



Shortage of Professional Science and Environmental Education Teachers in Nigeria

Olatunde Aiyedun^{1*}, Ogunode Niya Jacob¹

¹University of Abuja, Nigeria

*Corresponding email: aiyedunt@gmail.com

(Received: Mar 30, 2021; Accepted: Apr 10, 2021; Published: Apr 12, 2021)

ABSTRACT

This study evaluated the shortage of professional science and environmental education teachers in Nigeria's educational institutions. The study used descriptive research survey design. The population of the study comprised of all public primary, secondary, and tertiary institutions in Nigeria. The sample size comprised of 600 science and environmental education students respectively made up of 200 pupils, 200 secondary students, and 200 tertiary students, selected randomly from six geopolitical zones of Nigeria. The research instrument used for data collection was a 18 structured questionnaire items rated on a 4-point Likert scale, with response options of Strongly Agree (SA); Agree (A); Disagree (D); and Strongly Disagree (SD). The responses of the respondents were presented in simple statistical table and analysed using Mean (\bar{x}) and Grand Mean ($g\bar{x}$). The findings revealed that problems of shortage of professional Science and Environmental Education teachers is common to the Nigerian educational institutions at all levels. Based on the result of findings, it was recommended that Environmental Education infused concepts in science subjects should be taught by qualified Environmental Education teachers and lecturers at all levels of education, beginning from the primary level to tertiary level in Nigeria.

Keywords: Evaluation, Education, Professional, Teachers, Science

INTRODUCTION

The shortage of teachers, especially qualified teachers is a global problem. Most of the countries throughout the world are exposed to the problem of shortage of teachers. The Nigerian educational institutions is plagued with challenges of inadequate professional teachers at every forms of education. At the public primary schools in Nigeria, Guardian (2019) submitted that there is a shortage of 277,537 professional teachers in the public primary schools in Nigeria. The audit report of National Personnel showed that there was deficit of 135,319 professional teachers in the early Childhood Care Development Education, 139,772 deficit of professional teachers in primary schools and 2,446 shortage in Junior Secondary Schools across the nation. At the secondary schools, Ekanem, et. al. (2014) observed that many senior

secondary school in rural areas do not have professional science teachers. He went further to reveal that teacher-students ratio is always 1:150 contrary to the National policy on education that stipulated 1:40 teacher-student ratio. The problem of inadequate science teachers is affecting the development of science education in Nigeria.

NEEDS (2014) pointed out that shortage of professional teachers cut across all the Nigerian educational system. At the higher institutions, NEEDS (2014) observed that the problem of shortage of qualified academic staff in Nigerian universities is well reported in the Federal Government's needs assessment of Nigerian public universities which was carried out in 2012. The 2012 report indicated that only about 43 per cent of university lecturers have PhD qualifications. The remaining 57 per cent have qualifications below PhD. Only seven universities have up to 60 per cent of their teaching staff with PhD qualifications (NEEDS 2014). The report also disclosed that there was shortage of academic staff in Science and Environmental Education Departments in Nigerian universities.

Problem of Research

Concept of Environmental Education (EE) Teacher

Education begins with the teacher not because he is the most important person but because he is able to control his own behaviour and the teaching environment. An environmental education teacher is an individual trained in an educational institutions to teach environmental education programme in the educational institutions. The environmental education teacher can also be referred to as a science teachers because environmental education programme is a science inclined programme (Ogunode & Aiyedun, 2020). Olatunde-Aiyedun (2021) stated the objectives of EE which are the qualities of a professional EE teacher to include: awareness of social groups and individuals to acquire knowledge of the environment, its problems and remedies; to acquire knowledge of the environment beyond the immediate and distant environment; to help social groups and individuals acquire a set of values (right and positive attitude or behavior) for environmental protection; to help social groups and individuals develop required skills, for example, acquiring appropriate teaching methods, communication skills, among others, in disseminating information regarding the environment; to provide individuals with an opportunity to be active participants in environmental decision making at all levels. As a specialist in EE, teachers should be able to teach major trending topics in EE, such as climate change, anthropogenic activities (deforestation without replacement, hunting of wildlife and aquatic life, emission of gasses, etc.) low disaster safety measures, quality education for the sensitization of citizenry about these environmental problems of continuous depletion of our environmental resources, and mitigations in tackling environmental challenges (Ekpo & Aiyedun, 2017). Environmental Education teachers must be certified before they can be employed to teach in an educational institutions in Nigeria.

