

THE ROLE OF SCIENCE EDUCATORS' IN QUALITY MAINTENANCE FOR SUSUTAINABLE NATIONAL DEVELOPMENT

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Abstract

This study investigated the role of science educators 'in quality maintenance to ensure quick realization of the demands of the 21st century for sustainable national development. Two research questions and one null hypothesis guided the study. The study adopted the descriptive research design. The population of the study consisted of all 81 lecturers' in Akwa Ibom State Tertiary Institutions. The sample for this study comprised 40 respondents purposively drawn from three tertiary institutions vested with the responsibility of training teachers. The instrument for data collection consisted of structured questionnaire tagged: The Role of Science Educator's in Quality Maintenance Questionnaire (TROSEQ) was used for data collection with reliability index of 0.73. The instrument was duly administered to the respondents and the data collected were used in testing the hypothesis. The data were analyzed using mean, standard deviation and independent t-test at 0.05 level of significance. The findings showed that science educators play a significant role in quality maintenance in Akwa Ibom State Tertiary Institutions. However, there was no significant influence of male and female respondents on the role of science educators in quality maintenance. It was recommended among others that quality maintenance be given proper attention by the State and Local Government to meet the 21st century skills.

Keywords: Education, Science Educators and Quality Assurance.

Introduction

The damaging effects on the education contributed to the decline in standard. Educational system has suffered a lot of abuses. There has been much garbage in the system

ranging from students, teachers, school management, the parents, government and the society at large. Some of these errors have become a canker worm that have eaten deep into the fabric of educational system and hinder teaching and learning very difficult in the face of global trend. The decline in the quality of education in Nigeria at all levels began when governments, especially the military detested academic freedom, university autonomy and demonstrations. There was brutal clamp down on demonstrations and riots on our campuses in Nigeria. Military raped and killed students in Nigeria. The effects of all these on education were devastating resulting in the establishment of universities stopped abruptly, sharpdiminishing financial resources, physical, managerial intellectual dilapidation, no more productionof human resources to develop individuals and the flight of the best brains to safe and greener pastures began. This decline seemed to have continued till date without remedy in sight. Education is an activity aimed at fostering and equipping individuals with the appropriate skills, abilities and competencies that will enable the individual develop and also contribute meaningfully to the development of the society. Therefore, the aims and objectives of education cannotbe realized without fully developing the individual whom the society depends on for its advancement and development. The acquisition of these skills, abilities and competencies cannot be achieved without effective teaching and learning. Education is a veritable tool for preparing the child physically, mentally, socially, spiritually and morally to enable the childto live and contribute positively toward the development of the society. The development of the society has science and technology at its hub.

Consequently the academic community has undergone tremendous changes during these years, assuming new dimensions influenced by technology-driven applications. Although education is necessary for useful life and, is a social goal and the key that any nation can use to open the doors for development, the quality is also crucial and makes the difference in its outcomes, hence the need for quality education. Education is one of the ways through which a nation can become developed. It has the capacity to adequately equip people with the necessary skills and knowledge needed for effective participation in and contribution to National development (Udofia. 2020). Education has the capacity to unlock talents and skills in an individual. Education is a powerful means of social and economic progress. Anyone working with it, is working with probably the most powerful instrument man has yet devised for his own improvement. It is a catalyst for stimulating and sustaining overall national development. Udo (2016) asserted that education and for that matter quality education satisfies the basic needs and enriches the lives of learners and their overall experience of living. It can be elusive and meaningless, as it can reflect different ideological, social and political values or interest of multifaceted cultures (Babayemi, John O. & Atim E. Itighise & Sikuru M. Raimi (2022)., .which can be measured only in line with ascribed indices, which implies and guarantee that the necessary precautions and resources have to be put in place and utilized to provide a certain product of services to meet the needed expectation and satisfaction of the general public. Instructional teaching strategies are the means for helping students to study effectively. Teaching concern the tactics teachers use to meet teaching objectives, including instructional organization and techniques, subject matter, and the use of teaching tools and materials (Omwirhien and Ibrahim, 2016). Ameh and Dantani (2012) observed that instructional strategies/methodology is very vital in any teaching-learning situation and the method adopted by the teacher can either promote or hinder learning. It may sharpen mental activities which are the bases of social power or may

discourage initiatives and curiosity thus making self-reliance and survival difficult. Due to its importance in the educational set up, several teaching methods and strategies have been developed to bring about effective delivering of content by teachers and easy and meaningful understanding of concepts by students (Babayemi(2014).

