...] teaching is hardly complete if no learning is stimulated". The teacher is seriously a guide who must be ready to guide his students' activities and sensitise them to what they should learn, measure their achievement in this respect and give them a feed-back (KEER, 1968). The teacher's role has several implications the most important of which is that of his familiarity with the content of the curriculum. The society as a whole cannot get anything but a collapse of the whole educational enterprise if teachers are either ignorant of the curriculum they are expected to implement and/or not adequately equipped with the up-to-date knowledge of curriculum structuring.

The teacher of Physics by implication is the principal actor in the implementation of the Physics curriculum designed for learners at both the Senior Secondary Schools and tertiary levels of Education. He is to demonstrate an adequate academic and professional competence in the process of interpreting the curriculum content, in guiding the students, in ensuring that learning takes place, and in evaluating students' achievement in the light of their performance. From the foregoing discussion, the teacher's role starts from the moment a new curriculum is being planned through curriculum structuring to the effective delivery of instructions

in the classroom situation putting into use all his academic and professional training acumen. This invariably leads to effective learning on the part of the students. To this end the teacher has had an effective teaching.

The bedrock of adequate foundation and training of needed manpower in a country irrespective of area of specialization is a function of the sound products from the teacher education in that country. This is why Gidado (1995) said that the major problems of teacher education in Nigeria is that the teacher that are being trained are not sufficiently prepared to meet the complex demand of the teaching profession in Nigerian schools. It is an educational truism that a teacher can only teach what he knows. Tanner and Tanner (2002) said that the success of a curriculum largely depend on teachers handling it. In 1997, a survey report by the National Education Research Development (NERD) of the state of demand and supply of science and technology teachers nationwide indicated that about 320,000 representing 88% of the total needs were not available in 23 difference subjects. A similar survey by NERD (2004) in respect of polytechnics indicated a shortfall of 88%. This is in line with Agbeten (1985) who discovered that shortage of qualified teachers is a worldwide phenomena but more obvious in the developing countries where educational system are constantly expanding without sufficiency of qualified teachers. In support of this statement, Udofo (1994) lamented that insufficient qualified sciences and technology teachers in schools have often resulted in the employment of unqualified people and this demotivates the students through bad teaching. Aina (2000) states that the quality and quantity of teachers in the schools have contributed immensely to the high failure rates being experienced in the programmes run by National Business and Technical Examination Board (NABTEB) certificate examinations. Osarenren-Osaghae and Irabor (2012) in their study on availability and adequacy of human and material resources for the teaching and learning of skill-based courses in Nigeria public universities found out 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. Andreyka (1976) stressed that the prime requisite for successful implementation of educational programs is qualified teachers who are occupationally competent and skilled in the use of teaching methods.

Purpose of the study

This study primarily assessed the Physics lecturers in Colleges of Education. Specifically, this study examined:

1. the quantity and quality of lecturers for effective implementation of the NCE Physics curriculum in the Federal and State Colleges of Education.

Research questions

The researcher attempted to provide answer to the research question:

1. do Colleges of Education have appropriate quantity and quality of lecturers for the effective implementation of the NCE Physics curriculum?

Research hypothesis

The following hypothesis was tested in this study:

H_{01} : there is no significant difference in the views of lecturers from Federal and State Colleges of Education on the quantity and quality of lecturers for successful implementation of Physics course

Material and methods

This research is a descriptive of the survey type using questionnaire techniques. Information about physics lecturers teaching at colleges of education was sought. The sample was drawn from two Federal Colleges of Education and two State Colleges of Education in all the six geo-political zones in Nigeria. 60 lecturers were purposively sampled from 24 colleges of education. The distribution of lecturers involved in the study is as shown in Table 1.

Table 1. Gender distribution of lecturers.

Type of college	Lecturers					
	Males		Females		TOTAL	%
	N	%	N	%		
Federal	21	72.4	8	27.6	29	100
State	25	80.6	6	19.4	31	100
Total	46	76.7	14	23.3	60	100

Source: Author data.