A science teachers should possess the following professional skills: Mastery of their subject by thinking critically, ethically and creatively when evaluating a topic, Knowledge of diverse methods of Instruction, develop skills and commitment to collaborate as a team or independently, resulting in students' positive and desired attitude to learning (Ekpo & Aiyedun,

2019). Four trending objectives of a science education teacher are as follows: Science education teachers should be an essential professional in a continuum learning for all, and at all levels; They should focus on quality content with an emphasis on linking science with other subjects and disciplines such as Environmental Education; the 4th SDG of quality education which involve the use of appropriate teaching techniques, strategies and materials should be enhanced to improve the depth and quality of learning outcomes; and partnership between formal, non-formal and informal educational stakeholders should be improved (Olatunde-Aiyedun & Ogunode, 2020).

Entry Qualification for Science teachers into Primary school, Junior Secondary school, Senior Secondary School and higher institutions in Nigeria

In Nigeria the entry qualifications for teaching science education for primary schools is the Nigeria Certificate in Education (NCE) and that the teacher must be registered with the Teachers Registration Council of Nigeria according to the National Policy on Education (2004). In the junior secondary schools, the entry requirement for science teachers into junior and senior secondary schools. At the junior secondary school level, a candidate for teaching appointment is expected to possess a minimum of the Nigeria Certificate in Education (NCE). Other qualifications include Bachelor of Education (B.Ed) degree or any first degree with a Postgraduate Diploma in Education (PGDE). This means that anyone who does not possess a teaching qualification does not have any business teaching at this level. At the senior secondary school level, the policy on education recommends the minimum of a Bachelor of Education (B.Ed) or any first degree with a Postgraduate Diploma in Education (PGDE).

The Nigerian higher education comprised polytechnic, Colleges of Education and universities. The minimum entry qualification of a teaching staff (Science) into polytechnic is Bachelor's degree in relevant field (Science). In Colleges of Education, the National Commission for Colleges of Education (NCCE) requires that candidates to be considered for appointment should have, in addition to first degree, some qualification in education (Science). This means that they have to be certified as professional teachers. The minimum academic qualification required for appointing a university teacher in Nigeria is Master's Degree (Science).

Any qualification below this requirement is not expected to be employed to teach at every education level. Noun (2009) submitted that the reason for the emphasis on educational qualification is to enhance achievement of stated objectives. Though, a candidate seeking teaching appointment with first degree in Bachelor of Science (B.Sc) might be master of his/her discipline, this is not a sufficient condition for him/her to be considered for teaching. The skills and techniques of disseminating what he/she knows are not there. The subject matter mastery without instructional delivery technique is incomplete. The two are very important in teaching.

Shortage of Professional Science Teachers

Studies by different researchers in Nigeria and across the World revealed that there is shortage of professional science teachers. Ekanem, et. al., (2014) observed that some secondary

schools in rural areas especially private school do not have trained and effective science teachers to carry out teaching of science education effectively. Olayiwola (2014) stated that inadequate science teachers, approach to science teaching, science is an abstract course and will only be understood through practice. Some teachers do not put effort in improvisation of teaching aids and most importantly students' attitude and aspirations.

Bisi (2012) observed that the teaching and learning of basic science have shown several challenges which include: Shortage of science instructional materials, inadequate professional teachers for basic science subjects, poor supervision of science programme and inadequate infrastructural facilities. Ogunode (2020a) did a study that investigated the challenges facing the administration of STEM Education in Gwagwalada junior secondary schools of FCT, Nigeria. The study revealed that challenges facing the administrations of STEM Education in Gwagwalada include: inadequate science teachers, lack of instructional materials, high population, poor capacity development of science teachers, ineffective supervision, negative attitude of students towards STEM education and lack of science teacher motivation.

