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The Status of 21st Century Secondary School Science Teaching in Nigeria: Quality Assurance, the Way forward

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ABSTRACT
The paper examines the status of secondary science teaching in this 21st century as its apply to Nigeria educational system and the way forward.. The good intention of the science teaching as spelt out in the Nigeria policy document have been watered down by many factors-lack of quality teachers, poor funding, decay in the infrastructure occasioned by political interference and gross corruption leading to incessant strike actions that have mare the academic calendar. In this poor learning environment, the quality of science teaching in Nigeria is less in standard; Over the years, a substantial number of students in Secondary Schools have been found to have performed poorly in the sciences which has become a source of concern to stakeholders in the Nigerian Educational Sector" the poor state of science achievement could be due to lack of quality assurance and control in the teaching of science in secondary school. The need to ascertain areas of lack and to proffer possible remedy gave rise to this paper. However, the paper recommended that applying quality assurance measures as the way forward to help restore the lost glory since quality education is a veritable tool through which society achieves growth and development and Quality Assurance in our educational system can guarantee the revamping of the goals of science education teaching in our secondary schools. The study underscore the need to maintain Quality Assurance in science education, resource, library, laboratories, quality in record keeping, leadership, ICT challenge, enrolment and academic calendar. Possible way forward was also suggested.
Keywords: Quality Assurance, Secondary School, Science, Teaching, Nigeria. Way forward

INTRODUCTION

In recent years there has been a growing concern regarding the status or state of the educational system in Nigerian if compared to other countries' educational system. The same is applicable to the science education teaching in Secondary schools. Nigeria is falling behind other student in other countries on various measures of achievements and in particular on the measure of science education literacy. This was why the national policy on education states, "No education system can rise above the quality of teachers in the system" (FGN, 2017). Ogunsaju (2004) also states that the academic standard in all Nigerian educational institutions has fallen considerably below expectations. Even Blumende (2001) corroborated this view when he reported that the decline in the quality of education cannot be ignored by anyone who is aware of the significant role of education as an instrument of societal transformation and development.

Science education in any nation or civilization has very significant role to play in the development of its citizens. Nations are categorized into developed and developing on the basis of its scientific advancement. It is viewed as the fulcrum for any meaningful development because of its numerous contributions to the citizens and the nation. Science Education contributes to the development and understanding of the most effective ways to use science in daily life and social responsibility. Science Education has a beneficial role in the knowledge of the surrounding world. One of the most important objectives of Science Education is the development of *scientific* literacy in the life of citizens. However, this is far from the tis target. Generally, there are set out goals for science education teaching which includes the following:

- To enable learners gain knowledge and understanding of some of scientific concepts,
- To enable learners gain understanding that scientific endeavours are social human activities, involving value judgments and cultural context, and
- To enable the students gain an understanding of the processes involved in the conduct of and reasoning about science. (Akpan, 2008)

These objectives are in the soul of the nation scientific development and are expected to be actualized and sustained. However, in recent times the situation is different. Challenges faced by secondary institutions in the country in learning of science have thwarted the quality of education expected at this level of education; such that the goals of secondary education seem unattainable because of the overwhelming influences of those challenges. Education in the Nigerian society is bedeviled with a myriad of problems, most especially on those instrument mapped out by different policies to achieve the stated goals. These have been the major heart cry of many citizens to salvage the destiny of the Nigerian secondary education system. Despite the immense efforts and potentials of the secondary education to contribute to national development in the country, the contending challenges reduce the potency and subject the system to no development at all ends. Due to these and several factors plaguing the system, this paper was raised to recommend the way forward in revamping the aims of science education in secondary schools through quality assurance mechanism.

