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Stm Resources and Human Capital Development in Basic Education Secondary Schools of Fct

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Abstract
The study sought to assess the status of Human Capital Development (HCD) in Nigerian secondary schools at the basic education level in the Federal Capital Territory (FCT), Abuja. One hundred and fifty-two teachers drawn from both private and public junior secondary schools were sampled. Purposive stratified sampling was used and two sets of questionnaires were used as instruments to obtain information from the two separate samples of 140 science teachers and 12 school heads. Data collected for the study were analyzed using frequency counts and percentages. Results revealed that, among others, that infrastructural facilities and human resources are grossly inadequate to support human capital development at the basic education level especially in our public schools and the case of private schools are just a bit better. A number of appropriate recommendations geared towards improving HCD at the basic education level were thereby provided.
Keywords: Basic Education, Entrepreneurial skills, Human Capital Development, Human Resources, STM Resources and Quality assurance.

1.0 Introduction

In Nigeria, there are well-articulated curricular provisions for the attainment of qualitative education. At the basic education level, which is the concern of this study, there is the new curriculum for the basic educational level (FME, 2008) which implementation has started since September 2008 and which clearly spelt out the objectives, instructional media, as well as the methods and strategies for effective teaching and learning of all subjects (FME 2008 and UBE forum 2005). It will be recalled that the National Economic Empowerment and Development Strategy (NEEDS) lays emphasis on using education to empower the people and in the process create jobs, generate wealth and eradicate poverty. The 7-point agenda of the present Nigerian administration also recognizes functional education as playing a key and fundamental role in Human Capital Development (HCD). A critical focal point to the actualizing of the 7-point agenda of HCD to attain the vision 20-2020 is standards and quality assurance in education which include reforms in curriculum, and provision of high quality adequate and functional physical and human resources especially in the **S**cience, **T**echnology and **M**athematics.

The high points of the UBE curriculum include the introduction of basic technology and ICT, emphasis on creative thinking, entrepreneurial skills, positive, social and cultural values. It is expected that every learner who has gone through the 9-years of basic education should have acquired appropriate levels of literacy, numeracy, manipulative, communicative and life-long skills as well as the ethnical, moral and civic values needed for laying a solid foundation for life-long, learning as a basic for scientific and reflective thinking (FRN 2007). It is a known fact that no quality education can be achieved without investment in human and material resources Ikegbunam (2009) yet the physical environment in Nigerian schools has deteriorated to the point of decay. The buildings dilapidated, the roads leading to the school premises full of pot-holes, classrooms meant for thirty pupils contain seventy or more; offices and libraries empty. These are some of the things that mark out the present Nigerian education system as deplorable and disastrous (Ikegbunam, 2009).

The first nine years of schooling, termed basic education is free and compulsory but this is not enough, the entire primary and secondary levels should be free and compulsory for every Nigerian child of school age. The first three years of secondary school education or last 3 years of basic education had the innovation of introducing rudimentary vocational subjects with the essential techniques of survival in an age of technology. The pre-vocational courses – introductory technology, agriculture, business studies, home economics, local crafts, computer education, fine & visual arts and music are aimed at providing the students with the practical resources for self-sustenance and self-reliance at the end of their basic education (NPE 2004). The slogan 'education for all' by the year 2015 may not simply mean providing basic education which will make Nigerian child to be able to read and write, it also means giving the child the insight to know what to do with his/her life.

Human Capital refers to the abilities and skills of the human resources in a country (Adamu, 2002 as cited in Olaniyan, 2005). This suggests that human capital is acquired, built up and developed. In essence, the development of human capital is to ensure that they acquire meaningful and productive skills that enhance their

capabilities to engage in productive activities that lead to earning of livelihood. Human capital is thus defined by Meir (1995) (cited in Olaniyan 2005) as the development of human resources concerned with the two-fold objective of building skills and providing productive employment for non-utilized or under-utilized manpower (Bakare and Olaniyan, 2005). Human Capital Development (HCD) focuses on youth in schools and its aim at developing the values, attitudes, skills and knowledge that will enable them to make informed life and career choices for active participation in the society. Through the provision of facilities, materials and resources, provision of quality education and acquisition of skills (Lewis F.M., Nyalashe V.H. and Hartley Saahida, 2008) there are cries everywhere that many of our graduates, both from secondary schools and tertiary institutions are unemployable (punch 11-05010) thereby increasing unemployment rate in the country. Also, the educational scenario in Nigeria is pitiable; the level of access to education is still very low as 10 million Nigerian children did not have access to primary education while only 10.4 million of the 33.9 million eligible for secondary school education were in school.