Christine, et. al. (2014) stated that the teaching and learning of basic science in the upper basic in Kajuru Local Government Area of Kaduna State has some problems such as lack of qualified and competent teachers, high enrolment of students with lack of adequate facilities. Recommendations were in line with findings. This is in line with Sambo et al. (2014) that noted that facilities available for the implementation of Basic Science Programs are not adequate and there is a significant difference in the numbers of rural and urban science teachers on the extent of the implementation of the basic science program curriculum in Nasarawa West Zone.

NEEDS (2014) noted that the shortage of professional teachers in all the Nigerian educational institutions from the primary schools, secondary schools, and to higher institutions has lowered the educational standard. The Executive Secretary of the National Commission of Colleges education (NCCE) revealed that Nigeria as a country will need 1,320,135 teachers to meet the demands of basic education by 2015. Also, Junaid, (2013) concluded that the nation will need to produce a total of 330,033 teachers annually in order to achieve the EFA goal by 2015. However this has not been met as Ogunode (2020b) emphasized that the inadequate professional teachers in the Nigerian educational sector is affecting the teaching quality. Almost all the Nigerian educational system have deficit of professional teachers.

Research Focus

The problem of shortage of professional teachers in the Nigerian educational institutions is pronounced more in the science subjects especially in environmental education infused concepts in sciences. Due to the problems of the teachers' shortage, too many students are being taught by teachers who do not possess the adequate subject matter knowledge, training and instructional skills, and expertise that is required to help students learn, especially in the science subjects (Project, 2013).

Needs (2014) observed that there are shortage of professional teachers in Mathematics, English and the Sciences at the primary schools and junior secondary school in Nigeria. At the higher institutions, specifically the universities are experiencing shortage of academic staff in

Science and Environmental Education Departments (NEEDS, 2014). Based on this problem, this study is aimed to evaluate the problems responsible for shortage professional science teachers in Federal Capital Territory, Abuja, Nigeria.

The focus of this study was to evaluate the problems responsible for shortage professional science teachers in Nigeria. Specifically, the study aim to:

1. To evaluate the problems responsible for shortage of Science and Environmental Education teachers in public primary schools in Nigeria
2. To evaluate the problems responsible for shortage of Science and Environmental Education teachers in public secondary schools in Nigeria
3. To evaluate the problems responsible for shortage of Science and Environmental Education lecturers in public tertiary institutions in Nigeria

The following research questions were generated to guide this study:

1. What are the problems responsible for shortage of Science and Environmental Education teachers in public primary schools in Nigeria?
2. What are the problems responsible for shortage of Science and Environmental Education teachers in public secondary schools in Nigeria?
3. What are the problems responsible for shortage of Science and Environmental Education lecturers in public tertiary institutions in Nigeria?

METHODOLOGY OF RESEARCH

General Background of Research

The study used descriptive research survey design. This study was carried out in Nigeria. The six geopolitical zones of Nigeria was used for the study. Primary schools, secondary schools and tertiary institutions were selected across the each zone in 2018.

Subject of Research

The population of the study comprised of all public primary, secondary, and tertiary institutions in Nigeria. The sample size comprised of 600 science and environmental education students that were randomly selected from the six geopolitical zones of Nigeria comprised of 200 pupils, 200 secondary school students, and 200 undergraduate students,.

Instrument and Procedures

The research instrument used for data collection was a 15 structured questionnaire items rated on a 4-point Likert scale, with response options of Strongly Agree (SA); Agree (A); Disagree (D); and Strongly Disagree (SD). The questionnaire was formulated by the researchers and validated by two senior lecturers in the Department of Science and Environmental Education, University of Abuja.

Data Analysis

The responses of the respondents were presented in simple statistical table and analysed using Mean (\bar{x}) and Grand Mean ($g\bar{x}$).