Concept of Science

Science has been defined by many scholars and science philosophers. For the purpose of this paper, a few of those postulations are considered. Aliyu (1982) identified three major definitions given by different school of thoughts; To a scientist, it is an intellectual activity through which man seeks to understand nature. To the science teacher, science comprises organized and systematized body of knowledge in form of concepts, theories and laws. While to the layman, science is more or less everything, in form of machinery and gadgets that makes life more comfortable. He however noted that none of these views by themselves represent a holistic definition of science. therefore he thus concluded by giving what he considered a more broad based and comprehensive definition, which was the definition given by Karl Popper, in Joseph, (2016) which sees science as activities that culminate into testable, falsifiable and verifiable body of knowledge, Bassey (2005) observed that science is both a system of knowledge and the methodological process by which new knowledge is unraveled, thus ensuring the dynamics and growth of science. Furthermore, he conceives science as a tool for probing and exploring the unknown. Shaibu (1992) defined science as a complex human activity that leads to the production of a body of universal statement called laws and theories which serve to explain the observable behaviour of the universe or some aspects of it.

The Concept of Quality Asssurance

In this era of standards and accountability, institutions of learning inclusive of the secondary school setting have increase their use of quality assurance mechanism to evaluate the set out goals and objectives. Therefore, the need for Quality Assurance in any setting or system is to ensure that the systems' primary goals and standard are maintained to gain public trust. Quality assurance is the practice of checking the quality of goods and services that a company sells or produce so that the standard can be guaranteed. Therefore, the practice of checking goods as they are produced, to be sure that their quality remains acceptable and good enough for general acceptability is the essence. Quality remains the most important attribute that creates value and essence about a service. Originally it was known in business circle but now it is a common parlance in education and other public sectors. Quality assurance is derived

from two words that signifies different meanings.- Quality' and Assurance' According to English Dictionary, "Quality signifies a level of excellence or an attribute that differentiates a thing or a person from the other. While sssurance refers to"the act of assuring a declaration pending on inspire full confidence which is designed to give confidence. When the two words are translated, it means a process of determining the level of excellence and keeping it in the right quality and up-to-date position for its effectiveness and efficiency. It is the means by which service providers differentiate their quality from their competitors. Quality assurance in the education sector of any nation is very key and relevant because of its great importance to the country as a whole and to the sustenance of the quality of its educational goals and objectives.

Scholarly, quality assurance has been conceptualized differently by different school of thoughts as well as individuals. Quality Assurance (for short, QA) is a management method that is defined as "all those planned and systematic actions needed to provide adequate confidence that product, service or result will satisfy given requirement for quality and be fit for use" (Isyaku, & Mustapha, 2016). Context, it is viewed as a management method and a systematic to provide adequate confidence. Therefore, it is a service that provides a positive outcomes to where it is even been applied.

To Friend, Pereira, Lutz and Heerens, (2003), Quality assurance is a programme for the systematic monitoring and evaluation of the various aspects of project service for facility to ensure that good enduring standards of quality are met.

While in education system, Quality assurance has been viewed as the measure, planned processes and action through which the quality of any nation's education is maintained and developed in line with the set out objectives. Also, it can be viewed as systematic Management and assessment procedure adopted by the established agencies in order to monitor performance against the set out objectives and to ensure achievement of the quality outputs and quality improvements()

However, in the authors view, Quality assurance in Education, is all the things, methods steps and all the inputs the school system puts in place to maintain the envisioned standard of the set out goals of the school in order to assure the society of the standards.

Other proponents conceptualized Quality assurance (control) to (Oke, & Ogunnaiya, 2016), is basically a system for setting standards and taking appropriate action to deal with deviations outside permitted tolerance. It is an ex post facto action used to ensure the quality of a product or a system after processing and during which wastages have occurred and what is left is to reject. It is however better to prevent wastage and failure before they happen. Hence, the need for quality assurance which is preventive than corrective.

Quality assurance according to Iso (1994), is "the sum total of the activities aimed at achieving that required standard" in education. He described as a process of satisfying or meeting a required standard. That is all what we do, for it to be described as satisfactory. It has to meet a certain point and/or comply with certain rules and regulations. According to Adamu (2016) Education Quality Assurance (EQA) is a process of monitoring, assessing, evaluating and reporting objectively based on agreed quality standards to attained, maintained and improved upon continually. Quality Assurance (QA) processes and practices are dynamic and provide the needed guidance and support to schools for consistent improvement in learning outcomes.