As widely acknowledged locally and internationally, education at all levels is a key driver of growth and development (Omaji, 2022). In support of Etuk (2016) who made the point that the entire developmental apparatus of the socio economic structure revolves around a quality of education. A number of people including ordinary persons on the street have adduced the decline of quality education in Nigeria to many factors including the failure in institutional leadership, academic corruption and political leadership which have led to the system failure which pervades the whole system.

Akpan (2016) opined that the level of decay as well as the near absence of teaching and learning in schools is intolerable, unjustifiable, inexcusable and acceptable. He further added that successive administrations have sustained this criminal negligence of the most critical sector of human society, the unfettered interference, under the guise of necessary structural adjustments, resulted in, some Professors being made political Vice Chancellors and their professorial positions politically influenced. The ensuing suppression of university autonomy, the silencing of intellectual voices and the unpredictable and epileptic salary environment, gave rise to a mass exodus of many brilliant lecturers from the university system. Some left to join the rat race in other continent of the world.

United Nation (2022) identified 12 items that hindered quality education in Nigeria namely: inadequacies in facilities for teaching, learning and research, inadequate funding, deficit in teaching quality, governance deficits, depressed quality of graduates, inadequacies in access, and deficiencies in research and post graduate training, academic corruption and other vices, regulation by the UN and other professional bodies, promoting ICT-driven universities, fostering skills development and entrepreneurship and gender issues. When the backbone is weak, the whole system is weak also and a discerning observer would put two and two together to do some interpretation. The language is very clear, worst means worst no matter the angle we look at it. Educational system in Nigeria need total over hauling

It is an open secret that any school system which fails to transform itself to adapt to the transformative agenda of the 21st century would end up forgotten or abandoned. Sambo (2022) suggested in depth paradigm shift to quality maintenance in all levels of education. Quality assurance and service describe the systematic efforts taken to assure that the product(s) delivered to customer(s) meet with the contractual and other agreed upon performance, design, reliability, and maintainability expectations of that customer. Quality maintenance for sustainable national development involves ensuring that infrastructural resources and system are well maintain to support long term economy, social, and environmental goals. The key aspect of quality maintenance for sustainable national development are infrastructure maintenance, regular maintenance and preservation of infrastructure, such as road, bridges, and buildings is essential for ensuring their longevity and functionality. This includes routine maintenance, preventive maintenance and rehabilitation. Sustainable development requires protecting and preserving the natural environment. This involves implementing measures to minimize pollution, conserve resources and promote biodiversity, for example evaluating and identifying the quality of the regional eco environment and addressing issue related to agricultural eco environment. Social

coherent and equality, economic efficiency, target oriented planning. Udofia(2022) maintain that developing target oriented planning methods can help improve the planning system and achieve better results in both new infrastructure construction and maintenance. By prioritizing quality maintenance in these areas sustainable national development can be achieved, leading to long term economic prosperity, social wellbeing and environmental sustainability. The core purpose of Quality Assurance is to prevent mistakes and defects in the development and production of both manufactured products, such as automobiles and shoes, and delivered services, such as automotive repair and athletic shoe design. Assuring quality and therefore avoiding problems and delays when delivering products or services to customers is what is defines as that "part of quality management focused on providing confidence that quality requirements will be fulfilled". This defect prevention aspect of quality assurance differs from the defect detection aspect of quality control and has been referred to as a shift left since it focuses on quality efforts earlier in product development and production (i.e., a shift to the left of a linear process diagram reading left to right) and on avoiding defects in the first place rather than correcting them after the fact.

The terms "quality assurance" and "quality control" are often used interchangeably to refer to ways of ensuring the quality of a service or product. For instance, the term "assurance" is often used in a context such as: Implementation of inspection and structured testing as a measure of quality assurance.

Quality assurance comprises administrative and procedural activities implemented in a quality system so that requirements and goals for a product, service or activity will be accomplished.Sambo (2017). It is the systematic measurement, comparison with a standard, and monitoring of processes in an associated feedback loop that confers error prevention[Itighise, 2022].This can be contrasted with quality control, which is focused on process output Sambo (2017).

