



## Shortage of Science Teachers in Nigerian Educational Institutions: Causes and Way Forward

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**Abstract:** This paper discussed the factors responsible for shortage of professional science teachers in Nigerian educational institutions. Secondary data were employed to provide empirical facts for the paper. The secondary data were sourced from print materials and online resources. The paper identified the causes of shortage of professional science teachers in the Nigerian educational institutions and possible solutions for addressing the problems were recommended.

**Keywords:** Education, Institutions, Science, School, Teachers.

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### 1. Introduction

Science is an organized body of defined knowledge that deals with investigation and discoveries of concepts, laws, theories and generalizations. Omorogbe, & Ewansiha, (2013) sees science as an organized body of knowledge in form of concepts, laws, theories and generalizations. Urevbu (2001) defines science as a study of nature and natural phenomena in order to discover their principles and laws. Science has three interrelated aspects: content, process and attitude. Content can be separated into physical, life and earth sciences. Process involves the fifteen inquiring skills proposed by the American Association for the Advancement of Science (AAAS) which include observing, classifying, experimenting, measuring, inferring, organizing data etc. Attitude concerns openness and objectivities (Omoifo, 2012). According to National Policy on Education (2014), the goals of Science Education should be to: Cultivate inquiring, rational mind for the conduct of a good life and democracy, produce scientists for national development, service, studies in technology and technological development, provide knowledge and understanding of the complexity of the physical worlds in the forms and conduct of life. Ajaja (2007) identified the objectives of teaching science to include:- Knowledge of science in academic discipline; to acquire the skills of scientific method; having clear explanations for societal issues through increasing interest in science literacy and societal goals; for personal needs and for career awareness while Eze and Oluba (2010)

postulated five main objectives of teaching science to the youths which include training the youths; To be able to observe, measure, record, collect, analyze data, hypothesize and predict data and events in an accurate and honest manner, these are the scientific skills necessary for further work in science later in life. Also, to acquire the ethics of science which include honesty, skepticism, perseverance, objectivity, rationality etc, which will give the youths sufficient doses of scientific literacy capable of preparing them for some worthwhile vocations in the fields of science and technology, to groom a preponderant number of youths for future adult roles by equipping them with skills and competence to identify societal issues and problems and possible resolutions of such socio-scientific and technological problem, to produce a scientifically literate populace, some of whom will be professional scientists and technologists while others will be well informed, attentive citizens whose daily activities are guided by the products, ethics and processes they have acquired.

Omorogbe, & Ewansiha, (2013) observed that the attainment of the goals of science education is largely dependent on the quality of teachers. Science teachers are trained teachers that are saddled with responsibilities of providing science instruction to students. Science teachers instruct students in subject-specific classrooms. Science teachers create lesson plans; evaluate student performances; and teach using lectures, technology and hands-on learning experiences (Ajemba, et al 2021). They also model expected behavior to establish and maintain an orderly, disciplined classroom. Ajemba et al (2021) and Olatunde-Aiyedun (2021) opined that science teachers have the greatest part to play in society. Science teachers are the mirrors of society and a society which does not respect its teachers is bound to go in failure. The social and psychological conditions under which we all live today have minimized teachers not placing the expected values on them. The role of a science teacher as national builder is of basic importance as such science teacher should be encouraged so as to give their best. Science teachers have great impact on the social, economic and technological advancement of every nation and sectors. Their roles are felt in the environment, health, nutrition, agriculture, transportation, material and energy production, and industrial development sectors in our world. Ajemba, Ahmed, Ogunode & Olatunde-Aiyedun, (2021) submits that science teachers are important in the science curriculum implementation. Alaebo, (2020) posits that science teachers are key factor to be considered when talking about the development of science education in any nation. There are shortages of qualified science teachers in Nigerian schools. So called science teachers are not professionally qualified. They may have the knowledge of the subject but lack the method.

