

## SCIENCE EDUCATION IN NIGERIA: THE JOURNEY SO FAR

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### Abstract

Science education is a field of study that exposes learners to the contents as well as the methodology (processes) of acquiring scientific knowledge for practical application in relevant and applicable areas of life endeavors such as life on the planet, production of essential human needs like soap of all kinds, creams, drinks, petroleum and its bi-products, clothing, drugs, household utensils and chemicals for preservations of food items as well as textiles are all a product and principles of Chemistry. Other likely forms of production derived from science education is the production and supply of energy from different sources, means of transportation and communication as well as the inventions of machines and materials that has made life comfortable and enjoyable, all of this makes work easier and faster as it is an acquisition of the basic knowledge and principles of Physics. This type of education takes place in a formal school setting under the auspices of the science educator who is professionally qualified to moderate the scientific activities in the classroom with the use of appropriate pedagogies. The article specifically focuses on the history and journey so far of Science Education in Nigeria, its policy, status of science education in Nigeria, budgetary allocation of some sampled African Countries, problems of science teaching in Nigeria and way forward to its effective teaching.

*Keywords: Science education, Nigeria, Scientific Knowledge,  
Production and Effective teaching.*

### Background to the Study

Science is activities embark by man in search of basic needs for survival on the planet .Such as food, shelter and clothing. It is as old as man himself and meant for him to practice. There are variations in the definitions and nature of science. The way a scientist view the nature of science determines its definition. Some view the nature of science in terms of its contents such as, of biology, chemistry, physics, and agriculture, which are made up of facts, theories and principles. Others view it in term of its process (procedures and methods) and some as its products (technology). Raimi, Bolaji and Babajide (2003) view science is human activity in search of food, shelter, clothing and basic human needs and survival. In another dimension, Okeke (2007) asserted that science is a systematic investigation of nature with a view to understanding and harnessing them to serve human needs while Erinosh (2009) views science as an organised body of knowledge about the world; a set of logical and empirical methods for the investigation and understanding of natural phenomena and an enterprise for the application of scientific knowledge.

The scientific knowledge of science is relevant and applicable in all areas of life endeavors, without which life on the planets is miserable and primitive. For instance the production of essential human needs such as soap of all kinds, creams, drinks, petroleum and its bi-products, clothing, drugs and household utensils and chemicals for preservations of food items as well as textiles are all a product of principles of Chemistry. While the productions and supply of energy from different sources, means of transportation, and communication as well as the inventions of machines and materials that make life comfortable and enjoyable as well as what makes work easier and faster are all products of the basic knowledge and principles of Physics. The knowledge of Biology is applicable in medicine, physiology and anatomy to preserve and save lives. The knowledge of Agriculture gives way for the production of food and animals which serve as meat and sources of protein as well as raw materials for industries. As an evidence of the importance of science, it is pertinent that its education is of paramount importance. What then is science education?

Science education is that particular field of study that exposes learners to the contents as well as the methodology (processes) of acquiring scientific knowledge for practical application. In line with this, Okeke (2007) defines science education as an integrated field of study that considers both the subject matter of science discipline (Biology, Physics Chemistry and Agriculture) as well as the processes involved in the learning and teaching of science. This type of education takes place in a formal school setting under the auspices of the science educator who is professionally qualified to moderate the scientific activities in the classroom with the use of appropriate pedagogies. This article specifically focuses on the history of

Science Education in Nigeria, policy on science education, status of science education in Nigeria, budgetary allocation of some sampled African Countries, problems of science teaching in Nigeria and way forward to its effective teaching.

#### History of Science Education in Nigeria

The history of science education in Nigeria will be reviewed under two different periods, the colonial masters (pre-independence and post independence periods).