Table 1 shows the gender distribution of lecturers sampled. Forty-six 46 (76.7%) respondents were males and 14 (23.3%) were female lecturers. A graphical representation of this data is given in a bar chart in Figure 1.

From the bar chart in Figure 1, there are more male lecturers in State Colleges than in Federal Colleges of Education and more female lecturers in Federal Colleges than in State Colleges of Education. The only instrument used was Lecturers' questionnaire (LVENPC) consists of two sections: Section A seeks biographical data such as name of College, type of College, gender, qualification and

area of specialization, etc. While section B seeks for views on their general perception of the quality and quantity of Physics lecturer. The questions are structured in such a manner to collect detailed information concerning the adequacy and appropriateness of human resources for the implementation of NCE Physics curriculum. The respondents were required to react to each of the items along a four-point scale of Strongly Agree (SA), Agree (A), Disagree (D) and strongly disagree (SD) depending on their feelings of agreement or disagreement with each item. Scoring of the items was done manually awarding four (4), three (3), two (2) and one (1) for SA, A, D, and SD respectively.

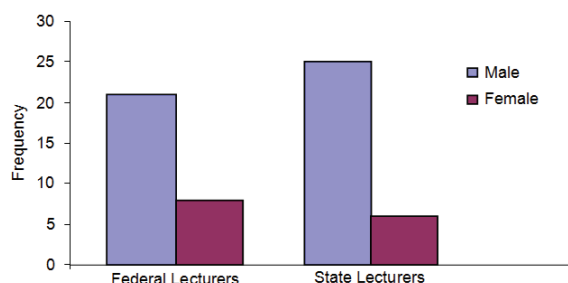


Figure 1. A bar Chart of Gender Distribution of Lecturers in Colleges of Education. Source: Author data.

The instrument was validated by the experts who were asked to scrutinize the items on the questionnaire and the final draft was subjected to test-retest reliability procedure and this provided a coefficient value of 0.78. The data collected were subjected to statistical analysis and interpretation. Descriptive statistics such as frequency counts, percentage and charts were used to describe the demographical data for the study. However, frequency counts, percentages, charts and chi-square analysis were applied to test the hypothesis.

Results

Research question one

Do Colleges of Education have appropriate quantity and quality of human resources for the effective implementation of the NCE Physics curriculum?

The analysis in Table 2 shows the quantity and quality of lecturers from Federal and State Colleges of Education. Bachelor's degree in Physics Education (B.Sc. (Ed.) is the most common 19 (31.7%) of the respondents holding this degree followed by Master's of science degree with 18 (30.0%). However, 8 (12.7%) of the respondents have Bachelor's degree in science with Postgraduate degree in Education.

Only 6 (9.52%) respondents had a Master's degree in Education while 5 (7.94%) hold Ph.D. in Education. The rest of the respondents have B.Sc. degree in science. The Table indicates that there are no enough lecturers in both Federal and State Colleges of Education and the quality of the lecturers is appropriate since the first degree is the minimum teaching qualification required for the NCE lecturers.

Table 3 shows the calculated χ^2 -value (2.077) and the critical χ^2 -value (11.07) with 5 degrees of freedom and at alpha level of 0.05. Since the calculated χ^2 -value is less than the critical χ^2 -value, hypothesis one is not rejected. This implies that there is no significant difference in the staffing of lecturers' from Federal and State Colleges of Education on the quantity and quality of human resources for successful implementation of Physics course. A graphical presentation is given in a bar chart in Figure 2.