The importance of science teachers in the development of science education cannot be underscored. Alaebo, (2020) argued that without science teacher education Information and Communication Technology would be impossible. Science and technology will not be possible without science teacher education; for instance engineering, medicine, architecture etc will not be possible if there is no one to teach the students the core subjects needed for these courses from the primary school level up to the university. As important as science teachers to the development of the social, economic and technological advancement of the country, it is unfortunate that many educational institutions are faced with the problems of inadequate science teachers. It is based on this that this paper examines the factors responsible for shortage of science teachers in Nigerian educational institutions.

## **2. Current Situation on Shortage of Science Teachers**

The current analysis of availability of professional science teachers in the Nigeria schools by researchers have revealed that there shortage of science teachers. At the primary schools, Ahmed, Ajemba, & Ogunode (2021) submitted that shortage of science teachers is one of the major challenge facing the development of science education in the Nigerian primary schools and Olamoyegun, Ahmed, & Ogunode (2021) observed scarcity of STEM teachers in primary schools in Nigeria. Also, Ogunode (2020) did a study with the aims of investigating the challenges facing the administration of STEM Education in Gwagwalada junior secondary schools of FCT, and

discovered that shortage of science teachers was among the challenges. Aina (2012) on his study of challenges and prospects of primary science teaching affirmed that there are unqualified science teachers in our schools.

At the secondary schools, Abubakar, Abiodun & Ogunode (2021) observed that shortage of science teachers is another problem hindering effective administration of Science programme in Nigerian secondary schools. Also, Ogunode, & Jegede (2019) in their study revealed that inadequate science teachers is a major problem in the secondary school education. Agun & Imogie (1988) outlined shortage of qualified teachers in many of secondary schools particularly in the rural community in Nigeria as hindering development of science education at the secondary school level.

At the higher education, Ogunode, & Aiyedun, (2020) posited that another problem facing the administration of science programme in the Nigerian higher institutions is the challenge of inadequate science lecturers. Data from the NUC revealed that universities experience an acute shortage of teaching staff in computer science and technology-based disciplines, but teaching staff shortage is very acute in disciplines such as law, engineering, medicine and surgery. These shortages are attributed to several reasons, such as poor incentives for serving teachers, inadequate turnout of teachers in these subjects by teacher-training institutions in the country, and the exodus of lecturers to Western countries in search of greener pastures (NEEDS, 2014).

Also, Olayiwola, (2014) and Ezechi, & Ogbu, (2017) identified lack of qualified science teachers in the Nigerian schools. Bajah (1982) between 1959 and 1982: lack of qualified science teachers and are lack of laboratory. Adebayo (1999) on educational policy 1977, he stated that shortage of manpower, lack of finance to execute the project, lack of facilities and lack of policy itself. Ayodele (1999) stated that the problems as, unqualified science, inadequacy of textbooks, lack of learner's interest and psychological fears of science subjects are factors responsible for poor performance in science subjects. Olayiwola, (2014) also stressed that the problems of poor teaching of basic science in our junior secondary schools is, therefore, as a result of, very few qualified science teachers, dearth of resources for teaching science and competency problems was as a result of the poor training of science teachers, large class sizes of science students.

### **3. Causes of Shortage of Science Teachers in Nigerian Educational Institutions**

In this paper, the following would be considered as factors responsible for shortage of professional science teachers: inadequate funding of science education, lack of strategic plans on manpower Development, poor motivation, Brain-drain, political influence, corruption and limited teacher education institutions.

#### **3.1. Inadequate Funding of Science Education**

Funding is key to the development of science education. Adequate funding is needed to employ qualified science teachers and deploy them to schools across the country. Nigerian educational system is underfunded. The underfunding of education in Nigeria is affecting the funding of other sub-programme under the education. Science programme is among the programme. Ezechi, & Ogbu, (2017) posited that funding science programmes and science related research has been a major problem facing technological growth and self-reliance in Nigeria. Government do not adequately fund science and science related programmes and research. In addition to this, the little fund provided relapse and are embezzled by top officials in charge of its implementation. Ahmed, Ajemba, & Ogunode (2021) pointed out that inadequate funding is a major problem responsible for poor development of science education. Science education is very expensive and cost effective. The annual budgetary allocation for the primary school education is inadequate. Science programme in the primary school drives their funds from the general budget of the primary school education.