##### Pre independence Period

The Christian missionaries brought western education into the country around 1848. In 1859, some schools were established by these missionaries such as the Church Missionary Society (CMS) grammar school in Lagos, the Roman Catholic Missionary School, the Wesleyan Methodist and a host of others. Some rudiments of science education were introduced into the curriculum of these schools as General Science and Nature Study. Also, Omolewa (1977) reported that arithmetic, algebra, geometry and physiology were introduced into secondary school curriculum. In addition to these grammar schools, some teacher training, pastoral, agricultural and vocational institutes were founded. Examples are the hope Waddle institute in Calabar founded in 1861, St Andrew College Oyo founded in 1899. All these institutes had science education in their curriculum as astronomy, chemistry, physiology, geology and botany. At the primary school levels, rudiment of science was taught as Nature Studies while it was taught as General science at the Secondary school level.

Oni (2009) reported that during the Missionary era there was no consideration for quality of education, no barrier for admission of students into schools, no classrooms; the same buildings were used for religious and academic activities. There was also no common syllabus for academic activities. Science was taught in abstraction right from the primary school level; contents of science taught includes the external structure of birds, foreign plants and animals, and gardening were also studied. There was absence of common science syllabus and laboratories. Teachers of science during these periods were the colonial masters who used British science curriculum and styles to impart scientific knowledge, the contents of the science curriculum were foreign with foreign textbooks with absence of instructional materials, teaching strategies were teachers centered and expatriates were science teachers at the secondary school level. Nature study was mandatory at the primary level while General Sciences at the secondary level, very few privileged secondary schools taught biology, chemistry and physics. Health science was taught as alternative to biology and examinations on it are taken at the school certificate level. Also, there were no orientations of such science subjects towards solving problems of the Nigerian society.

Therefore, as an evidence of these, the results of science at external examinations were extremely poor. It is worth mentioning that there was no post-secondary school for the learning of science from 1848 to 1933 except the specialized medical institution attached to the CMS Theological Institute founded in Abeokuta. The science subjects were offered by few able students known as geniuses. The science students at the tertiary level then depended on the products from secondary schools. There was a wide gap between ordinary and advance level which made few science students to qualify for University admission and only a few science graduates returned to classes to teach science. These inadequacies were observed by the Ashby report of 1959 and recommended an enriched curriculum to ensure relevance of students to the local manpower development. The teaching of science gained better ground in 1920 as a result of the visit of the Phelps-stokes funded education commission to Africa who found that science education was deficient. They therefore, recommended the inclusion of science subjects in the curriculum of all secondary schools in Nigeria. Even then, very few qualified science teachers were in schools and methods of teaching were unsatisfactory (Omolewa, 1977). The contents of science was dictated by external examination board (Cambridge and London) with little or no regards to the Nigeria environment

The education ordinances of 1960 brought slight improvement in the content of science education in Nigeria. Different examination bodies were set up in 1952, with its headquarter in Accra, Ghana followed the Jeffrey report of 1950. The board later became the West Africa Examination Board (WAEC) which revised the curriculum of school subjects including science and had its first examination in 1955. Professional bodies such as the Science Teachers' Association (STAN) were also established on 30th November 1957. This bodies reviewed the WAEC and HSC science curriculum in 1958. Other colleges were established by the Federal Government of Nigeria; the Federal College of Arts, Science and Technology was established in 1950 in Ibadan, Zaria in 1952, and Enugu in 1954. These colleges administered fairly comprehensive curriculum in science education and science related fields such as architecture, engineering, pharmacy etc.

The launch into space of the satellite (Sputnik) by Soviet Union in 1957 was a remarkable development of science in the world and this resulted into the development of the science curriculum effort by the Western World. This innovation led to the awareness of re-examining the school science curriculum objectives, content and evaluation. In the early 60s in Nigeria the science curriculum was geared towards the fulfillment of overseas examination requirement but in recent times a clear pattern for science project development at the Primary and Junior secondary level has been integrated but at the Senior Secondary School the emphasis has been on inquiry and problem solving activities.