Nigerian Secondary Education and its Goals

Secondary education can be described as the education received by learners after the primary education to prepare them for life as useful members of society and for further education in any tertiary institution.() It is the second tier of education and it is the link between primary and tertiary education basically to make individual to be self-sufficient, and a socially and economically viable member of the society. Secondary education is the midpoint of students schooling in Nigeria. It is a place where students are groomed and prepared for higher education. Thus it becomes necessary that the core components of this tier of education be properly provided to ensure an effective preparation and production of students for university education. The importance of secondary education in the scheme of things for national development cannot be overestimated especially due to its role in nation building. It ensures equality of opportunities for those aspiring for further education. This ensures that all individuals irrespective of

gender or ethic affiliations have equal opportunities to aspire and acquire higher education. Similarly, it is very important for nation building as it produces low-cadre manpower for the nation. Therefore, it is pertinent to state that the task of nation building lies not just in the hands of graduates or elites but the artisans as well. Hence, secondary education helps to raise individuals who through their efforts and skill contribute to the development of the nation.(Vivian, 2017)

The goals of secondary education are to prepare learners for useful living within the society and for higher education. The National Policy on Education (FGN, 2004) stated the goals of secondary education, to:

- Provide all primary school leavers with the opportunity to attain a higher level of education irrespective of sex, social status, religious or ethnic background.
- Offer diversified curriculum to cater for the differences in talents, opportunities and future roles.
- Provide trained manpower in the applied sciences, technology and commerce at sub-professional grades.
- Develop and promote Nigerian languages, arts and culture in the context of the world's cultural heritages.
- Imbue students with a desire for self-improvement and achievement of excellence.
- Foster national unity with an emphasis on the common ties that unite us in our diversity, and
- Raise a generation of people who can think for themselves, respect the views and feelings of others, respect the dignity of labour, appreciate those values specified under our broad national goals and live as good citizens. But the main question is – to what extent has the above highlighted goals been achieved in Nigerian secondary schools?

Factors threatening the quality of secondary school science teaching

1 Quality Teachers Education. The quality issue in science education teaching are closely linked to the broader problem of teacher education . Quality in teacher education is of concern because it impinge directly on the quality of teachers in discharging their primary and professional responsibilities. Over the past years, the crisis confronting the education sector and in particular higher education sub-sector has impinged directly / indirectly on quality in the preparation of professional teachers entering the teaching profession as shown by A lot of the teachers teaching our students in secondary schools are not qualified and for those who are qualified, they are either not motivated or improved, so they take the teaching job as the last alternative making them to see the profession as a make shift, (Joseph, 2017) consequently they handle the teaching haphazardly resulting to the reduction of students interest as well as their academic success. Teacher education has therefore suffered serious challenges that progressively affected quality and performance standard in the production of professional teachers for the school system.

In re-visiting the quality of teacher education programmes, education faculties would need to tackle the intertwined challenges in the core arears of professionalism, which include the following ;

i. ***Overhauling the science curriculum***. In order to ensure that the current marginalisation and inferiority complex that its product are suffering is halted. First, teacher education programmes as currently run in most universities lack depth and breadth in the cognate experience that students are provided. By the discription of programmes in education faculty, students are restricted in the depth and spread of cognate courses that are offered, thus denying them deep knowlege and understanding in their field of specialisation. This is shortchanging the product and eroding their respect, confidences as well as competitiveness in the job market. This, in our view is emanating from the present designed curriculum for science and technology education.

ii. ***Emphasizing on retraining***. Furlong (2013) argued that the key elements of teacher professionalism and fundamental nature of teachers' work can be most directly influenced by changing the knowlege, skills and values required of teachers. This can only come when teachers are constantly retrained to update to the current knowledge in the subject disciplines.