### **3.2. Lack of Strategic Plans on Manpower Development**

Lack of strategic plan on manpower development for educational sector is another factor responsible for the shortage of professional science teachers in the country. The lack of document and policies to production of teachers in Nigeria is causing a lot of problems in the sector. Many programme apart of science program are facing the problems too. Ogunode & Paul (2021) acknowledged that another factor responsible for shortage of professional teachers in the Nigerian educational institutions is lack of manpower planning for teacher education in Nigeria. There is poor manpower planning on teacher development in Nigeria and this is causing shortage of professional teachers in the country educational sector. Anyadike (2013) cited Goetz, (1989) who posited that inadequacy of Human Resources Planning has been cited as the reason why most public organization today are facing a chaotic situations as they did not at onset plan their workforce, neither did have any systematic human resource (HR) management programme that put the organizations goals first and the decay in the public organizations is evident as the level of frustration is equally high; and the “marketplace” trend of organization is becoming a reality. The cause of this unfortunate development is primarily a lack of human resource planning. Ogunode, Gregory, & Abubakar, (2020) observed that the lack of manpower planning is responsible for the teacher gap in the Nigerian educational institutions across the country. The problem of inadequate manpower in the Nigerian educational sector is a result of lack of effective manpower planning. The inadequate infrastructural facilities in the primary, secondary and higher education in Nigeria is due to lack of comprehensive infrastructural facilities planning, while the problem of inadequate funding can also be traced to the lack of financial educational planning for the entire educational sector. The school of education in most schools graduate a number of students every year but the number been recruited into the workforce if few. This can be traced to lack of pla and provision to expand the workforce.

### **3.3. Poor Motivation**

Poor motivation of science teachers in the various educational institutions is responsible for why many science inclined professional decline appointment in the educational institutions across the country. Many professional science teachers have decided not to work in the school because of the poor salaries and welfare packages. Study carried out by Ezechi (2016) showed that science teachers in Nigeria are not motivated. Science teachers are faced with poor condition of service, their salaries are not paid regularly, they are not given opportunities for developmental programmes and were not granted funds for creativity. All these have affected teachers performance in contributing towards learning. Ezechi, & Ogbu, (2017) submitted that if teachers are to perform at their optimal, they must be adequately motivated to boost their moral. To Ihebereme (2006), high moral among teachers correlates with high productivity and high achievement. Strategies that will enhance science teachers’ motivation according to Fredrikson include staff development and training, participatory decision making, good working conditions, remuneration and salaries, promotion as at when due, recognition of teachers profession (professionalism), conducive working environment, provision of adequate teaching aids, financial rewards, teachers scholarship, sponsorship of both local and international seminars, conferences and workshops (Ezechi, & Ogbu, 2017).

### **3.4. Brain-drain**

Brain-drain refers to massive movement of professionals from one country to another or from one sector to another sector of the economy. Many science teachers are moving out of the country to other part of the developed countries while those at home are moving from the teaching line to other professions where their salaries and welfare packages are better. Ndiyo (2011), opines that science teacher’s salary and other allowances are not paid in some states and science equipment are not

supplied due to declining in output and slow economic growth because of labour distortions, redundancy of the workforce, brain drain among others. Ogunode & Adamu (2020) observed that Brain-drain problem is another major factor responsible for the challenge of inadequate academic staff in the Nigerian public higher institutions. Hundreds of academicians are leaving the Nigerian public higher institutions especially the universities leaving to the institutions starve of lecturers. The mass movement of lecturers to other sector of the economic like the banking sector and oil sector is responsible for the shortage of academic staff in the Nigerian public higher institutions.