### Post independence

After independence there were several conferences to identify problems of science education and to deliberate on how to improve the teaching and learning of science. One of such conferences is the national curriculum conference of 8-12 September 1969 and it gave birth to the science curriculum and other different types of curriculum reforms in education it also brought about the new National policy on Education in 1977 revised in 1981, 1998 and 2004. The innovations in the fourth edition were: the introduction of information and technology education (ICT), the repositioning of science technology and vocational education. The national policy ushered in the 6-3-3-4 system of education and the universal primary education (Wasagu, 2011). So many materials in science were produced for primary and secondary levels, such as the Nigeria Secondary School Science Project (NSSSP) was developed by the defunct Comparative Education Study and Adaptation Centre (CESAC) now merged into the Nigerian Educational Research and Development Centre (NERDC) and Science Teacher Association of Nigeria (STAN) for secondary schools. The Nigerian Integrated Science Project (NISIP) and the National Primary Science and Mathematics Project (NPSMP) for primary school science were also produced. This curriculum was student activity based. There were innovations on theory and practical in the student-activity based curriculum. The training of science teachers during the long vacation holiday and the development of standard equipment as the minimum standard for science education in Nigeria are the two major undertakings embarked upon by STAN and NERDC. The training of teachers was mainly on methodology and improvisation of instructional materials. Government policies were aimed at encouraging science education at all levels (Ivowi, 1990).

The National Policy on Education (NPE) emphasized the importance of science and technology education at all levels, at the primary school level the objective of science education is to lay a sound knowledge in scientific and reflective thinking (FRN 1989;8). There was inculcation of literacy and numeracy and the study of science and introductory technology. Government planned to provide materials and teachers for the teaching of science and technology. At the secondary school level, the aim is for the preparation of students for useful living in the society and for higher education. The objective of the science policy is to equip students with adequate scientific knowledge to live effectively in modern age of science and technology. To achieve this, integrated science is offered as a core subject at the Junior Secondary School (JSS) and science subjects (physics, chemistry biology) as parts of core subjects and technical subjects at the Senior Secondary School (SSS) level. At the higher education level the aim is the development of higher level manpower. Government policy at this level is that course content of science and technology is with professional career and it must reflect the national requirement through consultation among Universities.

A broad-based and strong scientific background is expected of a University system. Hence a greater portion of education expenditure will be devoted to science and technology and University admission was fixed at ratio 60:40 for science students against liberal arts. Government has consistently given priority attention to science and technology, to these effects; there were establishment of educational bodies which played important roles in policy formulation, implementation and quality control. These are: National University Commission (NUC), National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE). The National Education Technology Centre (NETC) produced learning and teaching materials for technical subjects. Bodies were also established to handle examinations such bodies are West African Examination Council (WAEC) National Business and Technical Examination Board (NABTEB) and the National Board for Educational Measurement (NBEM). NABTEB were to conduct examination and award technical certificates.

In 1973 there were seminars to compile the National policy on Education, in 1976 there was launching of the Universal Primary Education, in 1981 there was national workshop on planning for JSS and finally the JSS curriculum was launched and the implementation took up in ten states and Federal government colleges. In 1984 there was workshop on planning for SSS in Kaduna and in 1986 the SSS curriculum was launched and taken up in some states and in the Federal government colleges. There were supplies of equipment by government and communities were involved in the building of workshops and installation of materials. Also, there was a commissioning of group for the training of technical staff and also seminars were organised by government and Universities for proper understanding of the policy.

The Universal Primary Education (UPE) of 1996 by Babangida military regime made primary education compulsory and free for all primary school children in Nigeria resulted to increase in pupils' enrolment at this level. The UPE was improved upon with the expansion of its scope from 6 to 9 years basic education and was changed from UPE to Universal Basic Education (UBE) in September 1999 by Obasanjo democratic administration. This is in line with the Millennium Development Goals (MDGs) and the Education For All (EFA) goal which are to ensure the realizations of government reforms in science and technology as a vehicle for national development, the National Economic Empowerment and Development Strategy (NEEDS) was introduced in 2004 (Ugwu, Ofuebe & Etiubon, 2011). This new scheme made free and compulsory education extend to Junior Secondary Schools. This implies that children will receive 9 years of un-interrupting formal education for 9 years (6 years at the primary and 3 years at the Junior secondary) The UBE is Education For All (EFA) and it is meant for children from 6 to 14 years.