iii. ***Insistence on academic and professional qualification***. Teachers' qualification is serious teacher quality for consideration in order to improve the teaching of science in secondary schools in Nigeria. Studies have shown that a lot of our teachers hand ling sciences in our secondary schools do not have the prerequisites academic qualification such that those who are not specialist in the

field are drafted to teach the subject and they cannot at this level give what they do not have. Okoye (2011) identified the place of adequate teachers qualification in the improving science teaching and said that no matter how good and articulate the school curriculum was well designed, if there are no well-trained and qualified science teachers that are well motivated to implement that curriculum the intention will be as good for nothing. The implication is that if all the science teachers are eminently qualified with at least a bachelor degree in the sciences , there will be the hope that students' academic performances may improve and their interest in subject may be sustained. Therefore there should be the insistence to ensure that qualified teachers are given the opportunity to handle the students, the only sure way to maintain the quality of science teaching.

iv. ***Place premium on value-added education.*** Teaching of science education curriculum should focus on relevance our science education does not seem to be relevant to our aspiration and needs these days. Consequently learners and society seem not attach good in interest on it. Many researchers and educators have expressed concern about the lack of relevance of our science education curriculum. (Udoh,Akpan, & Gang,1990) Ajayi, (2004) who referenced long explained that value-added science education is the education of science that means the extent to which it can be used by society and citizenry to realized the purpose of it in the society and individual life.

v. ***Pedagogic and subject matter knowledge***. Effective science teaching is more than knowing science content and some teaching strategies or methodology. Skilled teachers of science have special understandings and abilities that integrates their knowledge of science content, curriculum, learning, teaching and students. Such knowledge allows teachers to tailor learning situations to the need of individuals and groups. This special knowledge called pedagogical content knowledge distinguishes the science knowledge of the teacher. Teachers knowledge in science is a very important factor in promoting science education teaching, that was why Tsang and Rowland (2005) insisted that for a teacher to be effective in discharging his teaching professionally, that teacher must have have in addition to his academic qualification a good mastery of the substantive knowledge of the subject he/she teaches. In other words, science teachers need the vigour to understand a subject well enough to teach the students in that same subject effectively because the primary objective of teaching the students that subject to transmit the amount of knowledge at the teachers disposal to the students.

2 Funding: The greatest challenge in implementing any educational programme is adequate funding. The case of science education teaching is not different. In essence, underfunding is the major identified constraints for making Nigeria school science teaching a problem. For example, the cost implication in terms of procurement of science equipment/Apparatus, infrastructure/ facilities, could be astronomical, bearing in mind the proliferation of schools to cater for. The current level of funding of education in Nigeria with decreasing budgetary allocation to the education sector tells much about how far the implementation of the science teaching may go if the curriculum is to be successfully implemented. Sufficient funding is the key to effective functioning of institution. It goes far into building, conducive atmosphere for teaching and learning as well as ensuring availability af adequate and appropriate infrastructure adequate for the strength of staff and student. Insufficient funding has been a bane of all public secondary education in the country. Cosequently, infrastructures are in poor state, whilst research and learning environment are under-resourced. Also, compounding the problem is overcrowding in the classrooms / hostels and lack of cutting edge technologies to facilitate instructional processes. Instituional goals: Institutional mission and vision are to provide directrion for effective functioning of the system, which must be compatable with national expectation and global demand. Severe budgetary constraints in Nigeria have led to the slow pace of educational programme implementation and had led to the heavy dependence or donor assistance. Since funding is probably the most important determinant of success of science teaching, various tier of government should therefore, allocate a reasonable percentage of their revenue toward the implementation of the teaching of science in school.

3 Infrastructure. The effective science teaching depends on the availability and thorough organization of materials, equipment, media, and technology. An effective science teaching and learning environment require abroad range of the basic scientific materials as well as specific tools for particular topics and learning experiences. Teacher must be given the resources and authority to select the most appropriate materials and to make decisions about when, where and how to make them accessible. Specifically for science teaching to thrive the following facilities should be in place and their right quantity and functionality