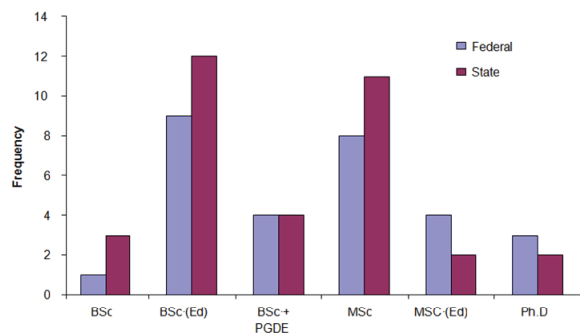


Figure 2. A bar chart showing lecturers' qualifications. Source: Author data.

Hypothesis one

HO₁: There is no significant difference in the staffing of lecturers' from Federal and State Colleges of Education on the quantity and quality of human

resources for successful implementation of Physics course.

Graphically, the number of B.Sc. (Ed.) holders in State Colleges appears to be higher than in Federal Colleges. This is because B.Sc. (Ed.) is the minimum teaching qualification expected of every lecturer in Colleges of Education.

Discussion

The result of the analysis in Table 1 shows that there was no appropriate quantity of lecturers that are highly qualified in both Federal and State Colleges of Education for the successful implementation of Physics course. This could be attributed to the fact that both Federal and State Colleges of Education management used the same academic qualification parameters for the appointment of lecturers (i.e. first degree in a teaching subject (B.Sc. (Ed.) or single honours in a teaching subject (B.Sc.) along with a Post Graduate Diploma in Education (PGDE). At the time of this study, there were 60 lecturers in all the colleges sampled. Out of this figure, 40 were professionally qualified lecturers, while 20 lacked professional qualification.

The above findings are surprising because the researcher anticipated that the required number of lecturers to be found in the department of single course such as Physics is 8 according to National Commission for Colleges of Education (NCCE) minimum academic if standard guideline would be met. However, the number of Physics specialist lecturers and lecturers with Physics background was very low. Result from the present study contradicts those of Efoghe (2000) who found a difference in the quality of staff from Federal and State institutions, a difference thought to have been caused by difference in funding in favour of Federal institutions.

Table 2. Analysis of human resources for effective implementation of NCE Physics curriculum.

College	Ph.D.		M.Ed.		M.Sc.		B.Sc. + PGDE		B.Sc.(Ed.)		B.Sc.		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Federal	3	10.3	4	13.8	8	27.6	4	13.8	9	31.0	1	3.4	29	100
State	2	5.88	2	5.88	10	32.3	4	11.8	10	32.3	3	8.82	31	100
Total	5	7.94	6	9.52	18	30.0	8	12.7	19	31.7	4	6.35	60	100

Source: Author data.

Table 3. Staffing of lecturers' from federal and state colleges of education on the quantity and quality of Human resources for successful implementation of Physics course. (Source: Akanbi, 2010)

		Quantity and quality of Lecturers' from Federal and State Colleges of Education							df	χ^2 cal	χ^2 Crit	Decision
		B.Sc.	B.Sc.(Ed.)	B.Sc. + PGDE	M.Sc.	M.Ed.	Ph.D.	Total				
Federal	Count	1	9	4	8	4	3	29	5	2.077	11.07	HO ₁ Not rejected
Lecturers	Expected Count	1.9	9.2	3.9	8.7	2.9	2.4	29.0				
State	Count	3	10	4	10	2	2	31				
Lecturers	Expected Count	2.1	9.8	4.1	9.3	3.1	2.5	31.0				
Total	Count	4	19	8	18	6	5	60				
	Expected Count	4.0	19.0	8.0	18.0	6.0	5.0	60.0				

Source: Author data.

Conclusion

From the study, there is every indication that majority of the lecturers were professionally qualified to lecture at NCE level, though the number of Physics specialist lecturers and lecturers with physics background was very low. It was therefore, recommended that Sufficient Physics lecturers should be employed to teach Physics in Colleges. This would not only allow the coverage of the curriculum, it would also encourage effective coverage of curriculum and also encourage more students to enroll for the subject. Colleges should ensure sufficient provision of human resources in both quantity and quality to enable the objectives of the programme to be fully achieved.

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