This form of education de-articulated the Junior Secondary School component and aligned it with the primary school component (Awofala & Shopekan (2013). On completion of the 9 years a certificate known as the Basic Education Certificate Examination (BECE) is issued. This is the minimum qualification of a Nigerian. Hence the existing Primary and Junior Secondary School curriculum was reworked to accommodate the new scheme and ensure the goal of the UBE. The (NERDC) successfully produced the 9 year basic education curriculum and the new senior school curriculum tagged 2007. This was approved by the National Council on Education (NCE) in 2005. There is lower basic science and technology curriculum for primary 1-3 and middle basic science curriculum for primary 4-6 and upper science basic curriculum for junior secondary school. At the senior secondary level there is senior secondary school education (science / Mathematics curriculum and senior secondary school education (technology) curriculum. The new curriculum was pilot tested in 2008-2011 and the lower, middle and upper science curriculum was found to be overloaded (Awofala & Shopekan 2013). Hence, it was rectified and a new curriculum was formulated for implementation in 2013.

#### Summary of science policy in Nigeria

1. The laying of sound knowledge in scientific and reflective thinking
2. To equip students with adequate scientific knowledge to live comfortably in the world of science and technology
3. Science shall be taught to all children in primary and secondary school levels
4. The teaching and learning of science shall be towards the development of students in the cognitive affective and psychomotor domains
5. There shall be equal opportunities in terms of provision of curriculum materials resources persons and laboratory materials.
6. At least one science is compulsory for every child at the end of secondary school
7. Local provisions of instructional materials shall be encouraged.

A detailed analysis of the implementation of the above policy showed a mismatch between policy formulation and implementation. The implementation has been major problem of the science policy. For example, government wants all students to be exposed to science but resources in terms of personnel's and materials are not available. How then will such objectives be achieved? Also, there are no provisions for instructional materials for the development of the psychomotor domain of the students; available laboratories are in state of mess; having absolutely no materials.

Table1: Budgetary Allocation for Education of some sampled African Countries

Country	Ghana	South Africa	Cote'dIvvoir	Kenya	Morocco	Nigeria
Budgetary allocation	31%	25.8%	30%	23%	17%	8.43%

Source: National Bureau of Statistics 2012

Table 1 show that Nigeria has the least budget allocation for education which is very dangerous since education is the bedrock of all forms of development. It therefore implies that for Nigeria to be developed, the educational sector needs to be properly funded.

#### Status of Infrastructures in science education in Nigeria

The state of infrastructures in science education sector is a determinant of the capacity of the sector to produce the requisite human capital necessary for the realization of competitive economy and social transformation. The production of adequate and competent technological manpower is a major challenge in Nigerian education industry. The education industry in Nigeria has suffered various aspects of infrastructural development and challenges for improving the quality of education and expanding access. The various government efforts to improve infrastructure in educational institutions include construction of classrooms, lecture halls, laboratories and staff quarters as well as supply of water and electricity to improve quality of education and manpower production.

Laboratories are perceived as vehicles for curriculum enhancement. The findings of Hadley and Rheingold (1992), McDaniel, Melnerney and Armstrong (1993), Hannafin and Saverye (1993) as reported by Nwachuckwu (2014) is that a properly equipped and functional science laboratory has the potential for enhancing science learning. Science laboratories have a central and distinctive role in S&T education, and science educators suggest that there are rich benefits in learning from using laboratory activities.