- ***Library:*** The library, as the repertoire of existing knowlege, must have adequate and up-to-date volumes and ICT facilities easily accessable to both students learning and academic research. The libraries in most secondary school if any contain obsolates resource materials. Many do not subscribe to current journals or establish network with other libraries worldwide. Often, teachers and students depend mainly on google search engine, which we know its limitation concerning scholarly information.
- ***Laboratory*****:** Effective laboratries and learning resources centers, as well as other essential support services that meet the social and guidance needs of students and staff are not readily available. Furthermore, the appalling state of laboratories in most of our school is quite disheartening. The laboratories are non- existent or dilapidated. Many are not well equipped and as such quality education can hardly take place. This appears more precarious in public schools and those located in rural areas, as most private schools have fairly well equipped laboratories (Olaoye 2007). There is need for infrastructural and development drive if the nation is achieves its science and technological transformation. According to Nigeria's education Sector Analysis ESA (2003) Nigerians primary schools in general do not have laboratories, although some teaching equipment are kept within the classroom or in what they called science corner. This is also applicable in the secondary schools. According to Joseph, Amadi and Mgbomo (2014) a lot of secondary schools do not have functional laboratories, there are no equipment/apparatus and where they exist, they are not adequately stocked with chemicals and reagents, such a scenario, the teaching of science would suffer immeasurably. Science at this point might be taught as theatrical class and the virtues and aims may be defeated.
- ***School Environment.*** According to Dike (2003) lack of a healthy learning environment caused by corruption and visionless leadership are affecting teachers' morals and performance. On the other hand, children growing up in a conducive environment may show superior cognitive abilities and academic competences. The school learning environment may consist of both negative and positive characteristics, which affects the perception of the class room environment by the students. School environment implies a measure of the worth and quantity of the cognitive, creative and social support that is provided and made available to the learners during their school life in terms of teacher-student interaction (Oloye, 2016). In this study, it will particularly look at the school environment in three facets; the classroom environment; the physical environment and the school learning climate or environments.

  There is a considerable body of knowledge on how the environment impact human being, however, very diminutive is known and said about the degree of its impacts on the academic success of the humans. Since the environment has been considered as a very important factor influencing the academic achievement of students in schools, it is therefore, absolutely necessary to examine its roles in the achievement of students at this level. Ferreire (1995) observed that students' attitudes are shaped, modeled and refined to some extent by the physical structure (facilities) in the school environment and it is through these physical things they formed mental concepts about their academic process. A good school environment with stimulating features attracts students, motivate and arouse their interest and thus promote learning, also, teachers and other supportive staff do well when a school has attractive learning environment where classrooms are adequately provided, have enough office space, well equipped with modern facilities conducive for creative exploitation.
- ***ICT Challenge Among Science Students*****.** Students non challant attitude to education and wrong use of ICT in schools is another very big challenge towards Nigeria secondary education system.

Almost all students in secondary school do engage in negative or wrong usage of mobile phones in schools. Most students use phones to perpetuate immoral practice in schools. Some times even while the teacher is teaching them. They are busy with handset when they ought to be listening to their teacher and even indulge in exam malpractices with thsee handsets rather than acquire knowlege positively through them. At the end of the day, half backed students or school drop outs are being producedin schools. This nagates the objective and goals of secondary school science education in Nigeria.