RESULTS AND DISCUSSION

Results of research that has been done, the respondent's data is obtained by gender as shown in the figure below:

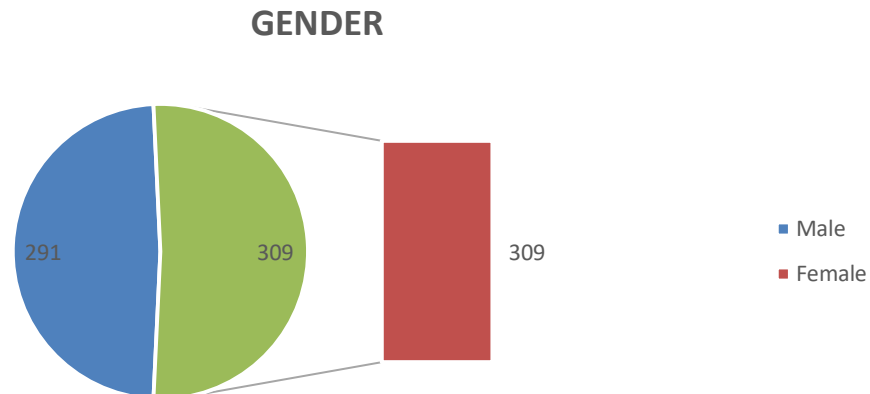


Figure 1. Distribution of Respondents by Gender

From the above pie chat, majority (309) of the respondents were females, which accounted for 51.5% while others (291) were males and only carried 48.5%.

Research Question 1: What are the problems responsible for shortage of Science and Environmental Education teachers in public primary schools in Nigeria?

Table 1. Problems Responsible for Shortage of Science and Environmental Education Teachers in Public Primary Schools in Nigeria

S/N	Statement	SA (4)	A (3)	SD (2)	D (1)	Mean (\bar{x})	Decision
1	We don't have enough teachers taking us basic sciences	240	220	110	30	3.12	Agreed
2	Lack of science teachers causes poor study habit which leads to poor academic performance	350	220	0	0	3.43	Agreed
3	Science teachers are too busy because there are few teachers to take the subjects	270	230	0	0	3.62	Agreed
4	We are less than 40 pupils in my class	0	0	500	55	1.81	Disagreed
5	Problems of cheating in class test and exams is because there are few teachers to supervise us	260	240	90	10	3.25	Agreed
Grand Mean ($\bar{g\bar{x}}$)						3.05	Agreed

Source: Survey, 2021

Table 1 shows the opinions of pupils on the problems responsible for shortage of Science and Environmental Education teachers in public primary schools in Nigeria which had a grand mean of 3.05. The table revealed a mean score of 3.12, 3.43, 3.36 and 3.25 respectively. However, the table showed that the pupils rejected the opinion that they are less than 40 pupils in my class with mean score of 1.81, which denote that pupils agree to the stated problems responsible for shortage of Science and Environmental Education teachers in public primary schools in Nigeria.

Research Question 2: What are the problems responsible for shortage of Science and Environmental Education teachers in public secondary schools in Nigeria?

Table 2. Problems Responsible for Shortage of Science and Environmental Education Teachers in Public Secondary Schools in Nigeria

S/N	Statement	SA (4)	A (3)	SD (2)	D (1)	Mean (\bar{x})	Decision
1	We don't have qualified teachers taking us sciences	300	270	0	30	3.35	Agreed
2	Lack of science teachers causes poor study habit which leads to poor academic performance	360	240	0	0	3.60	Agreed
3	Science teachers complain about their salaries (not being paid or short paid) and other finances	350	250	0	0	3.58	Agreed
4	Teacher to student ratio is less than 1:40 in my class	354	246	0	0	3.59	Disagreed
5	Teachers does not embark on in-service refresher courses and trainings, workshops or seminars in my school	240	235	50	75	3.06	Agreed
Grand Mean ($\bar{g}\bar{x}$)						3.44	Agreed

Source: Survey, 2021

The table 2 above presents the opinion of students with regard to the problems responsible for shortage of Science and Environmental Education teachers in public secondary schools in Nigeria which had a grand mean of 3.44. The result had a mean scores of 3.35, 3.60, 3.58, 3.59 and 3.06 respectively, which denote that students agree to the stated problems responsible for shortage of Science and Environmental Education teachers in public secondary schools in Nigeria.

Research Question 3: What are the problems responsible for shortage of Science and Environmental Education lecturers in public tertiary institutions in Nigeria?