In many African countries, research reports show that there are inadequacies in the number of laboratories in schools. The result of a study conducted by Jones (1990) show that 45 % of the schools surveyed in selected African countries indicated insufficient laboratories while Alebiosu (2000) and Onipede (2003) in Nwachukwu (2014)ported that many schools in Nigeria do not have laboratory with minimum standard facilities. This finding agreed with Barrow`s (1991) findings in Saudi Arabia which also indicated inadequacy in the provision of laboratory facilities in schools. The findings were also consistent with those of Black, Atwaru-Okello, Kiwanuka Serwadda , Birabi, Malinga, Biutigishu and Rodd (1998) who found in



Uganda that science education is faced with the problem of lack of resources with half of existing schools having no real laboratory. Leister, (1992) observed that shortages of laboratory facilities could have serious implications on the quality of schools' output.

The result of the study conducted by Nwachukwu (2014) on the state of science and technology education in Nigeria show that an important determinant of economic growth and development is human capital outlay. Three elements; qualification of teachers of secondary schools; quantity and level of experience of teachers; and ratio of teachers to student provided some insights to the human capital outlay in the Nigeria educational sector. Also, there are inadequate teachers, laboratories and necessary equipment for teaching S&T related subjects in most of the secondary schools in Nigeria. Also, electricity supply from the national grid to secondary schools is poor because only 30% of them have light at most 4hours a day. The study therefore recommends the provision of adequate funds and electricity generators for these institutions to enhance the teaching and overall development of S&T education in Nigeria. In addition, adequate and qualified personnel (teachers and laboratory technicians) should be provided while good maintenance culture and improved security of laboratories and equipment in secondary schools should be imbibed by all secondary schools in the country.

#### Problem of Science Education in Nigeria

The followings are some of the problems of science education in Nigeria

1. Poor management funding on the part of government
2. Shortage of qualified teachers
3. Poor attitudes of students towards the subject
4. Poor method of instruction
5. Lack of adequate laboratory equipments
6. Insufficient exposure of students to laboratory activities
7. Poor incentives / remuneration on part of science teachers leading to poor attitudes of teachers to work
8. Poor working condition of teachers and learning environment of students
9. Poor socioeconomic background of students leading to lack of appropriate learning facilities
10. Poor achievement of students in science

1. Poor management /funding on the part of government

The educational sector has been poorly managed due to poor funding and this has actually constituted a major problem in science education unit. The World Bank survey on education in Nigeria reported that the Federal Government expenditure on education is below 10% of its overall expenditure this is evidence of poor

funding. While UNESCO recommended 26% of the national budget or 5% of the Gross Domestic Product (GDP) should be spent on Education. The following are the survey of what few countries spent on education; Dakar budgeted 7%, Ghana 4.4%, Angola 4.23% and Nigeria, 0.79%. It is quite evidence that Nigeria has the least percentage (0.79%) this is another evidence of poor funding. The poor funding has negative effects on the quality of science education, since number of teachers to be employed will be reduced and there will also be a reduction in infrastructural facilities. Fada (2010) and Odekunle (2013) reported that all the facilities for the implementation of the UBE Program are not adequately available. Oseni (2012) reported that poor funding of the educational sector has led to series of problem which are; shortage of qualified staff, death of infrastructures, inadequate laboratory for teaching and research..The Federal Government of Nigeria should increase its annual budget on education in line with the UNESCO standard so as to have enough funds to education and science education in particular. Although the issue of educational tax degree of 1993 is helping but more efforts need to be put in place toward increasing the annual budget allocation to education.

## 2. Shortage of qualified science teachers

Qualified science teachers are grossly inadequate as a result of the science policy that says science should be taught to all students in schools; and this has increased the population of students in science class in schools .Therefore, some teachers who are not qualified to teach science do teach the subject. There are two categories of science teachers; those who have the content but lack the methodology and those who have the content as well as the methodology .Those who are qualify to teach science are those with content and methodology and they are limited in number. The shortage is due to the low enrolment of students into the faculty of education at the university level, only a few graduates go to schools to teach. Government should devise strategies of encouraging prospectus science students to study science Education at the University level and graduate to teach science in schools. This can be done through the implementation of incentives such as reasonable science allowance which will be of great help.