### **3.5. Political Influence**

Alaabo, (2020) Submits that Parents encourage their children to study science oriented courses which is good; children who have no ability for such courses opted for courses in humanity and art. When the time of employment come those who opt for humanity and art courses would be given job related to sciences without prerequisite qualification. Those who originally studied sciences are schemed out of the job because of ethnicity; the attitude discourages young ones from studying science education. Ogunode & Paul (2021) observed that the politician hacked recruitment process in the various higher institutions by sending their less qualified candidate for employment in the system. The high level of corruption in the administration of higher institutions in Nigeria also contributing to the shortage of academic staff in the various institutions of education.

### **3.6. Corruption**

Corruption is another big reason for the shortage of professional teachers in the Nigerian educational institutions. The funds budgeted and released for employment of teachers are looted or diverted by some administrators in the educational institutions. The school administrators institutionalized what is called ghost workers in their various schools and are collecting their salaries instead of employing the teachers in the schools. Ghost worker corruption is one of the most common form of corruption in the educational institutions in Nigeria (Ogunode & Paul 2021). Olagunju (2011), corruption leads to slow movement of files in offices, extortion in highways, ghost workers in work places, election irregularities and many more. Corruption makes school administrator mismanaged fund meant for purchasing science equipment and asked science teacher to make sure student still pass in examinations by all means. Aina, (2012) observed that employment is no longer based on merit; those who are qualified for teaching science are not given employment because they do not have 'godfather' in the government. Teaching appointment is done based on nepotism and favouritism. This affects the development of science teacher education in Nigeria. There is corruption in the land and no one is spared neither is any organ of government spared. Corruption within the educational institutions is a key factor responsible for shortage of professional teachers in the Nigerian educational institutions (Ogunode & Paul 2021). Ogunode & Adamu (2020) submitted that corruption is another factor responsible for shortage of academic staff in the Nigerian public higher institutions. The forms of corruption practices that responsible for shortage of academic staff in the higher institutions include; funds diversion, ghost workers and recruitment fraud. Funds released for the employment of academic staff are been looted by some administrators and principals officers of the institutions. Some school administrators are using fake names to collect salaries for people that are supposed to be employed in the system.

### **3.7. Limited Teacher Education Institutions**

Ogunode (2020) observed that inadequate teachers in institutions is another factor contributing to the shortage of professional teachers in the Nigerian educational institutions. The total numbers of teacher institutions in the country is not enough to produce the numbers of teachers needed in all the forms of Nigerian educational institutions. The number of Colleges of education, institute of education and faculty of education in the country do not have the capacity to production the professionals teachers require to produce professional teachers for all the educational institutions in



the country. Also, Ogunode & Paul (2021) submitted that limited teachers' education institutions in Nigeria is another factor responsible for shortage of professional teachers in the various educational institutions. The total number of higher institutions that specializes in teachers' production for the country is few and not produce the needed manpower requirement for the entire educational institutions.

#### **4. Recommendation**

To address the problems of shortage of professional science teachers in Nigerian educational institutions, the following were recommended:

1. Develop strategic plan on manpower development in the educational sector focusing more on science programme
2. Government should provide adequate funding for implementation of science education in Nigeria.
3. Direct all tertiary education institutions to offer science programme to increase more of more professional in the science education
4. The government should increase the salaries and welfare packages of science teachers teaching in all educational institutions to prevent brain-drain.
5. The government actors should allow ministries, agencies and departments to recruit objectively without influencing the processes with their candidates and all forms of recruitment corruption should be stopped by opening the processes for consultants.

#### **4.1. Conclusion**

This paper examined the factors responsible factors for shortage of professional science teachers in Nigerian educational institutions. The paper identified the causes of shortage of professional science teachers in the Nigerian educational institutions to include inadequate funding of science education, lack of strategic plans on manpower development, poor motivation, Brain-drain, political influence, corruption and limited teacher education institutions. The paper among other things recommended that the government should adequately fund science education in Nigeria.

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