Table 3. Problems Responsible for Shortage of Science and Environmental Education Teachers in Public Tertiary Institutions in Nigeria

S/N	Statement	SA (4)	A (3)	SD (2)	D (1)	Mean (\bar{x})	Decision
1	We don't have qualified lecturers taking us sciences	327	190	60	23	3.37	Agreed
2	Lack of science education Lecturers causes poor study habit which leads to poor academic performance	193	281	95	31	3.06	Agreed
3	Lecturers complain about their salaries (not being paid or short paid) and other finances	250	200	85	65	3.06	Agreed
4	Lecturers to student ratio is more than 1:40 in my class	400	170	20	10	3.60	Agreed
5	Lecturers does not embark on in-service refresher courses and trainings, workshops or seminars in my school	213	185	110	92	2.87	Agreed
Grand Mean ($g\bar{x}$)						3.19	Agreed

Source: Survey, 2021

The table 3 above presents the opinions of students with regard to the problems responsible for shortage of Science and Environmental Education lecturers in public tertiary institutions in Nigeria which had a grand mean of 3.19. The results had mean scores of 3.37, 3.06, 3.06 3.60 and 2.87 respectively, which denote that students agree to the stated problems responsible for shortage of Science and Environmental Education lecturers in public tertiary institutions in Nigeria.

The result of the research question 1 table one revealed that students agreed to the problems responsible for shortage of Science and Environmental Education teachers in public secondary schools in Nigeria. The above views are in agreement with the view of Guardian (2019) which identified shortage of specialized teachers as major challenges facing both primary and secondary schools in Nigeria. The shortage of professional science teachers can be linked to many reasons and one of which was noted to be poor manpower planning in the educational institutions. The inability of lecturers and non-academic staff to plan well is due to many challenges, one of which was said to be as a result of poor funding of planning education in FCT (Ogunode, 2020b).

The findings from the research question 2 in table two revealed that shortage of Science and Environmental Education teachers in public secondary schools in Nigeria has caused setback on Nigeria's educational system. The result is in line with the views of Ekanem et. al. (2014) and Epko et. al. (2017), that most secondary schools in Nigeria do not have enough

science teachers to handle the science and environmental education infused topics properly, because of the teacher to students' ratio of 1:150.

The findings from the research question 3 in table three revealed that shortage of Science and Environmental Education teachers in public tertiary schools in Nigeria is a major challenge in Universities, colleges of education and polytechnics. The result is in line with NEEDS (2014) that stated that shortages are attributed to inadequate turnout of lecturers in these subjects, poor incentives for serving teachers and the exodus of lecturers to Western countries in search of greener pastures

CONCLUSION

The current results have important implications for the development of science teachers and especially the environmental education teachers. The result revealed the shortage of professional teachers in the primary, secondary and higher institutions across the country. The implication of shortage of professional teachers is that the quality of teaching and learning of science and environmental education was affected since teachers' qualities and quantities matters in the implementation of the science education programme. Therefore, more professional teachers should be employed and deployed to the public primary, secondary and higher institutions to ensure effective implementation of science and environmental education programme. Based on the result of findings, the following were recommended:

1. The government should employ more qualified environmental teachers and deploy them to all educational institutions across the country;
2. The government should direct higher institutions especially colleges of education and universities to start offering Environmental Education programme or courses. This will help to produce more professional EE teachers for the different educational institutions across the country;
3. The government should design good welfare packages for science and EE teachers in the country;
4. Constant training and retraining programme should be provided for EE teachers in the Nigerian educational institutions; and
5. The government should design a master plan to enhance manpower development programme for educational institutions in the country.

Acknowledgements

Firstly, I would like to express my sincere gratitude to my first and second Ph.D. thesis supervisors/advisors Prof. M.A. Katcha and Dr. R.G. Dajal for their continuous support, patience, motivation, and immense knowledge of my Ph.D. study and related research. Their guidance helped me in my pilot study, and in writing of this article which is a section of my thesis. I could not have imagined having a better supervisor/advisor and mentor for my Ph.D. study. The financial, spiritual and moral support provided by my biological father Prof. E.A. Aiyedun cannot be overemphasized.