## 3. Poor attitudes of students towards the subject

Some students show poor attitude to science which may probably be as a result of misconception about the nature of science , people perceived science as a difficult subject that it is mostly taught in an abstract form with little or no practical activities hence students put on a little or poor attitude towards science. Osuafor, 1999; Adesoji & Olatunbosun, 2008)

#### 4. Poor method of instruction

A greater number of science teachers make use of lecture method of teaching or teacher' centered method of instruction. This has resulted into poor performance of the part of students (Osuafor, 1999; Adesoji & Olatunbosun,2008) .Since science is an activity subject hence, its teaching must be done in activity form, making use of diverse forms of instruction that will make students to be responsible for their own learning and constructors of their own theories (Okoronkwa, 2004, Iroegbu & Babajide, 2010) .These diverse forms of instruction may include practical activities,(Babajide 2010) peer tutoring method (Oludipe,2003) use of models(Okoronkwa,2004) etc . Also research reports showed that method of instruction is a determinant of students' achievement in science (Kalijah, 2002; Olagunju, Adesoji, Iroegbu and Ige, 2003; Oludipe 2003; Iroham, 1991; Agommuoh & Nzewi, 2003). The researchers attributed the deterioration in students' achievement in Physics to ineffective method of teaching Physics.

#### 5. Lack of adequate laboratory equipments

The teaching of science required adequate laboratory equipment for practical activities and demonstrations, but unfortunately these materials are not adequately available. Thus, making the teaching of science difficult (Onwioduokit, 1996; Onwioduokit and Akinbobola, 2005; Ogunleye and Lasisi, 2008), inadequacy of facilities may lead to student's low level of commitment to science. Therefore, science teachers at all levels should improvise the non available materials. Government on their own level should organise continuous training for science teachers on the job during long term holidays. The Science Teachers' Organisation of Nigeria (STAN) have organised such in the past but is should be a continuous exercise.

#### 6. Insufficient exposure of students to laboratory activities

Science students have not been successfully expoused to laboratory activities probably because of lack of adequate laboratory equipments or Due to other reasons known to the science teachers.Raimi( 2002) and (Babajide 2012) reported that science students are not expouse to practical activities until when final examination is close at hand .They attributed student poor performance in science to this reason.Therefore,teachers should expouse science students to laboratory activities as early as possible, Students should be tained to do science and not tolearn science from the primary school level.

#### 7. Poor incentives /renumeration on part of science teachers leading to poor attitudes of teachers to work.

The remuneration and incentive to science teacher is so meager that the salary and other incentives of science teachers should be significantly difference from that of

others; the science teachers' allowance is supposed to be attractive so that students can be attracted towards the study of science education at the University level and be willing to teach science at the end of their studies. This will in turn increase the enrolment pattern of science education students at the University level and improve the moral of science teachers and their commitment level to the teaching of science. The research reports of Aghadiuno (1992), Adesoji and Olatunbosun (2008) show that teacher's attitude made significant contribution to students' achievement in science.

8. Poor working condition of teachers and learning environment of students  
Science teaching and learning environment is generally poor. A survey of public primary and secondary schools in Nigeria shows that a lot needs to be done. There are dilapidated buildings; available laboratories need renovations in terms of structures and equipments. The environment of teaching and learning of science needs to be conducive for effective learning, teachers working environment must be conducive or else he or she will not be able to deliver effectively. Research reports of (Adesoji and Olatunbosun 2008) show high and positive correlation of environmental factors and achievement in science. A teacher whose environment is poor cannot work effectively this may lead to students' failure. Teacher and student's environment must be conducive for effective teaching and learning.