4 Administration and Management Problems

- ***Leadership.*** Nigerian secondary education system needs capable hands that are highly cerebral, that have right sense of value (Moral and otherwise), integrity and experience to run and manage the system appropriately. Most educational managers lack competence, accountability, integrity, commitment, right sense of value, correct philosophy of life, appropriate leadership style, ability to make precise decision and good leadership skills. If all educational managers had this, then, challenges will reduce and attainment of qualitative secondary school education becomes easy. Poor governance, corruption, wrong value system by leaders, weak leadership and indiscipline was stated by Ehindero, (2001) as some of the factors causing decline in the system. Also frequent change of leadership interrupt the implementation process and aborts visions. Complacency on the part of our educational administrators also noture mediocrity in the system.
- ***Political interference.*** **The** incessant political and policy summersault affect the quality of science teaching because party lines policies that in every four yeas or thereabout governments is changed either party or the individuals which invariably introduce new policies that may not be consistent with the extant one in place, such scenario, implementation of the science education policies do affect the proper implementation of the policies thus threatening the standard of science teaching.
- ***The Proliferation of Private schools***. In Nigeria, the number of the private secondary education institutions exceeds public ones. The proliferation was due to rot in the public school over the years emanating from long and protractile strikes, refusal from the government employ new teachers to replace the retired ones, lack of motivation and the parents and guidance discovered that the children attend public schools always show some level of mediocrity. This gave the private school to increase enrolment with commensurate facilities, employ very unqualified teachers with the belt of NCE or majority school certificate whose role has added to the poor quality of education system generally and science teaching in particular coupled with the absence of laboratory, libraries and good school environment that promotes ambient science learning. The quality of private higher education leaves much to be desired.
- **Lack of Accurate Institutional Data.** Most secondary schools do not keep comprehensive and consistent institutional data, yet it is vital for accessing quality. Often, records are kept manually in registers and data from different section in the same institution do not corroborate. More importantly, it is rarely analyzed for policy-making and planning.
- **Enrolment** Available records have shown that enrollment into secondary education increase astronomically from 14,568 in 1976 to 176,700 in 1996. This has continued in the same trend up till date. This pace at which education had grown in Nigeria is unparalleled elsewhere while the infrastructure is abysmally poor. Consequently, the standard of science education has reduced. The increase in enrollment leads to institutions massifying and thus results in a deterioration of quality if the schools enroll a far greater number of students than their carrying capacity. Since the introduction of Universal Basic Education which makes the first 9 years of education free and compulsory have resulted to over population at the Junior Secondary School Level. The over population has resulted into over stretching of the few science equipment in the school system, besides it has also resulted into situation where classroom are difficult to be managed by teacher.

- **Incessant industrial disharmony**. There is a rampant notion which is generally felt in the Nigerian educational sector. The incessant strikes embarked by the trade unions especially those connected to academic programme of secondary school. Teachers in the secondary and primary schools have really affected the process of the education section such that the intended goals are not acquirable again.
- **Disruption of academic calendar.** Due to the incessant strike conquest upon the poor funding and poor conditions of service, the academic calendar of science teaching in secondary school are usually disrupted. This will cause the student have stayed more than expected at homes, which prolonged the programmes. The consequence of these is that school will bridge the calendar so that they can meet up the next academic year. This eventually leads to low standard as students may not be able to grasp all the knowledge designed for that term consequently, the students will graduate with half-baked knowledge compared to their counterparts elsewhere. The lack of quality assurance in the school academic calendar engenders discrepancies in the way the school system is run. The number of weeks that should make a term is hardly observed, making for half barked school leavers. Distortion in academic calendar could also be as a result of disease outbreak, cults or communities clashes

5. Adequate Monitoring and Evaluation

- **Poor Record Keeping.** Most schools headed by incompetent principals manifest improper record keeping. Statutory records like admissin register, log book, student cummulative records etc are handled with levity. So also, some important records concerning both students and teachers are carelessly kept by ministry officials. At times, it is very difficult to get valuable informationfrom records at a glance, especially when needed for decision making. It is no gain saying that statistical information about school is usually needed to plan and no educational system can develop without statistical compilation for developments.
- **Implementation of QA Policies.** Implementation of the QA policies will help highlights and promotes the best practices of extraordinary teachers and give them the recognition and support they deserve. The QA helps to chart the course into the future. By building the best of current practice they aim to live beyond the constraints of present structure of schooling towards a shared vision of excellence. School that's implements the QA will have students learning science by actively engaging in inquires that are interesting and important to them. Students thereby will establish a knowledge base for understanding science. in schools where QA is thriving, teachers will be empowered to make decisions about what students learn, how they learn it, and how resources are allocated

The Way Forward

The down turn of the education sector has necessitated some unavoidable questions such as whether the standard of education is still the same as in the past or has there been so much compromise? Again, are the goals of science education teaching still achievable or realizable? To sustain the goals of science teaching in secondary schools in Nigeria and still maintain the standard some drastic steps are to be taken to restore the standard. These steps are to ensure the quality assurance. They are:

A Aggressive improvement in the infrastructure. The availability and usability of school facilities is seen as a factor in students' achievement. The Nigerian Academy of Educational Report (2004) states that 38% of the problems hindering students' academic achievement and quality of education in schools are attributed to inadequate provision of teaching and learning facilities or equipment. The availability of learning material is very important in teaching and learning process, because it makes learning real and concrete. Presently, the enrolment level of students in science has defied the facilities put in place twenty years ago such that the facility are either obsolete or are inadequate to handle the astronomically growing enrolment The science education to achieve and maintain its quality, the enabling environment, availability of the required laboratory equipment and facility must not just be available but must be adequately provided and utilized.