References

- Agbor, C.N. (2016). Importance of incorporating Environmental Education (EE) into teacher education programmes in Nigeria, *International Journal of Scientific Research in Education*, 9 (4), 248-263.
- Aiyedun, T.G. (2020). Effect of animation teaching strategy on secondary school students' achievement, retention and interest in climate change in Lokoja, Kogi State. *International Journal of Trend in Scientific Research and Development (IJTSRD)*, 4 (3) 944-949.
<https://www.ijtsrd.com/papers/ijtsrd30740.pdf>
- Bisi, T.Y. (2012) Nigeria Schools and Science education. Lagos.
- Christine, A. & Hayatu, S. J. (2014). *Universal Basic Education (UBE) in Nigeria problems and prospects in learning basic science in the upper basic : a case study of Kajuru local government area of Kaduna State*. Thesis submitted to the University of JOS Faculty of Education, Department of Science And Technology Education
- Ekanem, N.U & Obodom, M.I (2014). Education for all: problems and prospects of science education in Nigerian School. *Journal of Resourcefulness and Distinction*, 8, (1) 1-4
- Ekpo, C.G. & Aiyedun, T.G. (2019). Environmental Education: A tool for creation of awareness on adaptation to climate change in Nigeria. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 9 (6) 12-21.
- Ekpo C.G. & Aiyedun T.G. (2017). Environmental Education: Essential tool for the attainment of Sustainable Development Goals in the 21st Century Nigeria. *The Researcher: A Journal of Contemporary Educational Research*, 1(1), 124- 142.
- Guardian (May 09, 2019) Shortage of teachers, congestion, major challenges facing FCT schools, <https://guardian.ng/news/shortage-of-teachers-congestion-major-challenges-facing-fct->
- Junaid, I.M. (2013) Education: Quality, standards and control in Nigeria transformation agenda. Lecture delivered at the 35th convocation ceremony of the Federal College of Education (Technical), Akoka, Lagos.
- NEEDS, (2014). *Needs assessment in the Nigerian education sector*. International organization for migration, Abuja, Nigeria.
- National Policy on Education (NPE) (2014) (6th, Ed). Lagos. NERDC Press.
- Jacob, O. N. (2020). An Investigation into the Challenges Facing Administration of STEM Education in Gwagwalada Universal Basic Education Junior Secondary Schools in FCT, Nigeria. *International Journal on Research in STEM Education*, 2(1), 59-78.
- Ogunode, N.J. (2020b). Investigation into the challenges facing the planning of manpower. *International Journal on Integrated Education*, 3, (6), 100-110

- Ogunode, N.J., & Aiyedun, T.G. (2020). Administration of science programme in Nigerian higher institutions: issues, challenges and way forward. *Middle European Scientific Bulletin*, 6, 94-99.
- Olatunde-Aiyedun, T.G. (2021). *Fundamentals of Environmental Education*. LAP LAMBERT Academic Publishing, Mauritius.
https://www.researchgate.net/publication/349573767_Fundamentals_of_Environmental_Education
- Olatunde-Aiyedun, T.G., & Ogunode, N.J. (2021). School Administration and effective teaching methods in Science Education in Nigeria. *International Journal on Integrated Education*, 4 (2), 145- 161. [10.13140/RG.2.2.11502.54080](https://doi.org/10.13140/RG.2.2.11502.54080)
- Osuolale, O. J. (2014). Problems of teaching and learning science in junior secondary schools in Nasarawa State, Nigeria. *Journal of Education and Practice*, 5(34), 109-118.
- Projest, G. (2013). Effects of shortage of teachers on curriculum implementation in community secondary schools in Tanzania: The case of Bukoba Municipality. Open University of Tanzania. http://repository.out.ac.tz/911/1/Godfrey_Projest_final.pdf
- Sambo, M. H., Kukwi, I. J., Eggari, S. O. & Mahmuda, A. M. (2014). Assessment of the Implementation of Basic Science Program in Junior Secondary School in Nasarawa West Zone. *Developing Country Studies*, 4, (20) 96-99