The alarming rate of failure is a serious issue as 'of the 234, 682 candidates that sat for the Senior Secondary Certificate Examination (SSCE) conducted by the National Examination Council (NECO) 2010 examinations, only 4,223 or roughly 6% made 5 credits in five subjects including English and Mathematics, which is the minimum requirement for admission for further learning, and this has been the trend in the last 5 years as recorded in the West African Secondary School Certificate Examinations (WASSCE) conducted by the West African Examination Council (WAEC) and the Senior Secondary Certificate Examination (SSCE) conducted by the National Examination Council (NECO), if 98% of future leaders failed then where is hope? There is therefore great need for improvement in the current state of education in Nigeria and emphasis should be shifted from theories to practice with the introduction of entrepreneurship programmes and training. The political leadership crisis apart, the real crisis plaguing us today is the human development crisis, as human capital development is the epicenter of all developments.

2.1 Objectives of the study

The objectives are to:

1. Critically access the qualifications of teachers handling the development of human capital in science, technology and mathematics
2. Identify the state, adequacy and functionality of the resources, which are indicators for communicating human capital development at the basic education level in FCT schools
3. Survey teachers' responses/suggestions on the improvement of HCD in relation to resources
4. Make recommendations

2.2 Research questions

The following research questions are formulated to guide the studies:

1. What are the strengths and level of qualifications of teachers handling these STM subjects' communications HCD?
2. How adequate and functional are these indicators of human capital development in the sciences, technology and mathematics?
3. What are the science teachers' suggestions on the improvement of learning in respect of human capital development?

3.0 Methodology

3.1 Research design

The survey research design was adopted in the conduct of the study. This was because a large sample had to be drawn from the target population.

3.2 Population and sample

All the junior secondary school science teachers and school principals in the 6 local government areas in both public and private basic education schools in FCT were the population for the study. The study sample comprised of 152 science teachers and school heads drawn from schools located in three randomly selected local government council areas of the FCT, Abuja and were made up of 105 male and 47 female respondents.

3.3 Instrumentation

The questionnaire was the instrument used for data collection in this study. Two sets of questionnaire: each made up of 3 sections were developed. The first was administered to teachers, while the other ones were for the head of schools. Section A solicited for the respondents' demographic data, section B for respondents' to rate their perception on the availability of the adequacy and conditions of the indicators of human capital development. Section C called for suggestions for improvement of resources for the successful HCD in basic education school in FCT. The draft instruments were subjected to experts' judgment by three experts in measurement and evaluation. The reliability indices of 0.87 and 0.75 were obtained for the teachers and school heads' questionnaires respectively.

3.4 Data analysis

The research data collected were extensive and were analyzed using descriptive statistical methods involving frequency counts, percentages and weighted mean where appropriate.

4.1 Results and discussions

Table 1 shows the frequency and percentage distribution of STM teachers based on qualifications. Based on qualifications, teachers were grouped into teaching qualifications and non-teaching qualifications. Teaching qualified teachers have NCE, B.Sc (Ed.), PGDE and M.Ed in relevant subjects while those with ND, HND, B.Sc and M.Sc in relevant and irrelevant subjects are non-professional teachers.

4.2 Research question one

What are the strengths and level of qualifications of teachers handling these STM subjects' which communicates HCD?

A perusal of Table 1 shows that a vast majority of teachers teaching STM subjects in some schools are not qualified to handle the subjects they are teaching. Many of them are graduates in diverse irrelevant fields like Social Studies, Agriculture, Accounting, and Health Education, among others and some don't even have any educational profession training. According to Salau & Adebayo (2010), the inadequacy of the right caliber of teachers in our secondary schools as observed in the study could be attributed to lack of political will on the part of our Government to employ while private school owners might be entertaining the fear of depletion in their profit margins if well qualified teachers are employed. In same vein, respondents were requested to indicate the status of availability of STM technicians, assistants and attendants; so also course textbooks for effective service delivery. The outcomes of their responses are presented in the next table.

Table 2 revealed that more than 83% of respondents in public schools reported that there were no laboratory attendants and technicians in their schools and well over 50% indicated that most students have no recommended textbooks. It need be mentioned (Salau et al (2010) that when no support is forthcoming from the laboratory technicians and attendants when they are not available, the teachers may not be motivated to set the students on practical exercises which most of these STM subjects require for effective human development.

4.3 Research question two

How adequate and functional are these indicators of Human Capital Development in the Sciences, Technology and Mathematics?

The summary of table 3 is that there are more facilities in our private secondary schools than our public secondary schools. Some of the public secondary schools surveyed don't even have some facilities like the mathematics laboratory, technical workshops and technical workshop attendants and only a few of them that have some of these facilities have them in very small quantities and numbers.

With respect to existence, adequacy and conditions of facilities for effective human capital development at the basic education level, teachers were asked to rate these using 3-point Likert Scale format as 'Good (3), satisfactory (2); and poor (1). Mean scores 1.9-poor, scores ranging from 1.9 – 2.85 = satisfactory and scores 2.9 = good. The result is shown in Table 3. The data presented in table 3 show that more than half of the respondents believe that schools have poor laboratory facilities. In most public schools sampled, the conditions of all the laboratories and their equipment are averagely poor.