Quality assurance includes two principles: "fit for purpose" (the product should be suitable for the intended purpose); and "right first time" (mistakes should be eliminated). QA includes management of the quality of raw materials, assemblies, products and components, services related to production, and management, production and inspection processes. The two principles also manifest before the background of developing a novel technical product: to be sustainable means to be capable of continuing for a long time at the same level. It follows that sustainable national development of a country that does not use more national resources than can be replaced and so does not harm the environment. It is therefore apparent that sustainable socio-economic development of a nation is predicted on human capacity development in terms of knowledge, skills, abilities and positive attitudes. These attributes are indicated through quality formal education.Hence, the need for this study to investigate the role of science educators' in quality maintenance for sustainable national development.

Purpose of the Study:

The aim of the study was to investigate the role of science educators' in quality maintenance for sustainable national development. The specific objectives of the study include:

1. Determine the role science educator's play in quality maintenance in Akwa Ibom State tertiary institutions.
2. Assess the influence of male and female science educator's in quality maintenance in Akwa Ibom State tertiary institutions.

Research Questions:

- i. What role do science educators play in quality maintenance in Akwa Ibom State Tertiary Institutions?
- ii. What differences exist between male and female science educators in the maintenance of quality standard in Akwa Ibom state tertiary institutions?

Hypothesis:

There is no significant influence between male and female science educators in the maintenance of quality standard in Akwa Ibom State tertiary institutions

Methodology:

This study adopted a descriptive research design. The study location is all the tertiary institutions in Akwa Ibom State, Nigeria. The population of this study comprised of all 81 lecturers in the study area. The sample for this study comprised of 40 respondents purposively drawn from three tertiary institutions vested with the responsibilities of training of teachers. Instrument for data was structured questionnaire tagged: The Role of Science Educators in Quality Maintenance Questionnaire (TROSEQ). It is a 4 point scale rated Strongly Agree(SA), Agree (A) Disagree (D) and Strongly Disagree (SD), with rating values of 4, 3, 2 and 1 respectively. The instrument was validated by three experts in test and measurement and two Senior Lecturers in the Department of Science Education, Akwa Ibom State University and a reliability of 0.75 was determined using PPMC. The researchers administered the questionnaire copies with the help of three research assistants. Direct delivery and retrieval method was used. Data generated were analyzed using mean, standard deviation and hypothesis tested using independent t test at 0.05 level of significance.

Results:

Research Question 1.

What is the role of science educators in quality maintenance in Akwa Ibom State Tertiary Institutions?

Table 1. Respondents Response on the role of science educators in quality maintenance in Akwa Ibom State Tertiary Institutions

S/N	ITEMS	Mean	SD
1	I ensure that students attain classes up to 75% bench mark	3.75	.439
2	I marked and return assessment scripts to students with corrections	2.75	.670
3	I discuss areas of strength and weakness in the class with my student	1.75	.981
4	I encourage student's collaborative work in my class through giving assignment.	3.04	.716
5	I recommend reading areas, textbooks and internet site for students in my course.	2.25	.439
6	I monitored students pace of studying through giving them frequent assignment and field work	2.13	.335

7	I create time to attain to problem students in my course	3.31	.607
8	I ensure effective supervision during test and examination writing in my course	4.00	.000
9	I have a specify well prepared marking guide to ensure that marks are not arbitrary given to students	4.00	.000
10	I try to cover all the curriculum contents of my course with the students	2.62	.490
11	I ensure that students are led to understand the practical courses presented to them as i monitored their laboratory activities.	4.00	.000
12	I ensure that students are well checked into examination hall	4.00	.000
13	Materials such as phones, microchips are not allowed in my examination hall	4.00	.000
14	I subject my examination scripts after marking for vetting	4.00	.000
15	I subject my examination scores for moderation	3.62	.490
16	I don't permit short cut in passing my courses. Any students that fails is advise to re- register	3.25	.490
17	All my courses are taught using instructional materials	2.75	.439
18	I try to avoid missing schedule classes with the students in my course	2.75	.437
19	I encourage team teaching in my course to ensure quality standard	2.85	.975
20	I ensure integration of various teaching methods/strategies during lesson delivery	2.45	1.01

Table 1 showed respondents response on the role of science educator's in quality maintenance in Akwa Ibom State Tertiary Institutions. Analyzed data for questionnaire items 1-20 revealed the following: I ensure that students attain classes up to 75% bench mark