B Adequate Funding. To aggressively address the issue of infrastructure deficit in secondary schools there has to be adequate funding in the sector to enable it provides and upgrade the necessary teaching and learning resources, such as library and books, laboratories and equipment and several other materials that would enhance the quality science teaching and learning

C Motivation/Incentives. Due to political interference, openness of the teaching profession to both professional and quakes, the teaching of science suffer the same fate. Teachers who are not trained as scientists are in the field making the mockery of science teaching. Consequently, teachers are not adequately motivated neither were they adequately rewarded with the incentives that may ignite them to maintain the standard or quality. The scenario could breed passiveness and teachers might cut corners. There is need for general improvement in the remuneration and conditions of service for teachers especially at the post primary school system. This gesture may provide enough incentives in order to get the best from the teacher

D Emphasis on Curriculum Review: Certain cultural and superstitious which hinders scientific knowledge in the Nigerian society should be eliminated science is an enterprise that is based on empirical evidence while culture and superstitious is based on people belief system.

E Employment of Quality teachers: in the school is a major factor that determines the extent to which educational objective are realized, therefore proper attention should be paid to training and re-training of teachers with in-service training.

F Balancing Enrolment and Resources .The government should see to the issues of student teacher ratio in schools. More teachers should be employed in order for teaching effectiveness in schools. In other words the schools should endeavour to surmount the pressure of admitting students more than the carrying capacity

G Information and Communication infrastructure: ICT facilities should be properly employed by the students for effective learning inside and outside the classroom.

H Adequate Monitoring and Evaluation

I Encouraging Training and Retraining. Teaching like any other professional practice is not just dynamic, but very tasking especially the science teaching that involve evolving knowledge almost on daily basis and keep abreast of the time and new methods and techniques, it is imperative to expose our science teachers to these new techniques as they emerge (Ajayi, 2004) According to the author, to really exposed teachers innovation that are characterized by science, training is essential because it would enhance teachers performance and productivity. For the sustenance of the quality of science education, teaching in our secondary schools and the quest to maintain quality, there is the need to update teachers in pedagogy and curricular. Teachers need to go for professional training while in the job to enhance their productivity and to improve the students learning. One sure way of maintaining the quality assurance in the science education teaching is ensure policies of training and re-training are put in place and are fully implemented. Teachers' retraining in the sense used in this article is the learning opportunities given to practicing teachers who gainfully employed to develop new knowledge, acquire new and modern skills, adopt new teaching strategies or approaches to handle the students in their subject area and to enhance their effectiveness in their day to day classroom management

J Economic restructuring: The present structure of the Nigerian economy which is service-oriented with manufacturing accounting for only a small proportion of economic activity does not encourage the mass production of science and technology graduates, a there will be no capacity to absorb them. Government must therefore create the enabling environment for innovation and enterprise to thrive so that the economy can be productive.

CONCLUSION / RECOMMENDATION

There is no doubt that the quality of science education teaching has been compromised and these was due to the identified reasons-infiltration of unqualified teachers in the teaching profession, inadequate number of qualified teachers, proliferation of private schools, Poor funding, shortage of infrastructure and enabling environment, problems of administration and management, putting in place adequate monitoring and evaluation mechanism Based on the investigations of this study, quality assurance guideline should be employed in the teaching of science in our secondary school system in Nigeria. The way forward is the

proper implementation of quality assurance through the provision of, provision of adequate teaching material, employment of quality teacher and procurement of relevant ICT material, Motivation/Incentives, Emphasis on Curriculum Review, should be given priority. Also, the inspectorate division in the state and federal ministry of Education that is saddled and empowered to ensure minimum standard and quality control should be awaken to its responsibility. Surveillance and regular inspection should be taken to make sure the needful is done in enforcing standard. No nation can grow beyond it level of education.

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