4.4 Research question three

What are the science teachers' suggestions on the improvement of learning in respect of human capital development?

Table 4 shows that more of the teachers sampled suggested that better and more facilities, curriculum, consumables, curriculum compliant textbooks, library, laboratories, human resources should be provided and that human resources should be trained and retrained to meet the global competition of human capital development in the world today. Some of the teachers too suggested the reduction of class size especially for practical work.

5.1 Conclusion

An attempt has been made in this paper to assess the state of human capital development in school in respect of the resources available in schools to communicate HCD. The findings support previous studies (Ajewole, 1994; Folaranmi 2002; Olaniyan, 2005; Ikegbunam, 2005; Lewis, Nyalashe, and Hartley, 2008) that indicate large class sizes, lack of textual materials, inadequate laboratory apparatus and equipment, and lack of provision in many homes for the educational needs of students in Science as impediment to effective human capital development in secondary schools. Human capital development as suggested by Adamu (2002) are skills of human resources which can be acquired, built up and developed when there is focus on developing the values, skills and knowledge that will enable students to make meaningful life and career choices in life and this will be in the face of the new curriculum materials and excellent classroom/learning environments and not decrepit and strike-ridden public schools. According to Vanguard 7 April, 2010, 'bad governance, poor funding, poor

infrastructure at all levels of our education, atrocious staff welfare and low morale among teachers are some of the factors responsible for poor had and mass failure which must be properly and adequately look into'. This is also supported by the study.

5.2 Recommendations

From the research findings of this study, it is vivid that human capital development in school is in a parlous state and the following recommendations were made:

1. The FCT administration in collaboration with the universal basic education commission (UBEC) should work out the modality of providing infrastructural facilities required for effective human capital development.
2. Unqualified teachers already in the system should be advised and encouraged to go for post graduate diploma courses to enhance their professional competence to teach.
3. All schools should have laboratories for science and for technology with adequate supplies of equipment and reagents for practical work.
4. All schools should be equipped with ICT centres and internet facilities so that information beyond the school library will be reached.
5. This kind of study can be conducted in other states of the country as it will help in the improvement of development of human capital as this will reduce the level of mass failure and enable students make useful and meaningful life and career choices for active participation in the development of the society.

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Table 1: Frequency and percentage distributions of STM teachers with and without teaching qualifications

Level	Subjects	Qualifications	
Junior Secondary Schools (JSS)	Basic Science	**Teaching-Qualifications (%)**	**Non-TeachingQualifications (%)**
		25 (45.7)	45 (54.3)
	Basic Technology	35 (43.2)	46 (56.8)
	Mathematics	8 (40)	12 (60)

* Figures in parenthesis represent the percentages of the indicated qualities

Table 2: Response to availability of assistants/technicians and textbooks

Level	Availability of Resources	Private Schools (64)		Public Schools (88)	
		Yes	No	Yes	No
Junior Secondary Schools (JSS)	Laboratory Assistants/ Technicians	53.6	46.4	16.1	83.9
	Recommended Basic Science and Technology Textbooks	87.9	12.1	47.6	52.4
	The curriculum compliancy of recommended textbooks are	28.8	71.2	45.7	64.3

Table 3: Teachers' weighted mean rating of conditions of facilities for human capital development in the STM subjects

S/N	Statements	J.S.S. Level			
		Private schools	Remark	Public schools	Remark
1.	Condition of facilities in: Mathematics laboratory?	2.0	Satisfactory	1.17	Poor
2.	Basic Science Laboratory	1.73	P	2.0	S
3.	Basic technology laboratory	2.0	S	1.3	P
4.	What is the condition of science laboratory equipment?	1.96	S	1.2	P
5.	Basic Technology Equipment	2.0	S	1.0	P
6.	Mathematics Teaching Aids	2.05	S	2.1	S
7.	What is the quality of student' textbooks in mathematics?	2.9	G	2.4	G
8.	Basic science	2.6	G	2.1	S
9.	Basic technology	2.7	G	1.8	P
10.	How frequent is the supply of chemical for the science laboratories?	2.9	G	1.0	P

Key: G: Good; S=Satisfactory; P=Poor

Table 4: Teachers' suggestions on improvement of learning in respect to HCD in relation to the resources N=152

S/N	Suggestions For Improvement	No.	%
1.	Providing better or more equipment and facilities	91	59.9
2.	Need for more curriculum	67	40.8
3.	Need for regular supply of consumables	121	79.6
4.	Improved maintenance of classrooms	92	60.5
5.	Need for better quality and new curriculum compliant books for students and in school library	144	94.7
6.	Providing more funds to build School libraries, technical workshops, laboratories, etc	140	92.1
7.	Reducing class size	44	28.9
8.	Employing more qualified teachers	138	90.8
9.	Reduction of group size for practical work	35	23
10.	Employment and training of qualified laboratory assistants in schools	141	92.8