($X=3.75$ $SD=.439$), I marked and return assessment scripts to students with corrections ($X=2.75$ $SD=.670$), I discuss areas of strength and weakness in the class with my student ($X=1.75$ $SD=.981$), I encourage students collaborative work in my class through giving assignment. ($X=3.04$ $SD=.716$), I recommend reading areas, textbooks and internet site for students in my course. ($X=2.25$ $SD=.439$), I monitored students pace of studying through giving them frequent assignment and field work ($X=2.13$ $SD=.335$)

I create time to attain to problem students in my course ($X=3.31$ $SD=.607$), I ensure effective supervision during test and examination writing in my course ($X=4.00$ $SD=.000$), I have a specify well prepared marking guide to ensure that marks are not arbitrary given to students ($X=4.00$ $SD=.000$), I try to cover all the curriculum contents of my course with the students ($X=2.62$ $SD=.490$), I ensure that students are led to understand the practical courses presented to them as i monitored their laboratory activities. ($X=4.00$ $SD=.000$), I ensure that students are well checked into examination hall ($X=4.00$ $SD=.000$), Materials such as phones, microchips are not allowed in my examination hall ($X=4.00$ $SD=.000$), I subject my examination scripts after marking for vetting ($X=4.00$ $SD=.000$), I subject my examination scores for moderation ($X=3.62$ $SD=.490$), I don't permit short cut in passing my courses. Any students that fails is advise to re- register ($X=3.25$ $SD=.490$), All my courses

are taught using instructional materials ($X=2.75$ $SD=.439$), I try to avoid missing schedule classes with the students in my course ($X=2.75$ $SD=.437$), I encourage team teaching in my course to ensure quality standard ($X=2.85$ $SD=.975$), I ensure integration of various teaching methods/strategies during lesson delivery ($X=2.45$ $SD=1.01$). The high means response as compared to the criterion mean of 2.50 indicates that science educators played a significant role in ensuring quality standard in their courses.

Research Question 2

What differences exist between male and female science educator's in the maintenance of quality standard in Akwa Ibom State Tertiary Institutions?

Table 2:

Mean and standard deviation scores of male and female science educators in quality maintenance for sustainable national development

Gender	N	X	SD
Male	19	47.60	19.35
Female	21	48.00	22.85

Table 2 reveals that both male and female science educators have almost similar mean and standard deviation, however, the slight differences in the mean of science educators indicated that female teachers play the significant role in quality maintenance in Akwa Ibom State tertiary Institutions than their male counterpart.

Testing Hypothesis.

There is no significant difference between male and female science educators on quality maintenance in Akwa Ibom State Tertiary Institutions

Table 3: Independent t-test analysis between male and female teacher educators on their role on quality maintenance in Akwa Ibom State tertiary institutions.

Variable	N	X	SD	df	t cal.	t crit.	Decision@p<.05
Male	19	47.00	19.35	38	.896	2.03	NS
Female	21	48.00	22.85				

Table 3 compared the mean scores of male and female teacher educator's on their role in quality maintenance in Akwa Ibom State tertiary institutions. From the comparism the t calculated yielded .896. When compared with the t critical 2.03 the null hypothesis was accepted. This means that there is no significant difference between male and female teacher educators in their role in quality maintenance in Akwa Ibom State tertiary institutions.

Conclusion

Information on quality maintenance greatly involves the use of values by the stakeholders of education. If the students acquire these skills, they will be in a better position to maintain quality standard in the school system.

Discussion of findings

Based on the result of findings In table 1 which showed that science educators played a significant role in quality maintenance in Akwa Ibom State tertiary institutions as indicated in their mean scores from the questionnaire items No, 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15,

16, 17, 18, 19 and 20 respectively for which items deals with science educators role in quality maintenance in Akwa Ibom State tertiary institutions. It may also interest us to note that the item No. 3 which says I discuss areas of strength and weakness in the class with my student ($X=1.75$ $SD=.981$), had the lowest means score. The implication that could be deduce from this finding is that science educators played a significant role in quality maintenance in Akwa Ibom State tertiary institutions. The finding is in line with Udofia and Sambo (2021) on the issue of examination dishonesty among SS3 students.

Recommendations

Based on the findings of the study, the following recommendations were made:

- i. Quality maintenance should be maintained in all levels of education including tertiary institutions in Akwa Ibom State.
- ii. School administrators should help prepare a catalogue of what is expected of teacher educators to maintain quality standard.
- iii. Effort to improve activities of quality in schools should be the anchor point of school administration

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