9. Poor socioeconomic background of students leading to lack of appropriate learning facilities  
Some students are from poor families that their parents cannot afford to buy uniforms, books and some materials needed for the effective learning of science. Research findings show that socioeconomic factors correlated positively with achievement of students in science. The implications of this are that students who have access to basic educational materials and whose home background enhances the learning of science will ameliorate this problem. Also, Adesoji and Olatunbosun (2008) reported that background of students made significant contribution to achievement of students in science.

10. Poor achievement of students in science  
This is a major problem confronting science education in Nigeria. The education sector is basically for the students. The students are at the centre of the teaching learning process; every activity is on the students, hence student's achievement is of paramount importance. Research evidences show that student's performance in science is below average; hence researchers have worked extensively on factors relating to students' achievement in science. Factors such as government Teachers, students/parents, environment, materials etc were identified to influence students' achievement in science.

### The Way Forward for Effective Realization of Science Education Nigeria

Improvement on government fund on science education will lead to the recruitment of qualified staff, provision of basic materials, equipment and machines for the implementation of the content of any curriculum especially curriculum 2007 (recent curriculum). This will bring remarkable improvement in science education in Nigeria.

The provision of fund by the government should meet the students' enrolment so that every child and student will be exposed to the practical aspect of science this can only be possible if there are qualified personnel and materials on ground to prepare graduates of this era for self-employment. This will reduce job problem and promote economic security. The fund will equally be used for the renovation of building and provide conducive environment for teaching and learning of science. Government of the day should support Science Education in Nigeria and there is the need for a consistent policy and continuity of Government policies (science and technology policy) by the incumbent Governors. There is the need for political stability and that government should be committed to the funding of education so as to achieve all round development, self reliance, job creation and youth empowerment.

The teaching of science must be in students' activity oriented one, making use of diverse forms of instruction that will make students to be responsible for their own learning and constructors of their own theories (Okoronkwa, 2004, Babajide, 2010, 2013). These diverse forms of instruction may include practical activities, (Babajide 2010) peer tutoring method (Oludipe, 2003) use of models (Okoronkwa, 2004) and E-learning etc. Practising science teachers at all levels should improvise the non available materials. Government on their own level should organise continuous training for science teachers on the job during long term holidays. Seminars and conferences can equally be used. Teachers should expose science students to laboratory activities as early as possible; Students should be trained to do science and not to learn science right from the primary school level.

The salary and other incentives of science teachers should be significantly difference from that of others; the science teachers' allowance is suppose to be attractive so that students can be attracted towards the study of science education at the University level and be willing to teach science at the end of their studies. Teacher and student's environment must be conducive for effective teaching and learning. This is because a teacher whose environment is poor cannot work effectively and this may lead to students' failure. Parents and guardians should work very hard and provide necessary learning materials for their wards.

Science teachers are expected to use all strategies that will improve student's academic performance in science. There is also the need for specialist Trade/Entrepreneurship in Science and Technology Education aspect that could be produced from the NCE level as well as from the Faculty of Education in the nation's Universities, through the inclusion of courses by the Education Departments to run Bed or BSc Ed program such as in physics chemistry biology, mathematics, technology (electrical work refrigerator, auto-machine, welding, metal-fabrication, and electrical installation etc) in Entrepreneurship in science and technology.

### Conclusion

The status of science education in Nigeria has been adequately reviewed. It has been established that Government recognized the importance of science in national development hence has always formulated several policies and reforms for its actualization though the production of good curriculum, has always set up difference agencies to cater for provision of instructional materials, recruitment and training of staff as well as setting up of various sources of generating funds. However government efforts have not been yielding positive results because the available resources in terms of personnel, equipment, conducive environment, teachers and students poor attitudes, students poor background, lack of adequate exposure of students to laboratory activities poor methods of instructions and so on are the problems confronting the teaching of science. Therefore, for successful science education, there is the need for practical science policy with adequate funding for the effective implementation of the curriculum contents.

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